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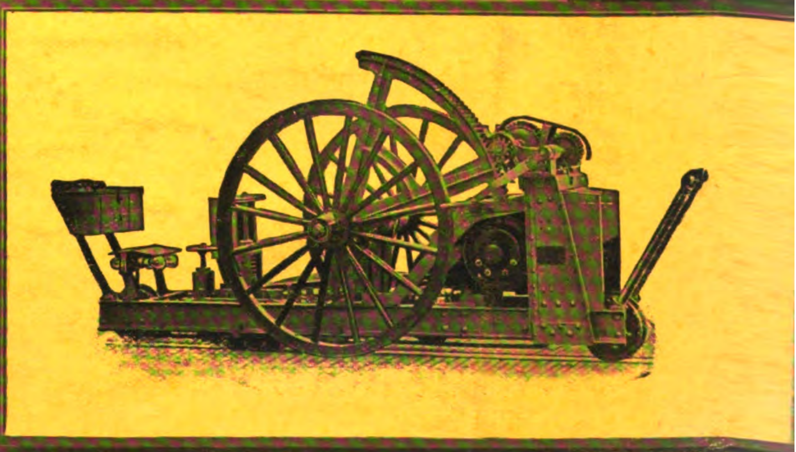

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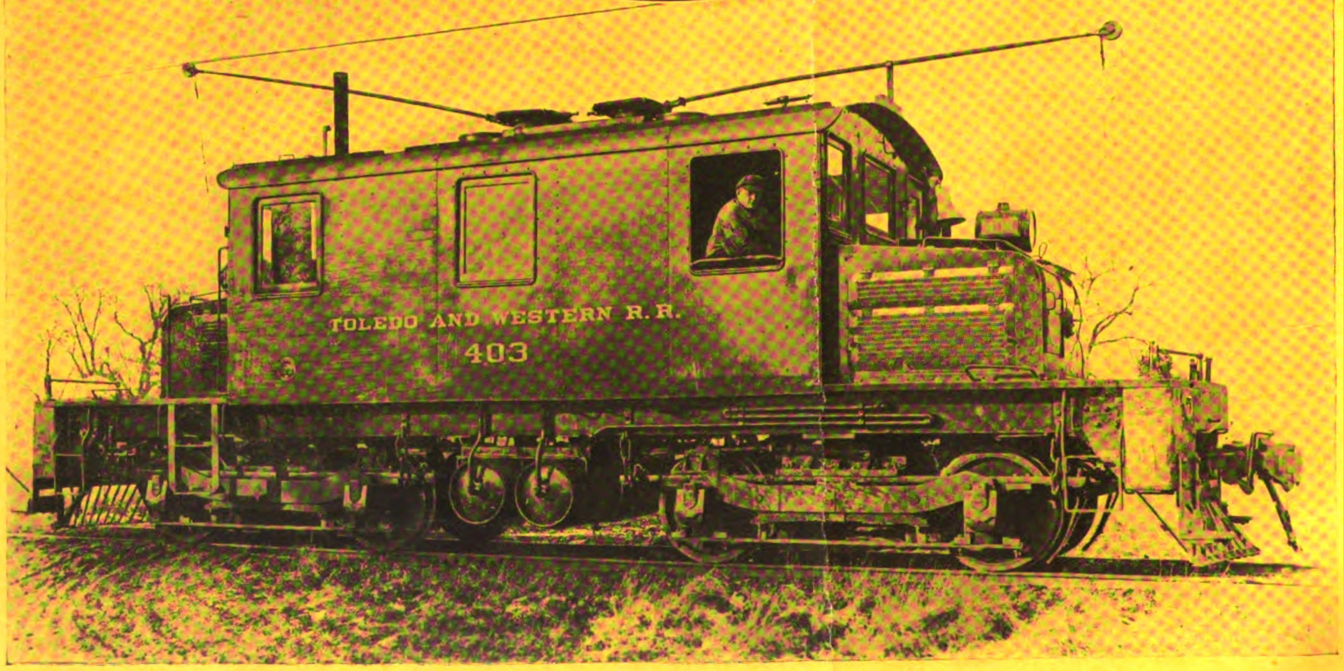

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Instructions for Use of Index

This index is essentially a subject index, not an index of titles, and articles treating a number of different subjects are indexed under each of them. In addition, a geographical reference is published wherever the article relates to any particular railway company, or to the State matters of any particular State. The geographical method of grouping serves to locate in the index any article descriptive of practices, conditions, events, etc., when the searcher knows the electric railway, city or State to which the article applies. Groupings are made under the name of the city in which the main office of the company is located, but an exception is made in the case of electrified sections of steam railroads, such entries being made direct under the name of the railroad. City or State affairs appear direct under the names of the city or State involved.

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In addition to the groups of articles covered by these headings the papers and reports from railway associations and technical societies are grouped under the names of the various organizations. Proceedings of other associations are indexed only in accordance with the subject discussed. Short descriptions of machine tools appear only under the heading "Repair Shop Equipment" and are not indexed alphabetically, because of the wide choice in most cases of the proper keyword.

CLASSIFIED LIST OF KEYWORDS

ACCIDENTS AND LEGAL

- Accidents (including wrecks)
- Accident claim department
- Legislation
- Legal
- Public service and regulative commissions
- Public service corporations
- Safety-first movement

CARS

- Car design
- Cars (descriptive)
- Cleaning and washing of cars
- Gasoline cars
- Lubrication
- Heating of cars
- Lighting of cars
- Storage battery cars
- Ventilation of cars
- Work and wrecking cars

CAR EQUIPMENT

- Axles
- Bearings
- Brakes
- Controllers and wiring
- Couplers and bumpers
- Current-collecting devices
- Doors, seats and windows
- Fenders and wheel guards
- Gears and pinions
- Headlights
- Motors
- Trucks, car
- Wheels

EMPLOYEES

- Employees
- Insurance
- Strikes and arbitrations
- Wages

FARES

- Fare collection (including apparatus)
- Fares
- Tickets
- Transfers

FINANCIAL AND STATISTICS

- Accounting
- Appraisal of railway property
- Financial
- Franchises
- Maps
- Operating records and costs
- Statistics
- Traffic investigations

HEAVY ELECTRIC TRACTION

- Heavy electric traction (general)
- High-voltage d.c. railways
- Interurban railways (general)
- Locomotives
- Low-voltage d.c. railways
- Single-phase railways

MAINTENANCE OF EQUIPMENT

- Cleaning and washing of cars
- Inspection of cars
- Maintenance records and costs
- Paints and painting
- Repair shop equipment
- Repair shop practice
- Repair shops
- Tests of equipment
- Welding, special methods

OPERATION

- Carhouses and storage yards
- Operating records and costs
- Passenger handling records
- Schedules and time tables
- Signals
- Stopping of cars
- Train operating practice

POWER

- Boilers and equipment
- Cables
- Energy consumption
- Feeders
- Overhead contact system
- Poles
- Power distribution
- Power generation
- Power stations and equipment
- Purchased power
- Substations and equipment
- Third-rail contact system
- Transmission lines
- Turbo-generators and equipment

RECORDS

- Maintenance records and costs
- Operating records and costs
- Passenger handling records
- Record forms

STRUCTURES

- Bridges
- Carhouses and storage yards
- Power stations and equipment
- Repair shops
- Terminal stations and terminals
- Waiting stations

TRACK

- Pavement
- Rail joints and bonds
- Rails
- Special work
- Ties
- Track construction
- Track maintenance

TRAFFIC

- Freight and express
- Public, Relations with
- Publicity
- Routing of cars
- Traffic investigations
- Traffic stimulation

VEHICLES (not on tracks)

- Motor buses
- Service and tower wagons

MISCELLANEOUS

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- Lightning protection
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- Standardization
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Electric Railway Journal

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Follow-Up Work with Inefficient Motormen

RECENTLY we discussed the possibility of maintaining the interest of motormen in car-checking devices by showing them the direct connection between higher efficiency and higher wages. However, the financial inducement is not the only one. A great deal can also be obtained by personal follow-up work. When a motorman is showing a low coasting average, and consequently high energy consumption, without apparent reason, it will prove more effective to ride with him in person instead of ride him by correspondence. This implies that an experienced car operator should be at or near the head of the department for, after all, knowledge of transportation conditions is the *sine qua non* in the analysis of coasting. It is far better to approach an inefficient motorman with the attitude of "let me see if you and I can't find out what's wrong with the car and the run." The average individual is bound to appreciate this man-to-man policy. If the instructor, who is quite green to the run, does better than the regular operator, the latter will be a peculiar individual indeed if he does not vow to learn and apply the secrets of efficient car operation.

Forehandedness in Service Capacity Now Paramount

IT was recently pointed out in these columns that the present seemed to be a good time for the electric railway companies which are in position to sell power at a profit to build up their commercial energy load by taking on some of the small isolated plant loads. The latter are harder pressed in the way of coal and supplies in these times than are the large corporations and in many cases may be quite ready to turn the worries of coal and oil and labor supply over to another. There are, of course, two sides to this subject. Lucky is the commercial power company to-day that has much generating and transformer capacity to sell. One manager of a small Indiana electric railway recently stated that he was 5000 kw. of transformer capacity behind his needs and could not get any help. This is only typical of the general condition. The answer to the situation is purely a matter of forehandedness. With conditions in the industry favoring a rapid increase of the commercial lighting and power load on electric railway plants, advantage should be taken of these conditions, and this can be done if the needs for equipment to supply this business are anticipated far enough in advance. Forehandedness is of paramount importance in these abnormal times.

Clear the Streets for Trolley Traffic

IN the rush of problems relating to higher fares, preparations for national defense and other conditions brought on by the war, the efforts of electric railways to secure relief from traffic delays caused by street congestion should not be relaxed. This problem is one which concerns cities of moderate size equally with those of metropolitan character. Indeed, the conditions may often be worse in the smaller cities because, as a rule, less attention is given in them to the enforcement of traffic rules. One of the most irritating features of the situation is that the present vehicular interference is to a large extent avoidable. In one state at least the electric car has legally a superior right on the streets to the public, whether on foot or in vehicles. This superior right is based partly on the fact that the electric car cannot turn out or leave its tracks, but also because the possession of such a right is in the interest of the public as a whole. This point cannot be too strongly emphasized in any discussion of street congestion. The more quickly the cars get over the line, the better the public is served. Let us have more strict regulation, then, against street congestion, especially against that most serious evil, being committed in practically every city in the country, of automobile owners parking their cars on narrow traffic streets.

Durability of Porcelain Transmission Line Insulators

THE discussion at the A. I. E. E. meeting last week on line insulators was a bit discouraging to those who focus attention too fixedly on the difficulties which are being encountered in this field. We prefer to look at the marvelous progress that has been made, as the insulator has been improved step by step to keep pace with the demand for higher and higher transmission voltage. Once the physical characteristics of the insulator itself limited this voltage, but now the limit is set largely by general economic conditions. Insulators can be built for any voltage within reason, but of course the higher the voltage the more expensive and less durable will be the insulators and other elements of the system. It is unfortunate that porcelain, still the best material available for high-tension insulator making, should be so susceptible to the subtle, as well as violent destructive actions of the elements. Its virtues for insulating purposes are so great, however, that the exhaustive studies of its properties which are being made by experts throughout the country are justified and inevitably will bring even finer results than they have brought so far. The microscope and the polariscope, as well as the mechanical testing machine and high-voltage electrical apparatus, have all been pressed into service and the effect is being felt. Quartz has been suggested as a substitute for porcelain and has some elements of promise, but until everything possible has been done to attain perfection in porcelain manufacture and in its utilization there is no reason to abandon it. Its record has been highly creditable. To be sure, the life of porcelain in insulator service is not infinite, and the present maintenance costs on early transmission lines may be high. But there is nothing unique about this as the same situation has developed in every rapidly advancing art, and the insulator engineers can be relied upon to "keep up with the procession."

Are City Cars Made for Collisions or Passengers?

WE sat in lately on a rather heated discussion which might best be designated by the title presented. The scrap began with the wail of a car builder that if one of the "tin cans" which a competitor was building ever got into a collision, the consequences would be such as to kill both the passengers and the "tin can" school of car building at one blow. His opponents readily admitted that some designs of recent cars were of feather weight but not of feather noiselessness. "Here," they said, "is room for improvement in springs and shock absorbers, but we deny the implication that the first consideration in building a city car is to make it collision-proof. It is our contention that the basic consideration in building a car for city service is to carry passengers. Why should a car be built with the idea that although held to a well-defined track it is going to be the target of crazed Fords and demented motor trucks? Are automobiles being made collision-proof?"

For our part, we believe that for unit-car city service the weight of a car should be fixed fundamentally by conditions of load, speed and track and only secondarily by considerations of longevity and resistance to collisions. As to longevity, we are beginning to feel that longevity in city cars, due to extra heavy framing and plates, has been overdone to the point of hindering the widespread adoption of cars which are more efficient operating units. We have seen one company spend $1,200 to remodel a five-year-old 50,000-lb. car when it would have been far wiser to have junked the car for a faster, safer and more economical design of one-third the weight. It is not on record that manufacturers tinker and retinker a machine tool until it wears out. They buy the newer, better ones outright. If railways learn to look at street cars in the same way, namely, as a production unit, measured by passenger and car-mile output at such and such comparative costs, they will put less money in dead metal and more money in equipment for high acceleration, quick braking and automatic operation.

As to collisions, what are the real figures? Is it not a fact that cross-track collisions are relatively scarce and that both cross-track and front-end collisions are less likely with a light, quick-braking car than with a heavy, slow-braking car? We suspect also that claims from vehicle owners for heavy damages will sound less reasonable when traction battleships disappear. Front-end collisions are largely under the control of the motormen. There may or may not be significance in the fact that on a certain railway the cars which have practically no collision protection for the motormen enjoy fewer rundowns than the cars which do have such protection. Too strong a sense of security can be quite as bad as no security at all.

An Affiliated Association for the Manufacturers?

LAST week the executive committee of the American Association reaffirmed its approval of the formation of an affiliated association for the manufacturer members and invited them to organize such an association. If they do so there will be three manufacturers in the executive committee, including the president of the affiliated Manufacturers' Association. In reaching its decision the executive committee had practically a choice among only three plans, involving an affiliated association, or an autonomous but closely-related separate association, or a manufacturers' committee in the main association to handle exhibits.

If the manufacturers accept the invitation of the parent association and organize as an affiliated association, a modification of the original general purpose of the group of affiliated associations adopted when the association was reorganized in 1905 will be necessary. The thought at that time was that the affiliated associations were to investigate technical questions. This is shown by article XII of the by-laws, which states that "the association shall do all in its power to promote the welfare of other associations organized with its approval to investigate technical matters connected with street and interurban railway construction and operation." Obviously the manufacturers have no separate technical interests in the sense intended in the by-law, such technical problems as they do have requiring their co-operation with the appropriate affiliated association, either the Engineering or the Transportation & Traffic Association.

The main function of the manufacturers as far as the association is concerned is to manage the exhibit feature at the conventions. Assuming that the association follows the proposed plan, a form of charter and constitution quite different from that of the other associations will be necessary. In the preparation of this charter every effort should be made to give the manufacturers virtually all of the rights and privileges which they enjoyed in a separate organization. It is desirable, therefore, in fact it is essential, that the plan of the suggested organization be formulated at once and laid before the industry for careful study in all of its bearings. Only such procedure will form a safe and sure foundation for a permanently satisfactory action on the application. The railway men should apply to the manufacturers the same principles which we have urged them to apply to the public and strive for better public relations. To make any plan a success it must appeal to the manufacturers as the best one available, one which encourages their initiative and accomplishes their purposes in belonging to the association.

The manufacturers are now company members of the American Association. By and large they have accepted the idea of unity throughout the industry and are paying their dues into the association on the same basis as the railway men. This is right and proper. The industry is in a bad way. If all parts of it do not hang together very soon they will "hang separately." There is no time or room for dissensions and destructive work. All thinking and work should be constructive in the interests of the industry as a whole. As far as the absorption of the manufacturers into the American Association is concerned the thing has been done. The executive committee of the parent association determined upon a plan or method of procedure. The manufacturers stood for it in principle but deplored the methods used. They felt that they should have been consulted beforehand. But as we have said the time for debate has gone by, and now all, manufacturers and railway operators, should put their shoulders to the wheel and devote their best efforts to the interests of the industry.

The Railway Prayer—Give the Commissions Vision

AS a rule, we are only indirectly interested in steam railroad rates, but the 15 per cent rate decision handed down on June 29 by the Interstate Commerce Commission has made an unusual impression upon us. In it there is an important outlining of rate-making philosophy of direct concern to all instrumentalities that must submit their rates to public approval. In the majority and minority opinions, three views of rate regulation are expressed—views which ought to be called to the attention of all electric railways.

The first is that expressed in the majority opinion. According to this, the record does not disclose the existence of a situation requiring "so heroic a remedy" as a 15 per cent increase in rates. To the commissioners' minds, the revenue showing seems better now than it did last February, and although many operating expense symptoms are "unquestionably unfavorable" and "much or all of what some railways believe will occur, will occur in the future," no one can know in advance. The absence of protests against the proposed increase the commissioners dismiss as without significance as a basis in rate-making, inasmuch as this indicates simply "a state of the public mind." Hence they refuse to grant more than a modicum of relief, but promise to keep an eye on the monthly returns to see whether the carriers' fears are justified. This is undoubtedly an honest view, but it is narrow and inadequate. As Commissioner Harlan states in a separate opinion, it is a "month-to-month and purely statistical" view.

For the next view let us look at the dissenting opinion of Commissioner McChord. He believes that the need of higher rates is a matter of government policy, and not of the making of reasonable rates. He asks whether the commission should approve an increase predicated upon prophecies in order to strengthen railway credit or whether the prices of materials and supplies should be regulated by Congress. Until the apprehensions of the railways are realized and it is clear that Congress will not act in the matter, he says, the commission is not justified in burdening the public with increased rates. This view is not so narrow as that of the majority, for it recognizes, although in a halting way, the desirability of a general investigation of operating cost tendencies rather than a short-sighted scrutiny of monthly statistics. But the view is of one without initiative, without a sense of personal responsibility in the full exercise of delegated powers. Rate making is now a commission, not a legislative matter. Whether Congress will or will not regulate prices is not the issue. Be the operating costs high or low, the commission should give them full consideration in establishing the rate basis.

What a different view from the others is the third one! Commissioner Harlan, concurring in the majority opinion only because his vote was necessary to give the carriers even the relief therein granted, thinks it not "safe" to take merely a narrow statistical view of the railways' need. With some operating factors undoubtedly unfavorable, he states, the wisdom of deferring full relief is not apparent. The country needs railway development, not simply because of war's exigencies, but because of its growing business. The shippers are ready for higher rates, provided they secure better service. And he adds: "A rate is a public question, and existing rates could well be advanced in the public interest. As long as we look to private interests to furnish transportation service, we must see to it that the rewards are sufficient to attract capital for its further development."

Which of these views is really constructive? Which is based on a realization of responsibility not to shippers, not to carriers, not to politicians, but to public welfare? Without question, the broad and wholly commendable view is that of Commissioner Harlan. The points he makes are vitally important to electric railways as well as steam railroads. Even now public service commissioners are considering in many places the need of higher electric railway fares. What will be their attitude? Will they be statistical fanatics, or will they try to shift their duties to the legislatures, or will they attempt in a broad-minded, far-seeing way to meet the basic public need of improved transportation facilities? We profoundly hope that their attitude will be that last stated, for, to paraphrase the proverb of a wise man of old, "where there is no vision, the railways perish."

"Better Service" Brings $70,000 Freight Business in Third Year

Some of the Policies and Methods Employed by a Western Road to Attract Freight Traffic to a New 75-Mile Electric Line Are Related, Also an Account of How Severe Competition Was Overcome

By J. F. HOLMAN
General Freight Agent Kansas City, Clay County & St. Joseph Railway

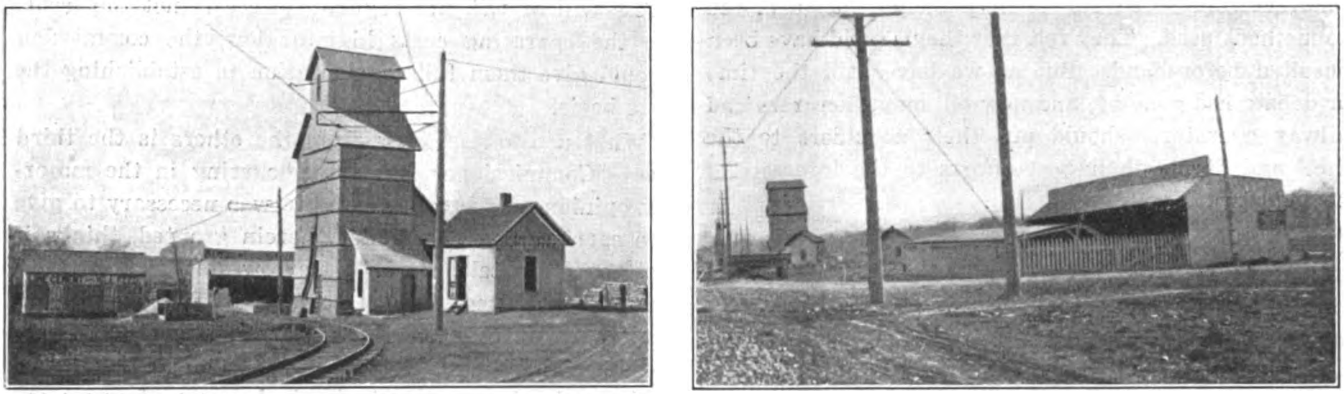
IT is a well-established fact that the steam railroads derive the major part of their earnings from the freight business, while electric roads depend chiefly on the passenger business for any profit. Should electricity be substituted for steam motive power, electric railroads might be declaring dividends earned in a great measure from the handling of freight. This would seem to indicate that the motive power is not the determining factor as to which branch of the business should be most profitable. There can be no question but that electric lines have solved the problem of making passenger traffic pay; likewise, steam railroads have been particularly successful in the handling of freight traffic. But the reverse in either case should be likewise a profitable pursuit and the railway managers could well devote their principal efforts toward building up the weak side of the transportation business.

It is my opinion that there is a large field for improvement by electric roads in the development of freight business. This means, of course, more motive power, large, adequate terminal facilities, sidings for industrial locations, joint rate and traffic arrangements with other carriers. The electric roads maintain their high efficiency in the passenger business by giving "better service," and this will necessarily be the key to a larger increase in the freight business.

The Kansas City, Clay County & St. Joseph Railway is located in a reasonably thickly populated country, with terminals at Kansas City, St. Joseph and Excelsior Springs, Mo. The farmers raise a surplus of grain, livestock, poultry and fruits. The company enjoys an enviable passenger traffic, and has a freight business which is on a par with the higher-grade electric interurban railroads in this country. It is hoped, however, to make it a freight as well as a passenger road, and it is to this end that the writer is working.

This road started operation in 1913. Located, as the property is, in a highly competitive territory, it was necessary to establish first the idea of "better service." By advertising it as "express-freight service," demonstrating to the shipper the advantages of such service, and giving special attention to complaints such as are bound to be made by shippers, the business has been increased continually since the operation of the road was begun.

Dependent upon local conditions in the different territories, it is necessary and possible to work out many features which will stimulate the movement of freight. Among some of the more important ones that have had the desired effect on this property are those described in the following paragraphs.



TYPICAL GRAIN ELEVATOR AND BUILDING MATERIAL INDUSTRIES

COMBINATION ELEVATORS, LUMBER AND SUPPLY YARDS

Not long after this road began operation there arose a demand for interchange with some steam railroad which would give joint rates on carload movements of grain and other commodities, in and out of a territory not heretofore served by any steam railroad. Joint rates and traffic agreements were made with the Chicago, Great Western Railroad, which parallels this line a portion of the way to St. Joseph, thereby giving especially advantageous connections with the productive sections of the country through which the electric road runs. A reliable grain man became interested and erected three elevators at different points along the road. However, before the elevators were erected at suitable points and the through rates could be put into effect, it was necessary that ten of the side tracks along this road be moved to points adjacent to the public highways. The farming communities along the line were glad to assume this entire expense, and in some cases the cost was as much as $2,000 per switch.

The elevators were built, and in addition lumber yards and coal bins were erected where coal, sand, stone and other building material could be handled at great convenience to the farmers. Shipments to and from these establishments are handled chiefly in foreign equipment and under joint rates, this road receiving a percentage of the joint through rate.

The arrangement made with the steam railroad was on the basis of car service, rather than under the per diem rules, which permits of our company having a foreign car practically three days without expense to us. Even where expense occurs it is usually borne by the shipper chargeable with the delay. In view of the fact that it is possible for this road to interchange with only one steam railroad the plan is satisfactory, but if we interchanged with more than one road some different plan would have to be made.

RAISING OF FRUITS ENCOURAGED

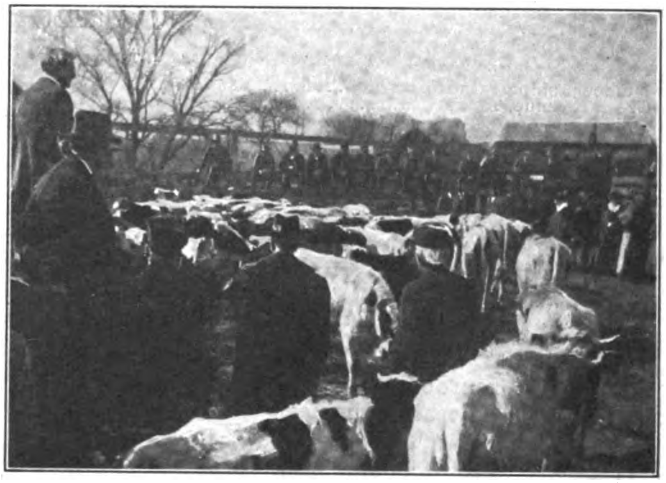
For the last two years we have made various efforts to interest the farmers in the growing of apples and small fruit, but until recently with little success. We find the farmers in Missouri have through generations been so accustomed to raising wheat, corn and livestock that it is difficult to interest them in fruit culture, or even in dairy farming. However, we now have two large commercial orchards along the line, and will have more as these develop. It so happens that the soil along the K. C., C. C. & St. J. Ry. has a deep layer of loess, which is the best-known soil for raising fruit, particularly apples, grapes and berries. A soil survey is being made under State supervision, and it is hoped that it will be completed this year in order to show the people along the line the value of the natural soil which has not been utilized heretofore for anything other than raising grains. When this survey is completed, a copy of the report will be furnished each of the landowners, and this should encourage the raising of fruits and vegetables, and materially increase the freight traffic on this road.

A NEW SCHEME FOR INCREASING DAIRY FREIGHT TRAFFIC

A novel scheme for increasing the general interest in dairy farming which has been given considerable attention during the last six months is the organization of calf clubs at various points along the line. The calf club plan had never before been promoted by any railroad to my knowledge, but already two Western steam roads have taken up this subject after attendance at our meetings in this vicinity by their representatives. The plan, as it is being carried out here, had its inception in Illinois last year, where it was promoted by a few enterprising bankers, with the idea of obtaining better dairy cattle and more of them, and also of interesting and bringing the people's attention to that branch of farming. The results were so pleasing that bankers all over the State are now organizing calf clubs. More than 200 clubs have been organized since Jan. 1. Clubs that were organized last year returned gross profit of nearly 100 per cent, the one at Brightton, Ill., doing even better. Eighty-four boys and girls were furnished calves at an average price of $43 per head, and these were sold in the fall at an average price of $92.30. The calf club plan on this road was developed as follows:

Dairy meetings were held at various points along the line, and calf clubs were organized. The co-operation of the local banker is the first step in the organization of a club. The general plan is for the banker to buy heifer calves of a recognized dairy breed, and sell them to the farm boys and girls on time, taking their notes, guaranteed by their fathers or guardians. These graded heifer calves are sold to the boys and girls in the spring, with the understanding that late in the fall they are to be sold at public auction. From the proceeds of the sale the amounts of the notes with accrued interest and the expenses of running the club are to be deducted, and the balance goes to the boys and girls.

The services of Edward K. Slater, former dairy and food commissioner of Minnesota, now connected with the educational department of the Blue Valley Creamery Company, Chicago, who has been identified with the calf club promotion work in Illinois, were secured. He addressed various meetings and aroused great interest not only in the calf clubs but in dairying generally. Great difficulty is now being experienced, however, in securing the calves for the several clubs organized. The interest of the whole community is aroused when a calf club is started. The boys and girls become more interested in the farm, and increased interest on their part means a new enthusiasm for dairying on the part of the parents. By becoming a member of a club, the child becomes the owner of property that he can call his own, and he takes a greater interest in the business end of farming. Great good is sure to result from the organization of these clubs. I quote from a letter written by a little girl who was a member of the Brighton Calf Club last year:



AT THE CALF CLUB PUBLIC AUCTION IN THE FALL

"I am glad I can join your calf club again this year, and glad that my two brothers can, too, because a boy cannot associate with a nice calf all summer without being a better boy."

In the year 1915 the Blue Valley Creamery Company shipped over this line 1399 cans of cream. In 1916 it shipped 1796 cans. This represents cream only, shipped to the one creamery. It is not necessary to tell the average railroad manager whether the handling of milk and cream on the road is profitable or not.

FREIGHT EQUIPMENT AND SERVICE

The freight equipment on this road consists of five steel motor cars, five standard box cars and five flat and gondola cars, all used in local service. All interchange freight is handled in foreign cars. This company does not supply any cars to the steam railroad. Two local freight trains each way daily are operated over each of the two divisions of this line, one a distance of 28 miles, between Kansas City and Excelsior Springs, and the other a distance of 52 miles, between Kansas City and St. Joseph. All carload movements are handled by the ordinary express car, so that the mileage is kept down to a minimum. At times when freight becomes congested it is handled at night, but this is a rare occurrence.

Below is a comparative statement of earnings, taken from the yearly report for 1916, showing earnings based on road-miles, car-miles, ton-miles, etc.

CAR-MILE, TON-MILE AND ROAD-MILE EARNINGS

	Year 1916	Year 1915
Total miles of road operated..........	75.75	75.75
Total freight car-miles (trailer-miles inclusive)	130,317.49	129,593.96
Total tons handled	24,320.5	19,886.5
Total tons 1 mile....................	803,354	....
Average gross revenue per ton........	$2.888	$3.01
Average gross revenue per ton-mile...	0.0873	....
Average revenue per freight car-mile (gross)	$0.5388	$0.4622
Average revenue per mile of road (gross)	$926.94	$790.79

COMPARATIVE EARNINGS PER SHIPMENT

Number shipments forwarded........	86,358	81,209
Gross revenue, forwarded.............	$70,215.97	$59,902.35
Average gross revenue per shipment...	$0.8131 $0.7376	$0.7376
Difference	$0.0755	or 10 per cent increase

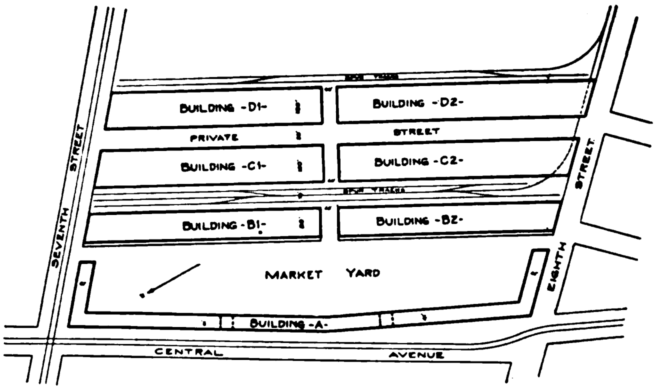
Bringing the Railway and Its Freight Customer Together

Los Angeles Union Terminal Company Is Now Building Fireproof Warehouses, in Which the City's Chief Wholesale Business Will Be Centered

FOLLOWING the example of the Bush Terminal Company, New York, and the Piedmont Lines, Charlotte, N. C., a company was recently formed at Los Angeles, Cal., to build a group of storage warehouses in the most favorable location for railway handling and distribution. This, the Los Angeles Union Terminal Company, is the largest project of its kind west of Chicago. It owns 19 acres of land in one parcel adjacent to the main lines of the Pacific Electric Railway and Southern Pacific Company in a fast-growing city, whose population already is around the half-million mark. This land is in the wholesale district, and only half a mile from the retail center, where the chief wholesale thoroughfare to-day has no trackage facilities whatsoever.

CHARACTER OF BUILDINGS

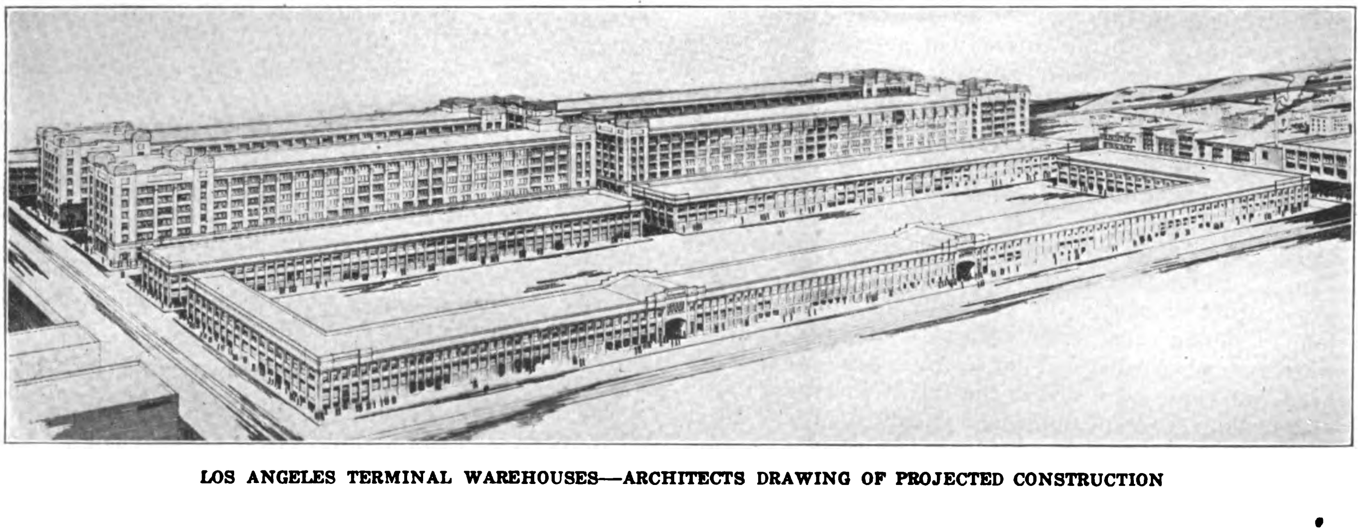
The first group of buildings now under construction comprises three six-story warehouses and three two-story market buildings, all of reinforced concrete. The latter buildings are peculiar to the local conditions, as they are designed to be utilized by the Los Angeles Public Market. Like the Bush Terminal Company's structures, which they resemble in many ways, the six-story buildings are of beam and girder type, built to obtain the lowest possible insurance rate. A rate of 15 cents per $100 is expected, as against rates up to $1.15 now paid by many of the future tenants. Wired glass is used wherever fire hazard exists, plain glass being used only where approved by the underwriters. Small subdivisions have hollow-tile partitions with gravity doors; subdivisions of 250 ft. or more have fire walls of 13-in. brick. As the latter walls are liable to be taken down in later years, brick was used in preference to concrete.



LOS ANGELES TERMINAL WAREHOUSES—PLAN OF BUILDING

The six-story buildings are 612 ft. long by 100 ft. wide; two of the two-story buildings are 620 ft. x 80 ft.; while the market building is 1541 ft. x 40 ft. The latter structure contains 430,547 sq. ft. of floor area and the warehouses 1,770,000 sq. ft.

Through the courtesy of the Bush Terminal Company, advantage was taken of that company's experience wherever possible. The chief difference in the two projects is that the business done at Los Angeles is warehousing with but a small proportion of manufacturing lofts. Consequently, the service that is rendered is not as ex-



LOS ANGELES TERMINAL WAREHOUSES—ARCHITECTS DRAWING OF PROJECTED CONSTRUCTION tensive as that supplied by the Bush Terminal to its tenants.

The layout of the first group of buildings and the architect's sketch are reproduced in two accompanying illustrations. From these it may be seen that switching and private tracks, as well as private streets, are provided to permit unloading directly into each building on the ground floor level. There is no switching charge. Chutes lead to the basements, while large electric elevators are provided either for general or private use, according to the nature of the lease. A crane will care for extra-heavy material.

Although the buildings were not scheduled for completion before Nov. 1, 1917, the company had rented on April 24 about two-thirds of the space to some sixty tenants. Most of these tenants are wholesale houses, which have grown so rapidly with Los Angeles that few have been able to expand at some one good location. Thus, one company which owned a building had been obliged also to rent an equal amount of space elsewhere. The terminal warehouse plan not only assures such concerns a low rental, excellent transportation facilities, and a fireproof home, but also enables them to concentrate their business. Furthermore, it is easier to provide for future growth.

The leases run from one month to fifty years, the larger concerns usually taking the longer leases. The amount and character of service, such as lighting, elevators, battery trucking, telpherage, etc., will be arranged in accordance with the wishes of the tenant, but of course these are details which will largely settle themselves with experience.

Strike and Union Agitation Fail in Denver

Employees Have a Brotherhood Organization, in Effect a Local Union—Faith in Their Own Ability to Look After Their Interests and Sense of Fairness They Feel Toward Company, Because of Voice Had in Its Affairs, Defeat Strong Attempt to Bring About Affiliation with Amalgamated Association

THE issue of ELECTRIC RAILWAY JOURNAL for March 31, 1917, carried a news report of the organization of a brotherhood of the Denver Tramway employees. The real significance of this organization was not evident to the casual reader at that time, and not until the developments of the last few weeks was the far-reaching influence of this brotherhood toward company loyalty disclosed. In these few weeks came the test and the proof of the principles on which the organization was built up. The chronicle of events during this period tells the story.

After weeks and weeks of the most determined effort on the part of union organizers or trouble agitators (call them what you will), direct from the Detroit headquarters of the Amalgamated Association of Street and Electric Railway Employees to establish a footing for an affiliated chapter of the national union, the interest of a few men from the 700 or more trainmen was enlisted. These few delegated, without authority, a committee of five men to present the demands of the Denver Union, No. 746, boldly heralded as having been organized, to General Manager Frederic W. Hild. This committee was received by Mr. Hild on June 4, while the newspapers were filled with the news of a threatened strike. An agreement was tendered to the company covering a period of one year and providing for a raise of wages from the present maximum of 31 cents to a new maximum of 40 cents an hour for trainmen and a 20 per cent increase for carhouse, shop and track men. It also provided for recognition of the union and strongly hinted that unless Mr. Hild gave answer by 9 o'clock the next morning a walkout would result immediately. Then witness the statement signed by this same committee in the morning papers June 5:

> We, the undersigned committee appointed to represent the Amalgamated Association of Street and Electric Railway Employees, find that matters are not as represented and hereby advise our fellow workmen and trainmen not to attend any meetings called for the purpose of organization, but we do believe that all these matters can best be handled through our own brotherhood. We have resigned from the committee.

Then witness further the set of resolutions adopted at a meeting of the local brotherhood, attended by 450 employees on June 5, expressing loyalty to their own organization and repudiating the acts of the committee which represented the Amalgamated Association:

> Whereas, a committee claiming to represent the employees of the Denver Tramway Company waited upon F. W. Hild, general manager of said company, on June 4, 1917, and at said time submitted a set of demands upon the tramway company, signed by said committee, and outsiders having no connection whatever with the tramway company,
>
> And, Whereas, the said committee was not authorized to represent the employees of the tramway company or the members of the tramway brotherhood:
>
> Now, therefore, Be it Resolved by the trustees and members of the Tramway Brotherhood of Denver, Col., all employees of the Denver Tramway Company, in this meeting assembled, that the aforesaid action of this committee was entirely without warrant or authority.
>
> Further Resolved, that we do hereby reaffirm our allegiance to said brotherhood and particularly the purposes and objects thereof as set forth in Article 1 of the by-laws, as follows:
>
>> Section 1. Recognizing, as citizens, that duty to the community of Denver and vicinity, and as employees, that obligations to the Denver Tramway system require that the transportation service rendered by the Denver Tramway Company shall be safe, continuous and reliable, and that frank, friendly meetings and intercourse between employees and officials are the best means of promoting harmony of effort and preventing and removing possible misunderstandings,
>>
>> And believing and being convinced that the employees of the Denver Tramway system have sufficient ability and business judgment to manage their own affairs, and represent and look after their own interests, without interference by or affiliation with any other individual or organization, and, furthermore, that these objects and purposes can be best pursued and accomplished by mutual co-operation and conference between employees and officials. * * *
>>
>> Section 2. The basic principles of this brotherhood are:
>>
>> First—Mutual and helpful co-operation by and among all the employees, the officials and the management of the Denver Tramway Company and its affiliated companies.
>>
>> Second—That the individual members of this brotherhood, each for himself, and upon his honor as a man, and attested by his signature, agrees to carry out and further the above and foregoing principles.
>
> Further Resolved, that we believe the members of said committee acted under a misapprehension of the facts, and we hereby approve their resignation from said committee.
>
> Further Resolved, that a copy of these resolutions be sent to the Denver Tramway Company and the press of the city.

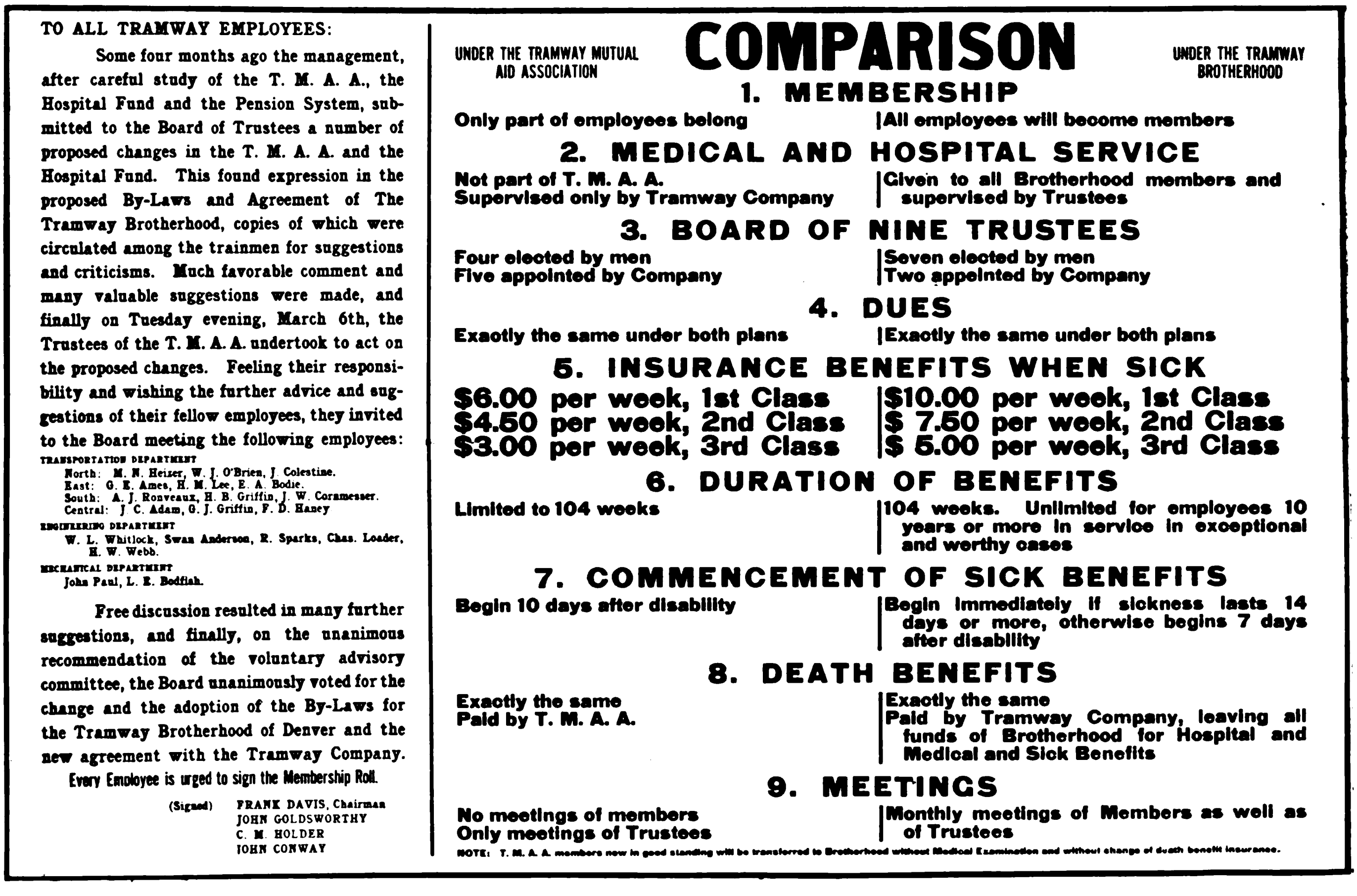
When these resolutions had been passed reassuring Mr. Hild of the good faith of his employees, he suggested that a committee be appointed to take up the matter of wages and working hours with the management in accord with the routine provided in the constitution and by-laws of the brotherhood. Thus was the aid of an outside, unsympathetic, selfish body rejected and Mr. Hild's persistent faith in the fairness of his employees reaffirmed.

DEVELOPING THE DENVER BROTHERHOOD

With the above recitation of events as the proof of the course the Denver Tramway Company has taken to gain the lasting confidence of its employees and thus avoid strikes and all the contingent discomforts to company and public, the nature of the organization, its aims, its benefits, its accomplishments, will be of interest. In passing, it is only fair to point out that not all of the road to amicable relations was traveled under the direction of the present management, but rather, that the former management handed down a group of loyal men and a very good feeling between company and employees as a basis for Mr. Hild's further work. There was formerly an organization of the trainmen only known as the Tramway Mutual Aid Association which offered certain sickness, death, pension and hospital benefits. This organization was controlled by the company, although the employees were represented on the board of trustees.

Mr. Hild sensed the need not long after he took charge of the property for an organization which would comprise all the employees of the company and would be controlled by them, the management having a minority representation on the board of trustees. He had in mind an organization of such a nature that it would in effect be a local union of the employees, yet be more to their advantage than affiliation with any national labor union would be. It would give every employee a voice in the conduct of those company affairs pertinent to the employees, and in this his principal object was to make the men feel that they had a perfect right to voice their opinions and then to provide a place for this discourse to meet with official recognition. Mr. Hild has a very firm conviction that with proper guidance, employees can be counted upon to be absolutely fair in their dealing with the company and that the more confidence there is placed in them, the less trouble there will be. Hence he was entirely willing to provide a common meeting ground for company and employees, and then welcome and encourage a free expression of the thoughts of the men—an assembly popular in both senses of the word. Such an arrangement takes away all the argument for membership in a labor union, and this was openly expressed as one of the motives for the organization of the company brotherhood.

So, with the Tramway Mutual Aid Association as the ground work for the new organization, a rough draft of the by-laws of the proposed brotherhood designed to supplant the Mutual Aid Association was laid before the trustees of the T. M. A. A. who circulated copies of the proposed new by-laws among the men. Then, after some four months of more or less discussion, the trustees of the Mutual Aid Association took up the matter for final action. A voluntary advisory committee of twenty employees from all departments of the company was called in and the by-laws gone over point by point, thoroughly studied and discussed, and thus was evolved in final form the existing by-laws of the present Tramway Brotherhood of Denver. These men, through their participation in the detailed discussion, were enabled to



TO ALL TRAMWAY EMPLOYEES:

Some four months ago the management, after careful study of the T. M. A. A., the Hospital Fund and the Pension System, submitted to the Board of Trustees a number of proposed changes in the T. M. A. A. and the Hospital Fund. This found expression in the proposed By-Laws and Agreement of The Tramway Brotherhood, copies of which were circulated among the trainmen for suggestions and criticisms. Much favorable comment and many valuable suggestions were made, and finally on Tuesday evening, March 6th, the Trustees of the T. M. A. A. undertook to act on the proposed changes. Feeling their responsibility and wishing the further advice and suggestions of their fellow employees, they invited to the Board meeting the following employees:

TRANSPORTATION DEPARTMENT
North: M. N. Heizer, W. J. O'Brien, J. Colestine.
East: G. E. Ames, H. M. Lee, E. A. Bodie.
South: A. J. Ronveaux, H. B. Griffin, J. W. Corsmesser.
Central: J. C. Adam, G. J. Griffin, F. D. Haney

ENGINEERING DEPARTMENT
W. L. Whitlock, Swan Anderson, R. Sparks, Chas. Loader, H. W. Webb.

MECHANICAL DEPARTMENT
John Paul, L. E. Bodfish.

Free discussion resulted in many further suggestions, and finally, on the unanimous recommendation of the voluntary advisory committee, the Board unanimously voted for the change and the adoption of the By-Laws for the Tramway Brotherhood of Denver and the new agreement with the Tramway Company.

Every Employee is urged to sign the Membership Roll.

(Signed) FRANK DAVIS, Chairman
JOHN GOLDSWORTHY
C. M. HOLDER
JOHN CONWAY

COMPARISON

	UNDER THE TRAMWAY MUTUAL AID ASSOCIATION	UNDER THE TRAMWAY BROTHERHOOD
1. MEMBERSHIP	Only part of employees belong	All employees will become members
2. MEDICAL AND HOSPITAL SERVICE	Not part of T. M. A. A. Supervised only by Tramway Company	Given to all Brotherhood members and supervised by Trustees
3. BOARD OF NINE TRUSTEES	Four elected by men Five appointed by Company	Seven elected by men Two appointed by Company
4. DUES	Exactly the same under both plans	Exactly the same under both plans
5. INSURANCE BENEFITS WHEN SICK	$6.00 per week, 1st Class $4.50 per week, 2nd Class $3.00 per week, 3rd Class	$10.00 per week, 1st Class $ 7.50 per week, 2nd Class $ 5.00 per week, 3rd Class
6. DURATION OF BENEFITS	Limited to 104 weeks	104 weeks. Unlimited for employees 10 years or more in service in exceptional and worthy cases
7. COMMENCEMENT OF SICK BENEFITS	Begin 10 days after disability	Begin immediately if sickness lasts 14 days or more, otherwise begins 7 days after disability
8. DEATH BENEFITS	Exactly the same Paid by T. M. A. A.	Exactly the same Paid by Tramway Company, leaving all funds of Brotherhood for Hospital and Medical and Sick Benefits
9. MEETINGS	No meetings of members Only meetings of Trustees	Monthly meetings of Members as well as of Trustees

NOTE: T. M. A. A. members now in good standing will be transferred to Brotherhood without Medical Examination and without change of death benefit insurance.

POSTER ANNOUNCING ESTABLISHMENT OF BROTHERHOOD go out and talk intelligently about the new association among their fellow employees. In the same manner, the plan was explained to employees of other departments, and in his talks with the men Mr. Hild very plainly said that the plan was directly opposed to affiliation with other labor unions or dictation or interference by outside organizers as is evidenced in the opening section of the by-laws of the brotherhood and quoted in an earlier paragraph in the resolutions passed by the men in repudiation of the recent work of the amalgamated association in Denver. By his very frankness of speech he won the confidence of the men that there was no "nigger in the wood pile," but that the idea was simply to provide the employees with all the advantages of membership in a labor union and more but retain to the company the privilege of dealing directly with its own employees in any matters of difference instead of being forced to negotiate through the medium of a national organization very remotely interested in the success of the company as a business enterprise.

Finally, a petition, which simply obligated the men to later join the brotherhood and adhere to the by-laws governing the association and to recognize and submit to the change from the Mutual Aid Association to the brotherhood, was sent to each division of the transportation and to all other departments for the men to sign. Posters placed in the division headquarters and in various offices over the property, and reproduced herewith, set forth the principal points of comparison of the two organizations and showed conclusively the advantages offered the employees in the new association. Within forty-eight hours after the petitions were sent out, 98.5 per cent of the employees had signed. Of the remainder 1 per cent were out of the city and signed later upon their return, and twelve men refused to sign, having reasons of their own which they refused to express. A significant thing is the fact that not a single trainman refused to sign. With this acceptance of the plan, its formal adoption was made on April 26, when officers were installed and the board of trustees elected.

ORGANIZATION AND OPERATION OF THE BROTHERHOOD

The object of the brotherhood as set forth in its by-laws are threefold: The first is to provide for the relief of its members in case of sickness, injury or disability and to provide benefit in the event of death; the second is to promote social relations and good fellowship among the members and to secure such business benefits for its members as may be attained by co-operation and conference between employees and officials; and the third is to aid in the education of its members in all matters pertaining to a general knowledge of street and electric railways, their equipment and operation, and to promote the best conduct of the business of the Denver Tramway Company for the mutual advantage of the tramway brotherhood and the company.

Every employee of the company, regardless of department or rank, is included in the membership of the brotherhood as long as he remains an employee and pays the dues provided in the by-laws. Before being entitled to any benefit of the organization, all members are required to subscribe to the membership roll and agree to support the by-laws of the organization.

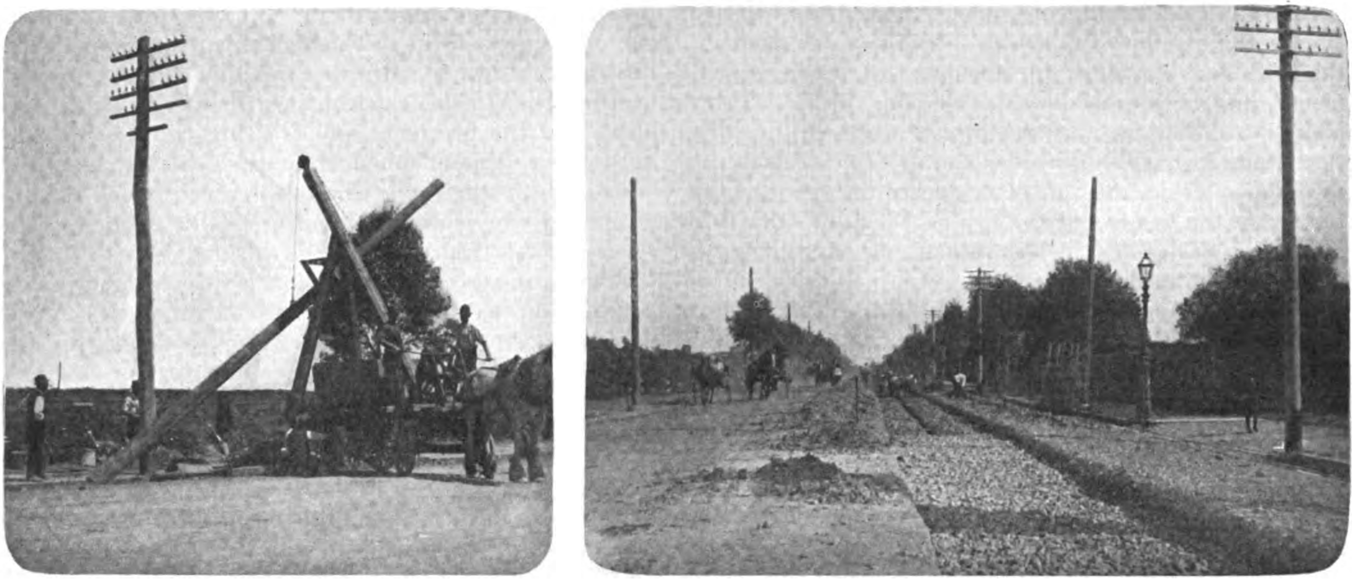
The management of the brotherhood is vested in a board of trustees consisting of nine members, of whom four are elected from the transportation department, giving a representative from each of the four divisions, one member from the mechanical department, one member from the ways and structures division of the engineering department, one member from the power department, and the president and treasurer of the brotherhood. The general manager of the tramway company is *ex-officio* president of the brotherhood, while the auditor holds the office of treasurer in like manner. The seven trustees representing the various departments of the company are elected through the process of primary and regular election, for periods of two years. This arrangement gives a popular representation on the board of trustees of four representatives for approximately 1000 transportation department men and three representatives for the 650 men in other departments.

The board of trustees holds at least one regular meeting each month, and each board member is paid the sum of $1 for attendance at the regular meeting. A monthly meeting of the entire membership of the brotherhood is held, and it has been the intention to concentrate all activities of the employees in this one meeting, in the hope that by reducing the number of meetings the interest would be increased in the one. The programs at the brotherhood meetings are, therefore, made to include all phases of the company activities, including the A. E. R. A. company section technical papers, social activities, safety discussions, and the business meeting of the brotherhood at which the discussion of any grievances is encouraged.

BENEFITS AND COSTS

Membership in the brotherhood requires participation in the medical, surgical and hospital benefits, and all employees are required to pass a physical examination before being accepted. The dues for medical, surgical and hospital service are 50 cents a month for all members. For insurance benefit against sickness, injury or disability, the dues are $1 a month for members whose average monthly earnings are $80 or more, 75 cents a month for those whose average monthly earning is between $60 and $80, and 50 cents per month for members whose average monthly earning is less than $60. These dues entitle a member to a benefit of $10, $7.50 and $5 per week respectively for the three classes, extended over a period of time as shown in the poster reproduced on page 8. Death benefits of $1,000, $750 and $500 for the three classes respectively are carried by the company for the benefit of the members of the brotherhood. When death benefits are due the payments are made by the company into the treasury of the brotherhood, which in turn disburses these mortuary funds to the beneficiaries. Providing he has passed the prescribed medical examination, a man is accepted for insurance as soon as he is hired by the company. When payment of pensions to employees is made it is accepted in place of insurance and death benefits and releases the company and the brotherhood from all other obligations. Pensioned employees, however, are entitled to medical, surgical and hospital service, provided they continue to pay dues into the brotherhood during the time they are pensioned.

The collection of dues is made by the company for the brotherhood without charge by deducting the amount from the pay checks of all those employees who are paid regularly by check. The trainmen pay voluntarily out of their own pocket the amount of the dues between the first and fifteenth of each month.



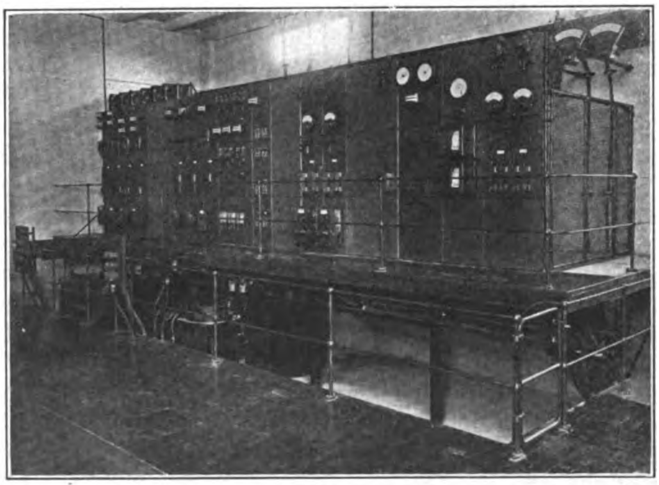
NEW MELBOURNE TRAMWAY—METHOD ADOPTED FOR POLE ERECTION, AND VIEW SHOWING SUBSTRUCTURE AND SUBSOIL DRAIN FOR TRACK

A Recent Australian Tramway

This New Australian Electric Line Includes 12 Miles of Track Laid with 90-Lb. Rail on Hewn Ties—Standard Span-Wire Construction Has Been Installed for the Contact System, and the Cars Are Similar to the California Type Used on the Pacific Coast

By STRUAN ROBERTSON, Assoc. Mem. Inst. C. E.
Engineer and Manager Melbourne, Brunswick & Coburg Tramways

THE new Melbourne, Brunswick & Coburg Electric Tramway is the most recent example of Australia's semi-suburban electric railways. Melbourne, with its suburbs, has a population of roughly 600,000 people, but there is no central municipal control, since it is cut up into several small cities, towns and boroughs, and each of these has its municipal affairs controlled by its own elected council. The system of control adopted for new projects has by an act of Parliament been constituted a tramways trust, whose members are elected by the municipalities concerned. The tramways have been constructed and are being operated under these controls in the interests of their constituent bodies. The capital for construction was obtained by loans advanced on the securities of the various municipalities concerned.



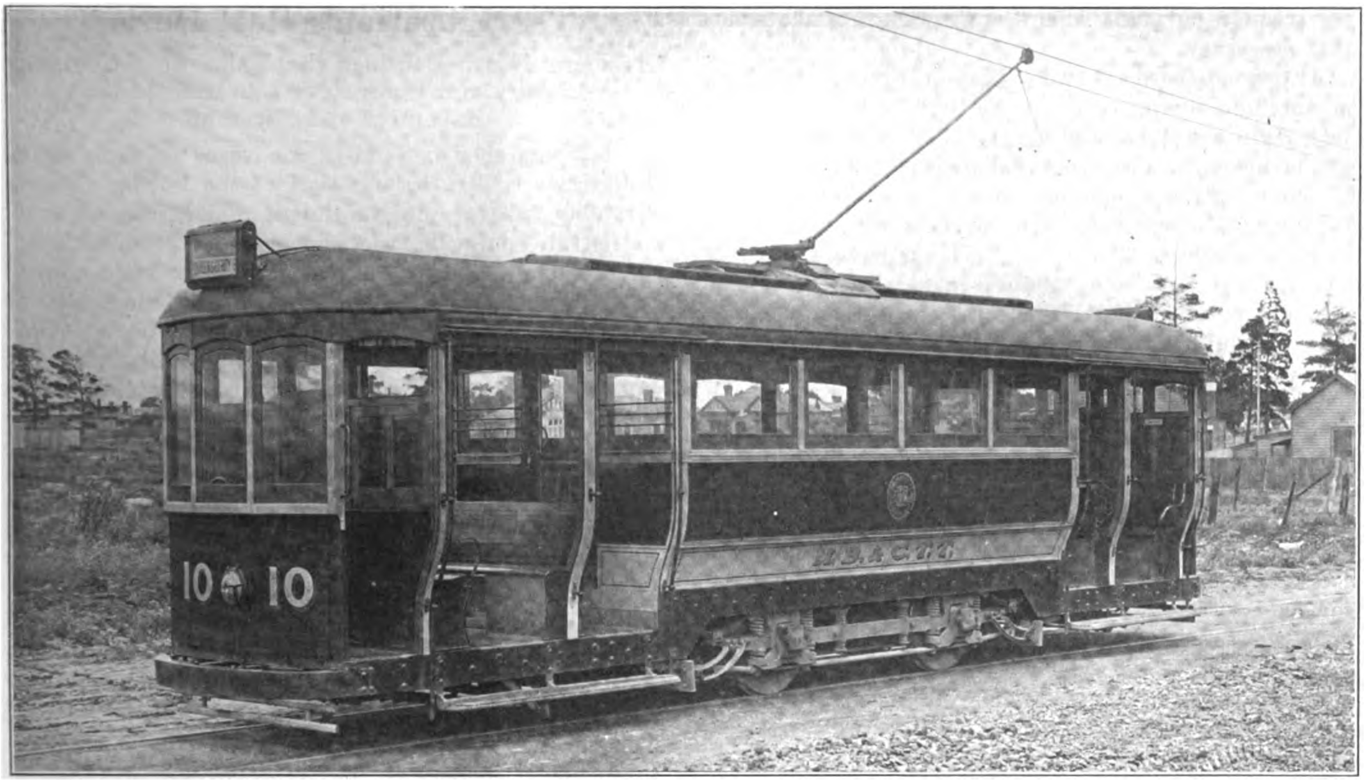
NEW MELBOURNE TRAMWAY—VIEW OF SUBSTATION SWITCHBOARD

The new tramway has a total route of 7 miles, of which 5 miles are double-track and 2 miles single-track, making 12 track-miles in all.

The permanent way construction has several special features that are unusual in Australasian construction. Among these is the use of a subsoil drain of agricultural tiles with frequent outfalls. This has been provided for the full length of tracks. In addition, an 8-in. depth of graded ballast has been used below the ties. For pavement of the roadway adjoining the rails a "gilsonite" asphaltic-concrete surfacing has been adopted, vitrified bricks being installed against the rails to prevent the asphalt surface from being broken down along the line of contact between the rail metal and the paving.

The rails weigh 90 lb. to the yard, and they are British standard, grooved-girder section on tangent track. A similar type of rail weighing 96 lb. to the yard is used on all curves of less than 150 ft. radius. The rail heads are curved with a radius of 12 in. The sharpest curves on the system are of 50 ft. radius. On curves of 60 ft. radius or less the inside rail is fitted with a removable, rolled manganese-steel flange. All rails are made of silicon steel, under the Sandberg patents.

For the ties native hardwoods, *i.e.*, red gum, iron bark and gray box are used. All ties are hewn and they are spaced on 27-in. centers. It is expected that the ties will have thirty years of life.

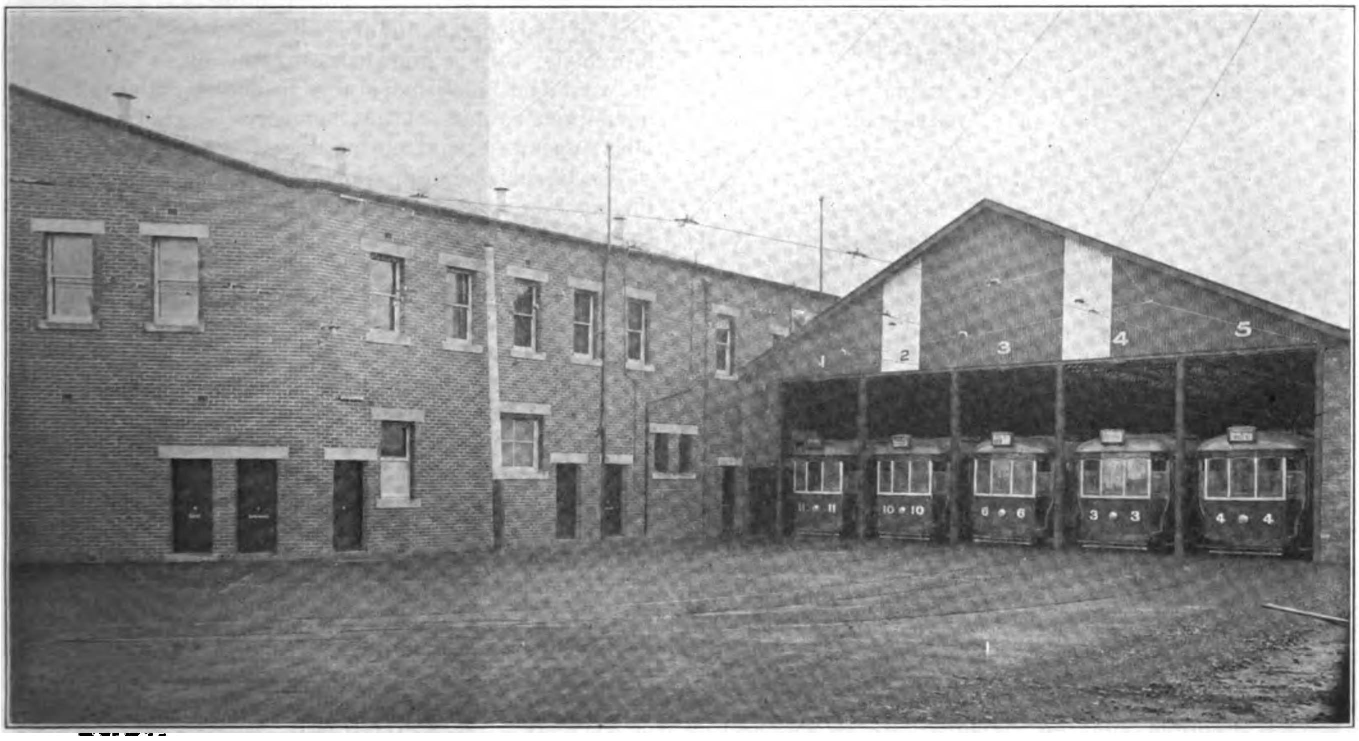


NEW MELBOURNE TRAMWAY—COMBINED OPEN AND CLOSED CAR

No tie bars or brace plates are used, and the heaviest axle load is not more than 8 tons.

Overhead construction is of side-pole span type. Steel poles are used throughout 5 miles of the route, and native iron-bark poles, neatly dressed, on the other 2 miles of the route. Non-fouling trolley wire with mechanical ears has been adopted.

A 5000-volt, three-phase, 50-cycle current supply is purchased from the electric supply department of the Melbourne City Council. Payment is made on a maximum demand system at a price which works out to approximately 2 cents per alternating-current unit delivered. The tramway has installed its own substation, which is equipped with two 200-kw. rotary converter sets, a 50-kw. general service power and lighting transformer and two 10-kw. series transformers for track lighting, the whole being controlled from a handsome black-slate switchboard. All the substation equipment has been supplied by the Australian General Electric Company, Ltd., Melbourne, representing the General Electric Company, New York. Space has been provided for increasing the capacity of the substation to 1600 kw.



NEW MELBOURNE TRAMWAY—VIEW SHOWING DEPOT YARD, OFFICE BUILDING AND CAR STORAGE for traction purposes when the growth of traffic makes this necessary.

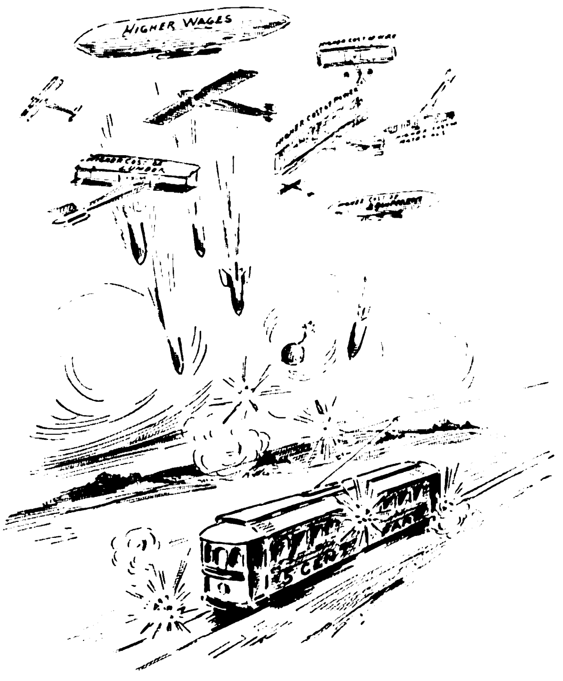
At present there are twelve cars in service. These are mounted on single trucks of the Brill 21-E type, having 7-ft. rigid wheelbase and 33 in. rolled-steel wheels. The car bodies were manufactured in Australia and are of the combination saloon and open type, having a seating capacity of forty-four. The over-all length is 35 ft., and the weight is 23,500 lb. Each car is equipped with two GE-241 box-frame motors rated at 55 hp. This motor capacity enables the car to maintain with five stops per mile a schedule speed of 12 m.p.h. Other features of the equipment are form K controllers and GE straight-air brakes. These cars are the first street railway equipments in Melbourne to be fitted with pneumatic brake equipment.

One carhouse serves the entire property. This includes under one roof storage for twenty cars, a workshop fitted with a 200-ton wheel press, a wheel lathe, an 8-in. lathe, a radial drill press, a sensitive drill, an emery and buffing wheel, and a wet emery stone. All of these tools have individual direct motor drives from three-phase, 50-cycle, 415-volt induction motors. The same building contains the substation, store, offices for staff and a messroom for the men. The complete installation, which was designed by and constructed under the supervision of the writer, was completed and placed in regular service on Oct. 28, 1916.

A Cartoon Summarizing Current Conditions

The accompanying drawing, made for this paper by John F. Burroughs of Baltimore, Md., tells its own story.

As the readers of the ELECTRIC RAILWAY JOURNAL know full well, the line which must operate on a 5-cent fare is pitilessly bombarded by rising wages and costs of materials, well typified, as the artist has done here, by the dirigible and the airplane raining destruction from the clouds.



HOW MUCH LONGER CAN A 5-CENT FARE LINE SURVIVE?

The Librarian's Real Duties

President Brush Outlines the Value of a Company Library and Competent Librarian to the Executive and His Staff

IN a comprehensive address delivered on June 25 by Matthew C. Brush, president of the Boston (Mass.) Elevated Railway, before the Special Libraries Association at Louisville, the importance of the duties of the so-called librarian, properly executed, were pointed out. The address appears in full in the June issue of *Special Libraries*, published by the association. It may be said here that the Boston Elevated Railway has an extensive and up-to-date library, and President Brush is no doubt in a position to speak of its possibilities as an efficient information bureau. In his opinion, the employees of the company must necesarily depend on the librarian to make readily available to them such information as pertains to their business, and they should be made to feel that such material will be placed at their command. They should be made to feel further that instead of supplying information as a favor, the librarian is always glad to be of assistance; that he welcomes the inquiry of an office boy as well as the perplexing questions of an expert, and that he will continue to work in their behalf when once he knows their wants.

To all the different members of the staff of the company the librarian can be no less helpful, provided his familiarity with the business is broad enough to enable him to look at it from different points of view and understand, to some extent at least, the problems of each official. His particular duty should be to acquaint himself with the needs of the staff and to bring to their attention new articles of interest of which it has been his opportunity to learn. The staff should feel that they can confide in the librarian many details regarding their problems in order that the latter can work advantageously in securing desired information. To this end he, having knowledge of the lack of material on certain subjects, should co-operate with the editors of periodicals in order to remedy the condition. Moreover, with a knowledge of the needs of the staff he would be much more able to detect articles bearing upon the business of the company, which would otherwise appear to be of no interest.

The librarian can do much, Mr. Brush said, to lighten the work of an executive, who would thereby have more time to give to his greater responsibilities. In so doing, information should be presented in a form digested or abstracted so that it could be grasped by the executive with the greatest economy of time. The librarian can even recommend to his company ideas which he notes from his reading have been successfully applied by other concerns. The importance of this service was expressed by Mr. Brush in the following statement:

"In fact, the so-called librarian can build a place for himself in every firm, corporation or company, if he desires to do so, and if he possesses an intimate acquaintance with the various methods of getting information aside from books, periodicals, pamphlets, etc., standing as he should at the elbow of an executive, demonstrating his ability to advise how various matters have been viewed by different minds and reporting why certain schemes were a success or failure, it would seem as if a more fitting title could be thought of for him than that of librarian."

Insulator and Cable Problems Discussed by A. I. E. E.

At a Business Session of the American Institute of Electrical Engineers Held in New York on June 27 and 28 Insulator Deterioration and Cable Heating Were Among the Topics Taken Up

A BRIEF business convention of the American Institute of Electrical Engineers this year took the place of the regular annual convention which had been scheduled to be held at Hot Springs, Va., during the latter part of June. The meeting was held in New York and consisted of two days of reading of papers and discussions on a list of topics of limited range.

> "The rapid development of the art has rendered much transmission apparatus obsolete, and the insulator is by no means an exception. When in addition to this, we take into consideration that little is generally known even at the present time as to the conditions under which the insulator has to operate and the necessary properties in same to withstand these conditions, it is surprising that the insulator has reached its present state of perfection."
>
> —A. O. AUSTIN
>
> "The continued and seriously high rate of deterioration occurring in all parts of the country in high-voltage suspension insulators of the cap and stud type, has caused investigators in their efforts toward the design of a durable insulator, to make a more careful study of the problem than heretofore. * * * In view of the number of factors involved * * * it is not only natural, but in fact a favorable sign of active and thorough investigation, that somewhat different views may at first be held as to the predominating causes of insulator deterioration by those engaged in making such studies."
>
> —J. A. BRUNDIGE

There was no session devoted to electric railways, but a number of the papers contained much of value to those responsible for the power end of the electric railway business. Among these were a group of four papers on high-tension cables, and another group of three papers on high-tension insulators. A number of the salient points in the papers and the discussions which may be of interest and value to electric railway men are summarized below.

Deterioration of High-Tension Insulators

The three papers on the subject of high-tension insulators covered largely the same trouble, namely, insulator deterioration. That was the subject of one by J. A. Brundige, Electric Bond & Share Company, who discussed particularly expansion effects as a cause of deterioration. The engineers of this company have arrived at the belief that expansion effects are causing the major part of insulator deterioration. Expansion in the steel studs on hot days is doubtless responsible for much of the trouble. Expansion also takes place inside insulator caps where Portland cement has been used for assembling. Such expansion in cement was clearly indicated in some experiments cited by the authors where numerous hair cracks were found to have developed throughout the mass of cement briquettes due to expansion and contraction under varying moisture conditions.

As evidence confirming Mr. Brundige's contention, he called attention to the following facts: No evidence of importance is at hand showing that electrical stresses have caused deterioration. In general, losses of insulators in service do not bear any apparent relation to the degree of firing of the porcelain. Deterioration appears to take place quickly and, as slightly porous wear absorbs moisture only slowly, large numbers of insulators would undoubtedly have been discovered in the intermediate resistance stages if porosity were the predominating cause of failure. Cracks of more or less long standing have been identified in the majority of cases where it has been possible to carry on post-mortem examinations on defective insulator units. The relatively good showing made by some earlier types of insulators indicate that porosity is not the factor of most immediate concern.

Quartz Suggested as Substitute for Porcelain

The general insulator situation was summed up by W. D. Peaslee, consulting engineer, Portland, Ore., who believed that four factors are of predominant importance in connection with deterioration, as follows: Mechanical stresses due to temperature changes and moisture; dielectric flux concentration due to improper design and to defects in the porcelain; dielectric flux concentration due to the non-homogeneous character of the porcelain, and mechanical stresses due to differences in coefficients of expansion of the constituents of the porcelain itself. He called attention to the fact that deterioration may take place independently of electrical stresses, quoting an example from the Pacific Coast where the percentage of deterioration in a lot of several hundred insulators, left over from line construction and remaining in the original crates, was practically the same as that occurring in the ones in service. The crates were of the usual open type and had been stored in a yard for a period of approximately four years.

In Mr. Peaslee's opinion the porcelain insulator as commercially available to-day is not a success in that it is deteriorating too rapidly both in and out of use. To overcome the defects there must be a correct appreciation of the mechanism of breakdown and the application of direct principles of electric flux distribution. He finds that quartz has many advantages for insulator manufacture, and he is experimenting to eliminate the difficulties in the way of making satisfactory commercial quartz insulators.

In another paper in which present practice in the design and manufacture of high-tension insulators was described by A. O. Austin, chief engineer Ohio Insulator Company, the statement was made that under the conditions of development of the high-tension insulator it is surprising that it has reached the present state of perfection. However, the very nature of the dielectric, the necessarily low cost due to the large number of insulators required, and the many hazards to which insulators are subjected in operation give us no right to expect that a line can be equipped with insulators which have absolutely no depreciation.

The cracking of insulators is by far the most serious cause of depreciation on most lines. Examination of many insulators which have cracked on the line indicates that the largest and apparently strongest insulators crack soonest, and also that the size, shape and number of the cemented joints affect the cracking. Much effort has been expended to incorporate in the modern type insulator a few strong parts, small heads with corresponding cement sections and areas, minimum amount of nesting permissible with mechanical reliability and elasticity in the joints. The last-named item was considered by Mr. Austin to be of great importance, and he stated as the requirements for a satisfactory insulator joint that there must be a minimum area for a given grip, an absence of slipping, and an elastic yield or ability to distribute a heavy load. A coated sanded surface fulfills these requirements to a marked degree. In conclusion, he insisted, among other things, that the abnormally low depreciation and successful performance of well-insulated lines under the severest conditions show that the modern insulator is very successful compared to the earlier products. For old lines it is well to consider the hazard increasing with time due to an increasing rate of depreciation. To maintain a given standard of performance it is then necessary either to split up the system into smaller sections as the line becomes older or to go over the line at decreasing intervals of time to remove the faulty material.

DISCUSSION ON INSULATORS

Comment on the above papers brought out a number of practical points from the operator's standpoint. For example, it was shown that while a broken unit in a multiple-part insulator may not ruin it electrically it may do so mechanically, hence cracking is a doubly serious matter. Another point was that while seasonal changes have a tendency to cause deterioration in cap and stud units this need not result especially with newer units. There was some debate as to the merits of two-part versus three-part insulators, it being held that while the relative effect of the loss of one part is greater with the former than the latter, to offset this there is greater reliability throughout in the insulator with fewer parts. There was general agreement on the desirability of weeding out weak insulators in securing economical maintenance. In reference to the proposed quartz insulator, one speaker said that, while quartz will withstand heavy arcing and will not crack under sudden cooling from water, it may become brittle at 150 to 200 deg. Fahr.

HIGH-TENSION CABLE PROBLEMS

In the opinion of John L. Harper, chief engineer, Hydraulic Power Company, Niagara Falls, N. Y., as expressed in a paper, the present abnormally high cost of underground cables renders it unusually necessary for operating engineers to devise ways and means for working present cable installations to a capacity much greater than they were supposed to have. From his paper one may infer that he thinks it is to be done through having full knowledge of the causes of cable failures. These failures he attributes to poor joints, mechanical abrasion and overheating. The joints may be poor due to improper workmanship or to the use of a joint-filling compound that has not the same characteristics as the insulating compound used in the cable itself. Experience and practice are necessary to insure well-made joints, and manufacturers can supply suitable joint-filling compounds if requested. There seems to be no cure for the evils of mechanical abrasion of lead sheath except to let nature take its course.

In order to increase the capacity of cables without overheating, Mr. Harper suggests, for new and permanent construction, provision for dissipating heat by water, if possible so constructing conduit systems that the ducts can be flooded and cables operated under practically submarine conditions. By this means the carrying capacities of underground cables could be made nearly to approach those of bare aerial conductors.

On the same general subject as that covered by Mr. Harper were the specifications for making cable joints for voltages from 10,000 and upward as presented by D. W. Roper, superintendent of street department, Commonwealth Edison Company, Chicago, Ill. He recommended in particular the following points: Liberal cutting back of the sheath to prevent injury to the insulation during the making of the joint. The use of copper splicing sleeves of liberal cross-sectional area, at least equal to that of the conductor, and of a length about four times the diameter of the conductors. The elimination of sharp points and edges in the splicing sleeve. The use of solid insulation to hold the conductors in fixed positions, and of filling compound of suitable dielectric strength not materially affected at the maximum operating temperature; this compound to be nonhygroscopic, free from tendency to form cracks in cooling or in cold weather, sufficiently fluid to flow into all air spaces before becoming chilled, and capable of removal without injury to insulation, and not having an excessive coefficient of expansion. Application of insulation and compound in such a way as to prevent the formation of air pockets or voids. Careful exclusion of all moisture. The use of care to prevent compound from running back into cable at high temperature if compound with low-melting point is used. Suitable identification of the joint as to the workman making it. Safeguarding the joint from mechanical injury.

The results of some tests on dielectric losses in high-tension cables were given by two testing engineers, A. F. Bang and H. D. Louis, who are connected with electric power companies. They studied the losses in several samples of cable installed in a special testing conduit and subjected to temperature from normal up to very high values. They showed how, by plotting curves, between watts loss per foot and temperature, representing both the heat-dissipating capacity of the conduit and the dielectric losses in the cable, it is possible to calculate the allowable copper loss and hence the operating capacity of the cable.

W. S. Clark and G. B. Shanklin, of the General Electric Company, Schenectady, N. Y., gave the results of elaborate tests on insulation characteristics of high-voltage cables, directing attention to the fact that practically all failures on such cables can be attributed to heating. This heating occurs at certain "hot spots," which particularly are effective in limiting the allowable current in the cable because of the rapid rise of dielectric loss with temperature and its cumulative tendency at high temperature. The tests made by Messrs. Bang and Shanklin yielded a vast collection of data which are available to cable experts.

Naturally a salient point in the discussion on cables was that raised by the suggestion of artificial cooling. The objections to flooding ducts were that the manholes must be pumped out for making repairs, there is increased danger of electrolysis, and water containing much air is apt to cause rapid oxidation. The intelligent forcing of cables was recommended although attention was also directed to the fact that some cable trouble is caused by use under conditions not originally contemplated. Another point emphasized by one of the speakers was the importance of radiation from the ducts which should be so constructed as not to impede radiation.

Fare Increases Already Granted

Sixty-Seven Companies Have Obtained Permission to Raise Rates Since 1914—Massachusetts, Where Capitalization Has Long Been Under State Control, Leads in Important Cases—Municipal Lines Are Included

THE bureau of information of the American Electric Railway Association has prepared a list of electric railways which have obtained fare increases of some sort since the year 1914. Twenty-one States and the Dominion of Canada are represented. In all, sixty-seven cases are cited in which fares have actually been raised. The bureau has endeavored to include all increases up to June 1, 1917.

An interesting feature of the list is the fact that more important fare increases have been granted in Massachusetts than in any other division in the list. This is an effective answer to those who claim that the necessity for increased revenue arises largely from overcapitalization, since in Massachusetts the issuance of securities by public utilities has been under the supervision of the State authorities for more than thirty years. Hence in this State, at least, there is very little complaint of watered stock.

It will be noticed that the Canadian list includes three municipally owned lines, which seem to have no better means of escaping consequences of increased costs of production than the privately owned enterprises.

The list as compiled by the association, showing the references from the ELECTRIC RAILWAY JOURNAL, follows:

ARKANSAS

Fort Smith Light & Traction Company, Fort Smith, Ark.:

OCTOBER, 1915—The company announced discontinuance of practice of selling twenty-five tickets for $1. (E. R. J., Vol. 46, 931.)

CALIFORNIA

Glendale & Eagle Rock Railway, Glendale, Cal.:

MARCH, 1914—Application made for permission to discontinue sale of twenty-ride commutation tickets at 50 cents and to substitute in lieu a regular fare of 5 cents. (E. R. J., Vol. 43, 611.)

MAY, 1914—Application granted by California Railroad Commission (order not applicable to children under eighteen years of age). (E. R. J., Vol. 43, 1012.)

Los Angeles (Cal.) Railway:

APRIL, 1915—District Court of Appeals upheld the right of the company to charge 10-cent fares from city to Eagle Rock, etc. (E. R. J., Vol. 45, 777.)

San Diego & Southeastern Railway, San Diego, Cal.:

JANUARY, 1916—Application of company for an increase in freight and passenger rates approved by California Railroad Commission. One-way fare between Third Street and city limits to remain 5 cents. (E. R. J., Vol. 47, 104.)

San Francisco, Napa & Calistoga Railway, Napa, Cal.:

MAY, 1917—Authorized by California Railroad Commission to increase monthly commutation rate between Napa and Vallejo from $5 to $6. (E. R. J., Vol. 49, 937.)

CONNECTICUT

Bridgeport & Danbury Electric Railway, Bridgeport, Conn.:

OCTOBER, 1916—Announcement that company operating a line between Bridgeport and Longhill will hereafter constitute its line into two fare-zones in each of which the fare will be 6 cents. (*Municipal Journal*, Sept. 21, 1916.)

Groton & Stonington Street Railway, Norwich, Conn.:

MARCH, 1917—Copper-zone system (2-cent zones instead of 5-cent) held as not unreasonable by Public Utilities Commission. (E. R. J., Vol. 47, 582, 1062 and 1089; Vol. 49, 618.)

GEORGIA

Augusta-Aiken Railway & Electric Company, Augusta, Ga.:

JANUARY, 1914—Petition asking for an increase in rates on lines in South Carolina from 1 cent to 2 cents per mile allowed by South Carolina Railroad Commission. Increase to go into effect June 1, 1915. (E. R. J., Vol. 44, 985, 1121, 1222; Vol. 45, 77, 118, 159, 1050; Vol. 46, 423.)

IDAHO

Idaho Traction Company, Boise, Idaho:

AUGUST, 1915—The company filed a schedule of rates with the Public Utilities Commission calling for increases in mileage rates. This was partially allowed by the commission, the company not to charge more than 5 cents within city limits. (E. R. J., Vol. 46, 128; Vol. 47, 801.)

ILLINOIS

Lincoln Railway & Heating Company, Lincoln, Ill.:

NOVEMBER, 1915—Company discontinued sale of six tickets for 25 cents. (E. R. J., Vol. 46, 1145.)

INDIANA

Fort Wayne & Northern Indiana Traction Company, Fort Wayne, Ind.:

OCTOBER, 1915—Application for permission to revise interurban passenger fares to 2 cents per mile, etc., granted. (Public Utility Reports, 1915 B, 1094.)

Indianapolis, Columbus & Southern Traction Company, Columbus, Ind.:

NOVEMBER, 1915—Increase from 1¾ cents to 2 cents per mile announced. (E. R. J., Vol. 46, 1145.)

Gary & Interurban Railroad, Gary, Ind.:

JULY, 1916—Public Service Commission permitted discontinuance of practice of selling fifty-four tickets for $2.15 (1¼ cents per mile), this being considered too low. (E. R. J., Vol. 48, 39.)

Union Traction Company of Indiana, Anderson, Ind.:

APRIL, 1916—Increases in fares through substitution of copper-zone system (2 cents per mile) for low fares in franchise allowed by Public Service Commission. The increase will in some instances amount to more than 100 per cent. Former rates were declared discriminatory. (E. R. J., Vol. 47, 799.)

MAINE

Atlantic Shore Electric Railway, Sanford, Me.:

JANUARY, 1915—Filed new passenger tariff calling for cancellation of all reduced rates now in force and certain other increases in fares. (E. R. J., Vol. 45, 159.)

MARYLAND

Cumberland & Westernport Electric Railway, Cumberland, Md.:

FEBRUARY, 1915—Increased price of 100-ticket books from $4 to $4.50. (E. R. J., Vol. 45, 355.)

MASSACHUSETTS

Middlesex & Boston Street Railway, Newtonville, Mass.:

JULY, 1914—Notice filed with Public Service Commission of a proposed increase in rate of fare effective Aug. 3, 1914, from 5 cents to 6 cents for every ride between any two fare limits, with an additional charge of 1 cent for every transfer issued. (E. R. J., Vol. 44, 146.)

AUGUST, 1914—Proposed increase in rate of fare suspended by commission until Oct. 1, 1914. (E. R. J., Vol. 44, 278.)

NOVEMBER, 1914—Case appealed to Massachusetts Supreme Court. (E. R. J., Vol. 44, 1180. See also Vol. 44, 543, 591 and 792.)

Providence & Fall River Street Railway, Swansea Center, Mass.:

JANUARY, 1914—Public Service Commission notified of proposed increase in rates for local passengers from 5 cents to 6 cents per passenger per fare zone, effective Feb. 1, 1914. The increase was approved by the commission. (E. R. J., Vol. 44, 209 and 692.)

Blue Hill Street Railway, Canton, Mass.:

JULY, 1915—Public Service Commission granted increase in fares from 6 cents to 8 cents or seven tickets for 50 cents. (E. R. J., Vol. 46, 226.)

New Bedford & Onset Railway, New Bedford, Mass.:

SEPTEMBER, 1915—Public Service Commission granted an increase in fares from 5 cents to 6 cents for each existing fare limit and reduced rate tickets from twenty-four for $1 to twenty for $1. (E. R. J., Vol. 45, 819, 863, 959 and 1136; Vol. 46, 628.)

Norfolk & Bristol Street Railway, Foxboro, Mass.:

FEBRUARY, 1915—Six-cent unit fare granted by Public Service Commission. (E. R. J., Vol. 45, 1136; Vol. 46, 354.)

Bristol & Norfolk Street Railway, Randolph, Mass.:

APRIL, 1916—Petitioned Public Service Commission for permission to increase fare from 5 cents to 6 cents. (E. R. J., Vol. 47, 716.)

OCTOBER, 1916—Permission granted. In this case a street railway operated at a loss was authorized to increase the cash fare from 5 cents to 6 cents; to sell ten school tickets for 30 cents to pupils entitled to half fare, rather than ten tickets for 25 cents; and to discontinue the practice of charging half fare between the hours of 6 a.m. and 8 a.m. and 4.30 p.m. and 6.30 p.m. (E. R. J., Vol. 47, 841; Vol. 48, 469 and 553.)

Bay State Street Railway, Fall River, Mass.:

MARCH, 1916—Withdrawal from sale of strips of six tickets for 25 cents in the city of Fall River approved by Massachusetts Public Service Commission. (E. R. J., Vol. 48, 1179; Vol. 49, 56 and 457.)

Bay State Street Railway, Boston, Mass.:

OCTOBER, 1916—Public Service Commission, having been notified of intention to establish a 6-cent fare unit on all of the company's lines, denied the increase, but did allow increases on rural lines. (E. R. J., Vol. 47, 468; Vol. 48, 412, 444 and 514.)

Concord, Maynard & Hudson Street Railway, Maynard, Mass.:

APRIL, 1917—Authorized by the Public Service Commission to establish a copper-zone system of fares with a minimum fare of 6 cents and a rate of 2 cents per mile to be charged in excess. Present fare on the main line is 6 cents, with zones from 3 to 4 miles in length. Under new system road will be divided into 1-mile zones. (E. R. J., Vol. 49, 846.)

Massachusetts Northeastern Street Railway, Haverhill, Mass.:

OCTOBER, 1916—Proposed increase from a 5-cent unit zone fare to a 6-cent unit, together with proportionate increases in the charge for school children's and workmen's tickets, allowed by Massachusetts commission in part. (E. R. J., Vol. 46, 1145; Vol. 48, 951 and 1038.)

Norwood, Canton & Sharon Street Railway, Canton, Mass.:

APRIL, 1917—Public Service Commission permitted company to increase fare from 5 to 7 cents, and authorized it to sell ten tickets for 65 cents and sixteen for $1. School tickets to be sold at ten for 35 cents instead of ten for 25 cents. (E. R. J., Vol. 48, 1081; Vol. 49, 322 and 893.)

Ware & Brookfield Street Railway, Ware, Mass.:

MARCH, 1917—Fare increases amounting to a maximum of 3 cents above an existing 7-cent rate allowed by the Public Service Commission. Changes in rates requested included the shortening of a fare zone between Ware and Gilbertville, establishment of a 7-cent cash fare for every local ride within the limits of every fare zone except one, regular cash fare between above points to be 10 cents instead of 7 cents, increase of workmen's fares from 5 cents to 7 cents between above points and establishment of a 12-cent workmen's fare from Ware to West Brookfield or intermediate points in place of the former rate of 10 cents. (E. R. J., Vol. 49, 665.)

Worcester & Warren Street Railway, West Warren, Mass.:

APRIL, 1917—The Public Service Commission was petitioned for authority to increase the passenger fare unit from 6 to 7 cents between West Warren to Spencer, the 6-cent unit having been in force ten years. The 7-cent unit was authorized. Workmen's tickets valid week days, 5 to 7, morning and afternoon, to be sold 50 for $3 (formerly 100 for $5). Age limit for children carried free reduced from 6 years to 5 years. Extra fare to be charged for every package carried on platform. (E. R. J., Vol. 49, 185, 411 and 711.)

MISSOURI

Illinois Traction System, St. Louis, Mo.:

JANUARY, 1915—Application to be made to Public Service Commission and Interstate Commerce Commission for permission to increase fare from 5 cents to 10 cents between St. Louis and Granite City, Ill. The franchise provided for 5-cent fare. (E. R. J., Vol. 45, 159; Vol. 47, 475, 840, 881 and 1207; Vol. 48, 995.)

DECEMBER, 1916—Increase allowed by Interstate Commerce Commission. (E. R. J., Vol. 48, 1222 and 1269.)

NEW HAMPSHIRE

Manchester & Derry Street Railway, Manchester, N. H.:

OCTOBER, 1916—Increase from 5-cent to 8-cent unit fare allowed by Public Service Commission. (E. R. J., Vol. 46, 1059; Vol. 48, 952.)

Manchester & Nashua Street Railway, Manchester, N. H.:

OCTOBER, 1916—Increase in fare unit from 5 cents to 7 cents authorized by Public Service Commission—retention of school children's fares and commutation tickets on a 5-cent basis recommended. (E. R. J., Vol. 46, 1059; Vol. 48, 851.)

Massachusetts Northeastern Street Railway, Haverhill, Mass.:

See under Massachusetts. Petition similarly approved in part by New Hampshire commission for company's lines in that State. (E. R. J., Vol. 48, 1038.)

NEW JERSEY

Burlington County Transit Company, Mount Holly, N. J.:

MARCH, 1916—Petition to increase fare between Moorestown and Mount Holly and Mount Holly to Burlington from 10 cents to 15 cents presented to Public Utilities Commission. (E. R. J., Vol. 47, 477; Vol. 48, 81 and 912.)

NOVEMBER, 1916—Increases allowed on condition that improvements be made. (E. R. J., Vol. 48, 1223.)

New Jersey & Pennsylvania Traction Company, Trenton, N. J.:

JUNE, 1916—Increase in fare (10 to 15 cents) between Princeton and Trenton ordered after valuation by Board of Public Utilities Commissioners (zone fare). Upon appeal being taken to New Jersey Court of Errors and Appeals, commission's jurisdiction and order was upheld.

OCTOBER, 1916—The application to Board of Public Utilities Commissioners for permission to increase rate between Trenton and Philadelphia from 15 cents to 20 cents, denied in April, 1915, was allowed, tickets to be still sold at twelve for $1—four 5-cent zones created. (E. R. J., Vol. 45, 819; Vol. 46, 1279; Vol. 48, 911.)

NEW YORK

Schenectady (N. Y.) Railway:

May, 1914—The complaint of city of Schenectady, asking that company be required to resume sale of six tickets for 25 cents, dismissed by Public Service Commission. (E. R. J., Vol. 43, 1232.)

Hudson Valley Railway, Glens Falls, N. Y.:

December, 1914—Tariff increasing fares, effective Jan. 1, 1915, filed with Public Service Commission. (E. R. J., Vol. 44, 1368.)

International Railway, Buffalo, N. Y.:

August, 1914—Notice of a proposed increase in fare between North Tonawanda and La Salle from 10 cents to 15 cents (effective Sept. 15, 1914), filed with Public Service Commission. (E. R. J., Vol. 44, 407.)

New York State Railways, Rochester, N. Y.:

October, 1914—Increases in suburban fare sustained by Public Service Commission in part. (E. R. J., Vol. 44, 791 and 1274.)

New York State Railways, Syracuse, N. Y.:

November, 1914—Tariff filed with Public Service Commission (effective Dec. 15, 1914), providing for increase in joint one-way fares from a number of points. (E. R. J., Vol. 44, 1222.)

Buffalo & Lake Erie Traction Company, Buffalo, N. Y.:

January, 1915—Announced increase in local one-way fare between Irving and Silver Creek from 7 cents to 10 cents, effective Jan. 24, 1915. (E. R. J., Vol. 45, 119.)

Fonda, Johnstown & Gloversville, Gloversville, N. Y.:

February, 1915—Tariff filed with Public Service Commission, effective Feb. 1, 1915, calling for a general advance in fares. (E. R. J., Vol. 45, 159.)

International Railway, Buffalo, N. Y.:

February, 1915—Notice of proposed increase in round-trip fare between Buffalo and Lockport from 50 cents to 60 cents and other changes filed with Public Service Commission. (E. R. J., Vol. 45, 441.)

Newark & Marion Railway, Newark, N. Y.:

February, 1915—Tariff filed with Public Service Commission, effective March 17, 1915, increasing cash and ticket fares. (E. R. J., Vol. 45, 441.)

New York State Railways, Oneida, N. Y.:

April, 1915—Tariff filed with Public Service Commission calling for advances in local one-way and round-trip ticket fares and chartered car rates effective May 14, 1915, on Oneida and adjacent lines. (E. R. J., Vol. 45, 819.)

Orange County Traction Company, Newburgh, N. Y.:

April, 1915—Announcement of an increase in fares (local one-way) between Newburgh and Orange Lake Park or between Walden and Orange Lake Park from 5 cents to 10 cents, between the hours of 2 p.m. and 12 o'clock midnight. (E. R. J., Vol. 45, 777.)

Geneva, Seneca Falls & Auburn Railroad, Seneca Falls, N. Y.:

April, 1917—Public Service Commission permits company to place into effect a new passenger tariff adding a 5-cent fare zone between Geneva and Waterloo. Twenty-ticket commutation books will continue to be sold for $2, good during morning and evening rush hours. Twenty-ride ticket books, good at any time, will be sold for $2.50. (E. R. J., Vol. 49, 665.)

United Traction Company, Albany, N. Y.:

March, 1917—Following denial by Public Service Commission of an increase in fares from 10 cents to 15 cents (with full transfers) between Albany and Troy, the company filed a fare tariff for this line providing for the elimination of transfers to city lines in the terminal cities. This was allowed by the commission. (E. R. J., Vol. 48, 1040 and 1319; Vol. 49, 412, 667 and 713.)

OHIO

Cleveland (Ohio) Railway:

August, 1914—Charge of 1 cent for transfers restored. (E. R. J., Vol. 44, 404.)

Mahoning & Shenango Railway & Light Company, Youngstown, Ohio:

Increase in fares announced to go into effect on Dec. 15, 1914—2 cents per mile the basis for increase—commutation and school tickets to remain unchanged. (E. R. J., Vol. 44, 1274.)

Toledo Railway & Light Company, Toledo, Ohio:

April, 1916—Company allowed by Judge Killits of United States District Court to eliminate 3-cent fare during rush hours, morning and evening, and to substitute and charge at all hours 5 cents cash or six tickets for 25 cents. (E. R. J., Vol. 47, 745 and 833.)

OREGON

United Railways, Portland, Ore.:

October, 1914—Application to increase fares to Linton granted by Oregon Railroad Commission. (E. R. J., Vol. 43, 799 and 1119; Vol. 44, 501.)

PENNSYLVANIA

Titusville (Pa.) Traction Company:

December, 1916—The Titusville Traction Company allowed an increase in fares from 5 cents to 6 cents in the city of Titusville, in the boroughs of Pleasantville and Hydetown and in the township of Oil Creek. (E. R. J., Vol. 48, 1178.)

Trenton, Bristol & Philadelphia Street Railway, Philadelphia, Pa.:

January, 1917—New schedule of fares in effect between Morrisville and Torresdale, Pa. The through trip fare between these two towns increased from 25 cents to 35 cents. (E. R. J., Vol. 49, 56.)

VERMONT

Barre & Montpelier Traction & Power Company, Montpelier, Vt.:

August, 1914—Proposed increase in fares held up by equity suit brought by the city—from 5 cents to 6 cents and workmen's tickets from 2½ cents to 3½ cents. (E. R. J., Vol. 44, 235 and 368.)

November, 1914—Increase enjoined by Vermont Supreme Court because of franchise restrictions. (E. R. J., Vol. 44, 1121.)

December, 1914—Tariff increasing fare over line between cities from 10 cents to 15 cents filed with Public Service Commission. (E. R. J., Vol. 44, 1319.)

Increase in fare between Barre and Montpelier to 15 cents one way and 25 cents round trip, went into effect Dec. 28, 1914. For the previous eight years the fare had been 10 cents. (E. R. J., Vol. 45, 119.)

WASHINGTON

Puget Sound Electric Railway, Seattle, Wash.:

April, 1914—Renewed application for an increase in passenger rates between Seattle and Tacoma, made in 1909, as follows: 2 cents per mile; commutation, 1.4 cents per mile; round trip from Seattle to Tacoma, $1.25; at which time the State Railroad Commission refused permission. (E. R. J., Vol. 43, 949.)

May, 1914—Allowed by Public Service Commission, which vacated the order of the State Railroad Commission which it succeeded, made in April, 1910. (E. R. J., Vol. 43, 1059, 1174, 1304 and 1420; Vol. 44, 234.)

Tacoma Railway & Power Company, Tacoma, Wash.:

June, 1916—Increase in round-trip fare between Tacoma and American Lake from 25 cents to 30 cents upheld by Public Service Commission as not unjust or excessive. (E. R. J., Vol. 47, 1111.)

WEST VIRGINIA

Parkersburg-Marietta Interurban Railway, Parkersburg, W. Va.:

July, 1914—Allowed by Public Service Commission to increase rates between Parkersburg and Marietta from 10 cents to 20 cents by creating four traffic zones. Company required, however, to issue commutation tickets equivalent to a 5-cent fare for 6½ miles from Parkersburg. (E. R. J., Vol. 44, 235.)

WISCONSIN

Chicago & Milwaukee Electric Railway, Milwaukee, Wis.:

February, 1916—Authorized in April, 1915, by Wisconsin Railroad Commission and the Interstate Commerce Commission to increase ticket rates to approximately 2 cents per mile, but to maintain 5-cent zone system of cash fares. No change in 5-cent Milwaukee city fare, but ticket rates between Milwaukee City limits and Wisconsin State line on a straight 2 cents per mile basis. Cash fares collected on trains also, but collections to be made in next higher multiple of 5 cents. One-hundred coupon books for $1 to be sold by mail. Minimum fare to be 5 cents. Old average fare was about 1.8 cents per mile. (E. R. J., Vol. 47, 383.)

Duluth-Superior Traction Company, Superior, Wis.:

APRIL, 1916—Wisconsin Railroad Commission issued order rescinding order made Nov. 13, 1912, reducing fares by requiring sale of six tickets for 25 cents. Cash fare was always 5 cents. (E. R. J., Vol. 40, 1067; Vol. 47, 840.)

Waupaca Electric Light & Railway Company, Waupaca, Wis.:

MARCH, 1916—Increase from 10 cents to 15 cents between Soo Line Depot and Grand View Hotel, through establishment of three instead of two zones, denied; however, a 12½-ticket rate was allowed by Wisconsin Railroad Commission. (E. R. J., Vol. 47, 627.)

CANADA

Port Arthur & Fort William Electric Railway, Port Arthur, Ont.:

SEPTEMBER, 1914—Advisability of increasing ticket rate on municipal street railway system from six for 25 cents to 5 cents straight was considered (no interference with children's or workmen's tickets proposed), the city council finally approving. (E. R. J., Vol. 44, 592.)

Saskatoon (Sask.) Municipal Railway:

AUGUST, 1914—City Council of Saskatoon passed a resolution increasing fares from six for 25 cents to straight 5 cents. Workmen's tickets to be sold as before at eight for 25 cents for use between 6 a.m. and 8 p.m., and school children to be carried at half fare to and from school. (E. R. J., Vol. 44, 185.)

British Columbia Electric Railway, Vancouver, B. C.:

MAY, 1915—Fares reduced to stimulate travel and fight jitney competition, eight tickets sold for 25 cents, no transfers. (E. R. J., Vol. 45, 959.)

MARCH, 1916—Selling of eight tickets for 25 cents discontinued. (E. R. J., Vol. 47, 512.)

Kingston, Portmouth & Cataraqui Electric Railway, Kingston, Ont.:

JUNE, 1916—On June 1 the company discontinued selling six tickets for 25 cents and substituted a cash fare of 5 cents. Workmen's tickets, good from 6.30 to 7.59 a.m. and from 5 to 6.30 p.m., are sold at eight for 25 cents, and tickets for children between the ages of five and twelve are also sold at eight for 25 cents. (*Canadian Railway & Marine World*, July, 1916.)

Port Arthur (Ont.) Civic Railway:

Fort William (Ont.) Electric Railway:

MARCH, 1917—Utilities Commissions of both cities adopted a new schedule of fares for Port Arthur Civic Railway, providing for one fare in each city or two fare zones; 5-cent cash, six tickets for 25 cents from 5 a.m. until 12 p.m.; workmen's eight tickets for 25 cents good during certain morning and evening hours and Sunday tickets at the same rate, good from 5.30 a.m. until 12 p.m. Children under fourteen years of age allowed ten tickets for 25 cents; students at this rate between 8 a.m. and 5 p.m. on school days. A 10-cent fare to be charged from 12 p.m. to 5.30 a.m., good for a through ride. (E. R. J., Vol. 49, 711.)

In addition to the cases in which increased rates have already been granted in whole or in part, applications for increases have been filed by various companies. Exclusive of those for lines in New York State, many of which are now acting in concert, the cases now before the authorities for disposition are:

Illinois Traction System, Peoria, Ill.
Hagerstown & Frederick Railroad, Frederick, Md.
United Railways & Electric Company, Baltimore, Md.
Bay State Street Railway, Boston, Mass.
Kansas City (Mo.) Railways.
Lincoln (Neb.) Traction Company.
Bucks County Interurban Railway, Trenton, N. J.
Trenton & Mercer County Traction Company, Trenton, N. J.
Portland Railway, Light & Power Company, Portland, Ore.
Montoursville (Pa.) Passenger Railway.
Pittsburgh (Pa.) Railways.
Milwaukee Electric Railway & Light Company, Milwaukee, Wis.

COMMUNICATION

A Publicity Bureau for the Association

SOUTHERN PUBLIC UTILITIES COMPANY
CHARLOTTE, N. C., July 2, 1917.

To the Editors:

From a letter written by the editor of the ELECTRIC RAILWAY JOURNAL, received about the middle of June, I obtained the impression that in an early issue of the JOURNAL would appear some comments concerning the suggested publicity bureau for the electric railway interests of the United States, with especial reference to a conference of a number of publicity men at St. Louis early in June.

The St. Louis conference resulted in several things, the most important being the decision of those present to send the entire matter back to the American Electric Railway Association, where it rightly belongs, with some concrete suggestions as to the nature and purpose of such a bureau.

A committee composed of Mr. Brumbee of the United Railways of St. Louis, Mr. Waugh of the Interborough and the New York Railways, Mr. Burroughs of the United Railways of Baltimore, Mr. Davidson of the Denver Tramway and the writer was appointed, to prepare suggestions for interchange between the membership of the committee and the submission of the composite suggestions of the whole committee to the executive committee of the American Electric Railway Association, for consideration either at the mid-winter session or for the next annual convention of the association.

At the conference the nature of such a bureau was discussed at length, during which it was found that a wide variance of opinions existed among the publicity men taking part in the Round Table.

That a central editing office combined with a central publication office is not practical is the opinion of the writer, expressed as emphatically as is possible at the annual convention at Atlantic City in October, 1916. In this opinion I believe publicity men engaged in active electric railway service will concur.

For instance, following the Atlantic City convention, my office and that of the president of my company were flooded with offers from printing companies in many sections of the country to publish a bulletin or magazine for all electric railway companies. Their plan, in every instance, was to compile, at the central or publishing city, data of a general nature applying to all electric railways, to compose a large percentage of the publication, the various companies to furnish a small percentage of the data relating specifically to local conditions and happenings, and the publication to carry a different cover design for each company but to issue from one central office.

The scheme is all right in theory but in practice it falls down. General Hancock said several years ago that the tariff is a local issue, and electric railway publicity is a local matter, purely and simply. Conditions which prevail at Denver do not prevail at Charlotte. And publicity which is all it should be for the Brooklyn Rapid Transit would seriously affect the United Railways of St. Louis in all probability.

Hence the publication of a general bulletin to cover the entire business would be dangerous, in the first place, and it is my opinion that such a publication would fail of support at the hands of the employees of any of the interested companies.

And again, such a plan of handling the publicity of electric railway companies would entail endless complications and take from the individual company the control of the publication, to a great extent, if not entirely.

I am of the opinion that a bureau within the American Electric Railway Association, whether as a department of the Transportation & Traffic section, or as a new section, either alone or in conjunction with the public relations committee, could and would serve the proper ends. As an information bureau for companies not operating a department of publicity, it would be of immense value. There is not a week in which I do not receive requests from other companies for information concerning operating methods. Requests for cost data, circulation plans, policies and the like come in all through the year. I am glad, always, to give this information, and doubtless every other publicity man feels the same way. But the company desiring this information must needs analyze the information received from many sources, spend considerable time in securing it and possibly miss the company having very nearly the same conditions under which to operate.

My suggestion would be to have periodical reports made to the secretary of the bureau, similar to the fare research work now under way, and which is proving of so much value to the business. All information, of whatsoever character, would be included in these reports, and when any company desired information concerning publicity the secretary could furnish immediately detailed reports, confidentially, if need be, from every company operating a publicity department.

So much for the company contemplating or considering the establishment of such a department.

But the greatest value would be to the companies already operating such a department. For instance, should I desire information concerning the operation of any given line of publicity the secretary could give me, without loss of time, the experience of every company of the association, at an expense that would be inconsiderable.

Advice concerning the advisability of publishing certain information would come from the bureau, having in hand information concerning the experience of all the railways.

Advice as to how to secure desired matter for publication and the actual preparation, in isolated cases, of articles for individual companies or for the business at large would, under my plan, come from this bureau.

I am opposed now, and always have been, to the organization of a bureau of electric railway publicity men aside and separate from the American Electric Railway Association. I am on record in the office of the secretary of the A. E. R. A. as being opposed to the conference of publicity men at St. Louis in June, unless it were approved by the executive committee of the association and were in line with the desires of the officers. I thought the conference would accomplish good results as a round table discussion of the difficulties publicity men meet in their work, but if the meeting contemplated, as I understand it did, the organization of a department of the Associated Advertising Clubs of the World, or of a separate bureau or association, outside the A. E. R. A., I was opposed to the entire proceedings. And the action of the publishers at the St. Louis conference, in deciding to offer suggestions to the association for the organization of such a bureau within the association, is directly in line with the opinion of leaders in the publicity field, including Ivy L. Lee, James H. McGraw, A. D. B. Van Zant and others at the Atlantic City convention in 1916.

Since the St. Louis conference I have not heard from the other members of the committee appointed to prepare suggestions for interchange, but within the coming month I shall have my suggestions in shape, covering in more detail the general ideas presented herein, for the other members of the committee, and I am trusting that within that time the entire committee will have its suggestion in the hands of each other, so that we can then begin the formulation of the concrete suggestion to the executive committee for its consideration at the mid-winter meeting.

LEAKE CARRAWAY, Director of Publicity.

Trial Six-Cent Fare for Bay State

New Fare Unit Becomes Effective on July 13 for Six Months' Trial—Sale of Twenty Tickets for One Dollar Approved—No Transfer Charge

THE Massachusetts Public Service Commission on July 3 granted the Bay State Street Railway, Boston, Mass., permission to establish a 6-cent fare unit on its entire system for a six months' trial period. This decision followed an agreement between the company and a number of the larger municipalities served, as outlined in the issue of the ELECTRIC RAILWAY JOURNAL for June 30.

WHAT THE COMPANY DESIRED

The company appealed on May 16 for increased rates on the ground that the cost of operation had increased so rapidly since the decision of Aug. 31, 1916, that the revenue had become entirely inadequate. On June 12 the company filed a schedule of fare changes. Under this it was proposed to make the unit cash fare 6 cents upon all lines; to sell nine transferable tickets for 50 cents good except on Saturday afternoons, Sundays and holidays, in the present 5-cent zones within, from or to the centers of seventeen cities, and to charge 1 cent for each transfer issued; to abolish certain commutation, excursion and special tickets, including the 8-cent check between the company and the Boston Elevated Railway; and to increase the rates for workmen's tickets to 80 per cent of the cash fare where they cover two zones, and to 66 2/3 per cent of the cash fare where they cover three zones. At a hearing on June 21 the company introduced evidence that it required $1,404,906 additional yearly revenue, and computed that the proposed change would yield a yearly increase of $1,111,700.

MODIFICATIONS MADE IN FARE PROPOSAL

There was much opposition to the schedule proposed. As the result of conferences between the company and the municipalities concerned, the company amended its plan to provide for the sale of twenty tickets for $1, such tickets to be good except on Saturdays after 1 p. m., Sundays and holidays, within the seventeen cities, between such of those cities as are adjoining, and between such cities and adjoining towns or portions of towns as by reason of location or density of population are practically part of such cities. The proposed charge of 1 cent per transfer was eliminated, but provision was made for the adjustment of transfer privileges outside this territory by restricting the length of ride to that reasonably furnished for a single fare. The proposed increases in workmen's tickets and the cancellation of commutation and other special tickets were also eliminated, although the company might later file a separate schedule. It was also understood that any patrons within the present 5-cent territory who would be excluded from the use of the twenty-ride tickets would have the right of appeal without prejudice, and a like plan was agreed upon with respect to transfers. The company would keep a detailed record of a six-months' trial, after which, upon application to the commission, the entire case should be reopened.

As a result of these modifications the company estimates that the annual increase in operating revenue will be reduced from $1,111,700 to $720,000. The commission does not consider this estimate unduly low. It is satisfied that the results from operation, at least during the experimental period, will not make possible an excessive return upon the investment. In regard to the sale of tickets (the municipalities urged the sale of ten tickets for 50 cents or five for 25 cents), the commission holds it not unreasonable to require an investment of $1. It takes this stand because the large majority of present schedules for workmen's and other special tickets provide for an investment of $1 or more; because an investment of a like or a larger amount is commonly required for similar tickets issued by other Massachusetts companies, steam and electric; and because the issue of such tickets in smaller amounts would facilitate their use by casual riders and thus lead to an unwarranted decrease in revenue.

In regard to the plea of certain communities for exemption, the commission says: "Without much question other communities might have urged considerations equally pertinent to show that they also should be exempted. Such objections, we feel, are based upon a failure to appreciate the spirit and significance of the agreement. Under this the company will not secure all that it claims it ought to have, and this is equally true of certain communities." The commission concludes that the parties have been wise in coming to an agreement, and that the rates proposed are not unreasonable as a basis of trial.

Speaking of the decision, President P. F. Sullivan said:

"When we ask the public to turn in and help us make a success of this six months' experiment, we have their interests in mind as well as our own. City officials can aid us materially by regulating jitney competition. We do not ask that jitneys be abolished. All we ask for is a square deal. Unregulated jitneys divert from our treasury more than $300,000 a year.

"We are going into this experimental period with the feeling that we have back of us the public, and we shall take special pains to acquaint the public with what we are doing. If operating costs go up, we shall tell them that; and if they go down, it will be with special pleasure that we shall tell them that also. We are assuming that our business is the public's business, and that the public should know all about it."

AMERICAN ASSOCIATION NEWS

American Association Will Hold "Conference" Instead of Convention

At a meeting of the American Association executive committee in New York on June 26 the following were in attendance: L. S. Storrs, J. J. Stanley, J. H. Pardee, M. C. Brush, M. R. Boylan, F. R. Phillips, R. E. McDougall, Thomas Finigan, James H. McGraw, H. H. Vreeland, T. N. McCarter, C. L. Henry, J. D. Mortimer, J. N. Shannahan, H. C. Donecker and E. B. Burritt. The most important items taken up were as follows:

It was decided that a meeting of the executive committee should be held at such a date this fall as may be determined by the president and the chairman of the subjects committee. An invitation will be extended to all interested in the industry to meet at that time for conference. This meeting will be held in New York.

With regard to the work of the affiliated associations, it was recommended that all committee work except that which can be handled by correspondence should be held in abeyance; that the annual meetings be omitted; that the present officers be continued in office, and that the personnel of committees remain as at present until the 1918 convention. It is understood that no reports will be presented by any association at the conference.

The status of the manufacturers in the association was brought up for discussion in connection with the report of the sub-committee of manufacturers. This report was received, and after discussion it was decided that the committee on constitution and by-laws should be directed to prepare amendments to these instruments, to take their regular course, to provide as follows: For the election of two manufacturer members as members of the executive committee, with the understanding that if the manufacturers form an affiliated association the president shall be ex-officio member of the executive committee in addition to the other two. In this connection the executive committee recommended that the manufacturers be invited to form an affiliated association. The committee also approved the letter ballot canceling the annual convention.

In addition to the formal work of the meeting, President Storrs outlined the activities which have been carried on by the committee on national defense, and there was also an informal discussion on rates of fare.

Engineering Executive Committee

The day following the meeting of the American Association executive committee the Engineering Association executive committee met and ratified the recommendations already referred to in so far as they affect the Engineering Association. The resignation of Vice-President G. W. Palmer, Jr., was also received with expressions of regret and appreciation of his faithful service. In attendance at this meeting were Messrs. F. R. Phillips, W. G. Gove, C. F. Bedwell, L. P. Crecelius and E. B. Burritt.

EQUIPMENT and MAINTENANCE

HAVE YOU A GOOD WAY OF DOING A JOB?
—*Pass It Along*

Read in This Issue:
The Scheme Described by R. C. Cram for Cutting Asphalt Pavement

Cutting Sheet Asphalt with Angle-Iron and Road Roller

A Scheme for Simplifying a Disagreeable and Troublesome Job—Considerable Saving in Cost Effected by Its Use

BY R. C. CRAM
Assistant Engineer Way and Structure Department, Brooklyn Rapid Transit System

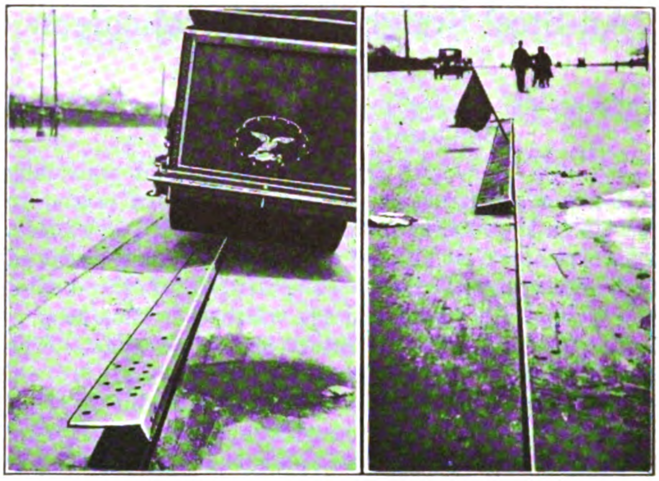
Cutting out sheet asphalt by means of the ordinary asphalt mattock or cutter, using manual labor, has always been a slow process and one which is particularly severe on the men themselves. In hot weather the job is not an enviable one and of late the labor has been difficult to get and more difficult to keep at such work.

When a job of removing a large amount of sheet asphalt surface presented itself under these conditions, it seemed advisable to adopt some other method which would be less primitive and which would obviate the labor difficulty. Some consideration was given to devices which could be attached to a road roller, as has been done elsewhere at times. The device described by M. E. Stark in the issue of the ELECTRIC RAILWAY JOURNAL for Jan. 20, 1917, page 123, also came to mind, but this could not be used on the work in hand because there were no car tracks upon which to operate. On the contrary, we were preparing to build an extension through a street paved with sheet asphalt.

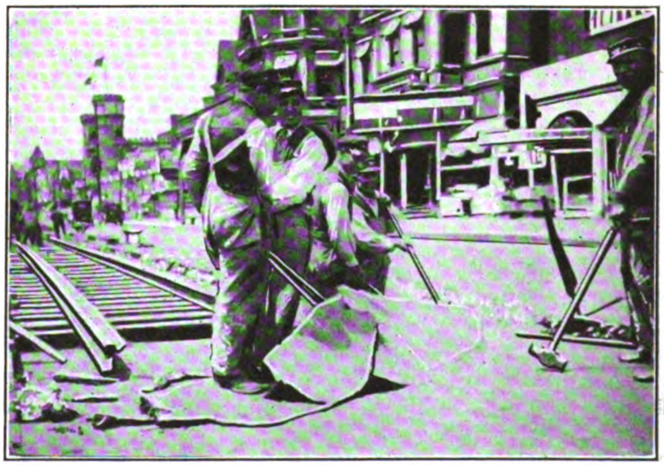
Before attempting to equip a roller at considerable expense, the suggestion was made by C. L. Crabbs, engineer way and structure, that we try the simple expedient of laying a long piece of angle-iron having unequal legs, 4 in. x 3 in. or 6 in. x 3 in., upon the surface, with the shallow leg down to form a cutting edge, and rolling it into the pavement with our 8-ton tandem road roller.

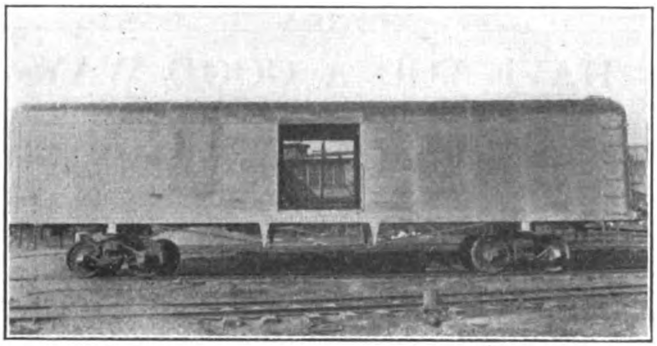
A piece of 6-in. x 3-in. angle about 20 ft. long was accordingly obtained and the 3-in. leg was cut off to 2½ in. and sharpened slightly. This was cut off to prevent the edge from getting into the concrete in case the asphalt and binder was less than the original 3 in. in thickness on account of wear. It was then laid on the pavement and rolled in as suggested. At the first test the scheme was found to be successful and other pieces of angle were obtained which could be placed ahead of the roller, keeping it in continuous operation, the angles being removed from behind after rolling and placed ahead of the roller in turn.

Some fears were expressed before trial as to whether the angle could be removed readily after being rolled in, but no such difficulty arose. On the contrary, after rolling a few times the ends of the angles curl up slightly and one end stands up so that the angle may be removed with ease. It is almost unnecessary to say that we now expect to use the device for cutting asphalt in the 2-ft. strips adjacent to tracks requiring removal for reconstruction. There is a considerable saving in costs effected by this scheme, but comparative data are not yet available.


CUTTING ASPHALT PAVEMENT WITH ROLLER AND ANGLE IRON

Since trying out the angle-iron scheme so successfully we have hit upon an improvement which is now being substituted for the angle iron. This is a T-iron made by cutting off the head through the web of a 105-lb. girder rail and sharpening the cutting edge somewhat. The upright of the T forms the cutter, 2½ in. deep as before, while the upturned base, 6 in. wide, furnishes a surface upon which the roller will run even better than on the back of the angle and prevent damage to the roller in dropping from the cutter to the pavement.


AFTER CUTTING, THE ASPHALT IS STRIPPED OUT WITH LINING BARS, OCCASIONAL BLOWS WITH A SLEDGE BEING GIVEN



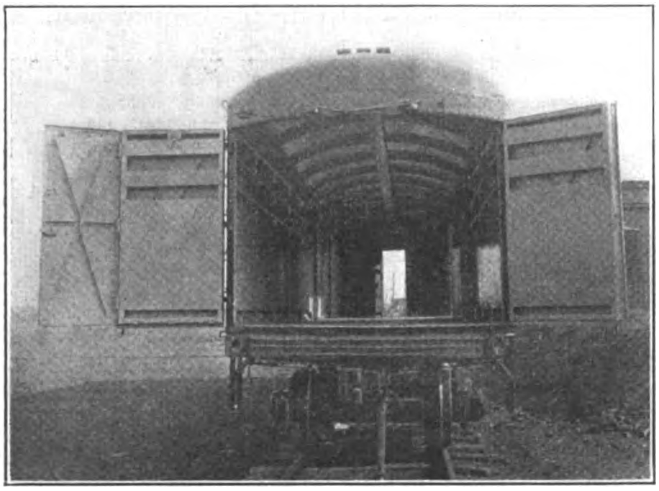
NEW STEEL FREIGHT TRAIL CAR FOR MICHIGAN RAILWAY

All-Steel Freight Cars for Michigan Railway

Ends of Car Swing Open and Facilitate Handling Shipments of Automobiles

Ten new arch-roof freight trail cars of unusually high-grade construction have recently been placed in service on the Michigan Railway. These are all of steel construction except for the wood floors, and are equipped with Rico anti-climbers. The length of the bodies over bumpers is 50 ft. and the width over sheathing is 8 ft. 11 in. The truck centers are 30 ft. apart. The body framing consists of side-sill angles, 7 in. x 3½ in. x ½ in., with intermediate longitudinal sills of 7-in. channels. The center cross-sills are made with 7-in. I-beams and the other cross-sills are 5-in. channels riveted to the longitudinal sills with the flanges turned down. An anti-telescoping plate of ⅛-in. steel is riveted to the longitudinal sills and bumpers. Underframe truss rods, 1½ in. in diameter, fitted with open-type turnbuckles, serve to reinforce the car against sag. The body bolsters are of the built-up type.

The 3-in. I-beam side posts are continuous from side-sill to side-sill, arching over the car to form the carlines. These are riveted to the side-sills and reinforced with double-angled plates. The sides of the cars are framed for a 6-ft. single sliding steel door in the center, and the ends are equipped with a 28-in. steel swing central door. Three of the cars of this allotment are constructed for hauling automobiles. The entire ends are made up of three steel doors which open up the full width of the cars to the ingress or egress of machines. The inside of these cars have a ⅛-in. steel lining extending from 6 in. below to 48 in. above the floor. The outside sheathing is 3/32-in. sheet steel extending from side-sill to letterboard.

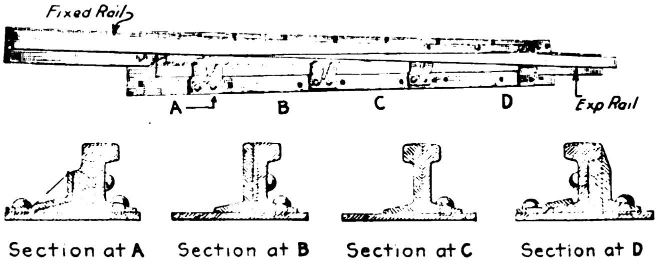


MICHIGAN RAILWAY FREIGHT CAR WITH END OPEN TO RECEIVE AUTOMOBILE

The car body and steel freight trailer trucks were built by the St. Louis Car Company.

Use of Electrically Welded Joints on Exposed T-Rail Track

In order to extend the life of old T-rails on exposed tracks, where the joints have become badly cupped, the Public Service Railway, Newark, N. J., has made considerable use of the Lorain standard electrically welded joint. The company has a number of stretches of exposed track where this practice has been followed, the principal ones being on the line between Haddon Heights and Woodlynne, for a length of about 3½ miles, and another piece of about 1 mile in length on the Riverside line in Hamilton Township. The former was welded about four years ago and the latter a year later. These joints are giving entire satisfaction and the process is highly recommended by the company. Standard expansion joints, as shown in the accompanying sketch and cross-sections, were inserted at the beginning and end of every curve and also at intervals of 1000 ft. to 2000 ft. on tangents.



SKETCH AND CROSS-SECTIONS OF EXPANSION JOINT

Besides rejuvenating the rails the welded joint, of course, provides a perfect electric bond. It is not the practice of the Public Service Railway to weld the joints on newly-laid exposed track, because the mechanical joint is good enough for a number of years and is obviously much cheaper. On tracks laid in permanently paved streets, where the mechanical joint is inaccessible after it is once installed, it has become the standard practice of this company to weld all of its new rails and thus practically to create a jointless structure, thereby increasing its life.

Feeder Cable Theft Alarm Signal

BY E. H. HAGENSICK

Superintendent of Electric Lines Omaha & Council Bluffs Street Railway, Omaha, Neb.

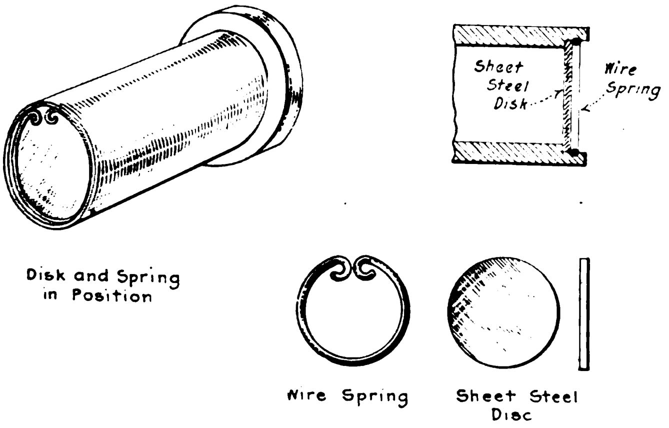
Trouble with the loss of feeder cable by theft after car service was off at night led to the installation on the Omaha & Council Bluffs Street Railway lines of a burglar alarm system. A small gage wire was strung from the substation over a route different from that of the feeders to the outlying districts. This was connected to the feeders at the far ends. A bank of lamps for resistance in series with a relay was mounted on the back of the switchboard in the substation and connected between the cable and ground. After service is off at night, the feeder cable, of course, is de-energized.

The small telltale wire is connected to the d.c. busbar, and current is carried to the end of the feeder and back over the latter through the bank of lamps and the relay to ground. Should anyone cut the feeder the loop circuit is broken and the relay armature drops to normal position and causes an alarm bell to ring. The night operator then quickly dispatches someone out over the cable route to intercept the thieves. The system has worked very successfully.

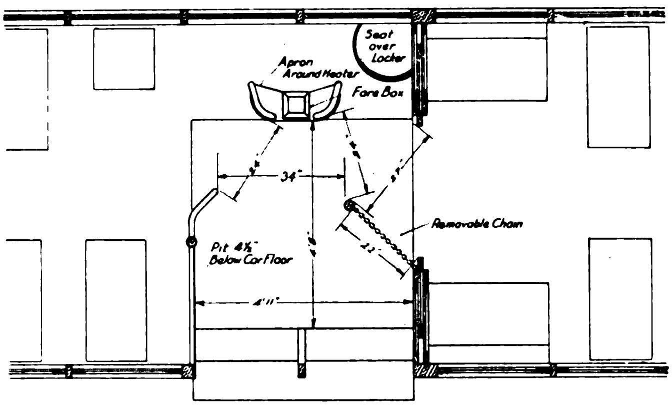
Commutator End of Armature Bearing Protected by Simple Device

The commutator end of the armature bearing of the old-type GE-57 motor is usually protected by a sheet of canvas. This frequently comes off, works loose, or is damaged by the end of the armature shaft, thus allowing dust and dirt to get in and grind out the bearing.

This trouble has been overcome in the shops of the Elmira Water, Light & Railroad Company by cutting off the end of the armature shaft, cutting a groove around the inner circumference of the bearing and inserting there a sheet of No. 14 gage sheet steel. The latter is held in place by a piece of No. 6 spring steel wire bent to form an open circle and then sprung into the groove after the sheet-steel disk is in place.



PROTECTION FOR END OF ARMATURE BEARING

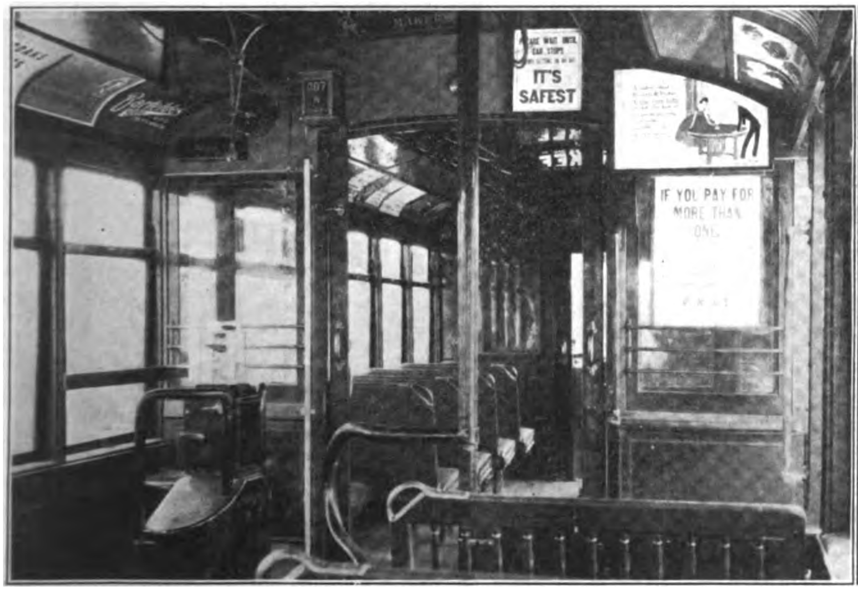


PREPAYMENT PLATFORM ARRANGEMENT FOR DENVER CARS

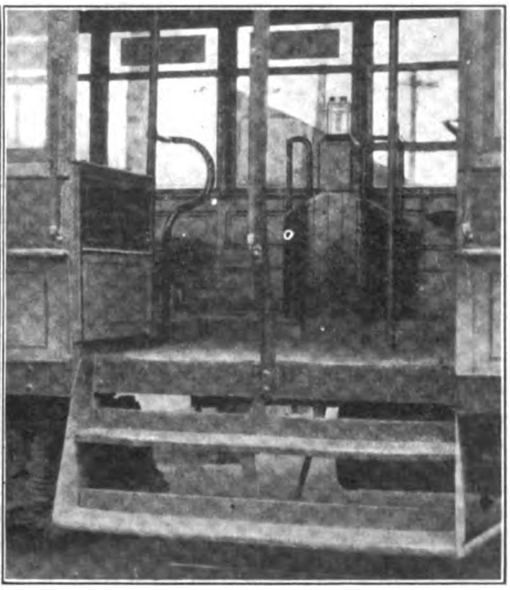
Changing Denver Center-Entrance Cars for P-A-Y-E Operation

In order to install the pay-as-you-enter fare collection system on the center-entrance cars of the Denver Tramway, some slight changes in the platform arrangement were necessary. The longitudinal seat opposite the entrance was taken out, and also half of the first cross-seat behind this longitudinal seat, thus losing four seats. The space formerly occupied by this three-passenger longitudinal seat serves as an advantageous position for the conductor, since the floor is 4½ in. above the floor of the entrance well, and thus gives the conductor a good view of passengers entering and leaving the car.

The Johnson fare box used is mounted on an asbestos-lined wooden hood located in the center of the entrance platform, but on the car floor level as seen in the accompanying drawing. Since the entrance and rear half of the Denver cars are open the year around, an electric heater was installed underneath this hood, which will serve to take off some of the chill at the conductor's position. A seat installed in the corner at the central bulkhead lifts up and forms a locker for storing surplus transfers, etc. The arrangement of the two stanchions and prepayment rails is shown in the accompanying drawing. The rails beside the fare box serve to give passengers a hand-hold while waiting for change and



FARE BOX AND REGISTER INSTALLATION IN DENVER CENTER-ENTRANCE CARS.



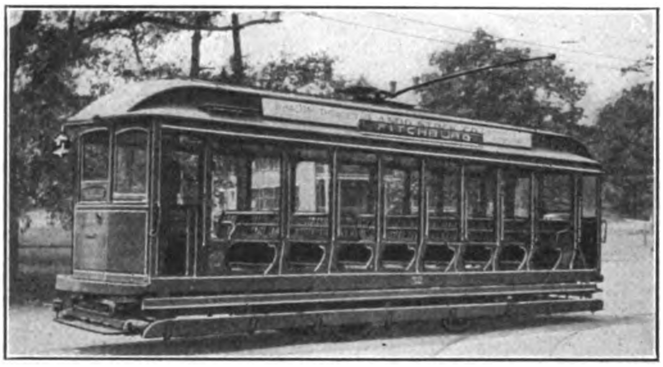
VIEW OF DENVER PREPAYMENT ARRANGEMENT FROM OUTSIDE OF CAR transfers. The International register installed on the bulkhead of the car is operated by a foot pedal underneath the fare-box hood. This leaves the motorman's hands free for making change, issuing transfers, etc.

Economical Stenciling of Car Signs

BY W. P. LISH

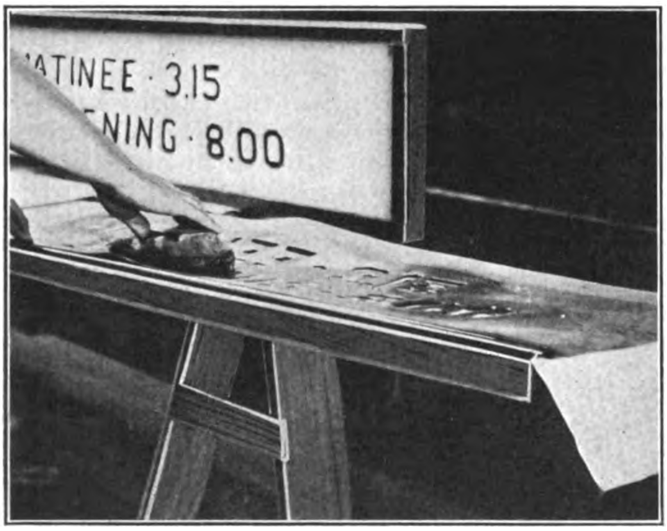
Master Mechanic Fitchburg & Leominster Street Railway, Fitchburg, Mass.

Instead of using an ordinary brush in making stencil signs for cars we use a sheepskin pad attached to a 2-in. x 4-in. wooden block. This has been found to be an effective means of securing a sharp outline which gives the sign the appearance of having been printed.



CAR HAVING STENCIL SIGNS ADVERTISING PARK AMUSEMENTS

The letters are stenciled on starched cotton costing about 6 cents per yard by means of the two-plate process. In one instance twenty-four 12-in. x 18-ft. signs, one of which is shown in the accompanying illustration, were made in five hours. This has proved an especially effective means for providing park advertising signs for our cars.



USE OF SHEEPSKIN PAD IN MAKING STENCIL SIGNS

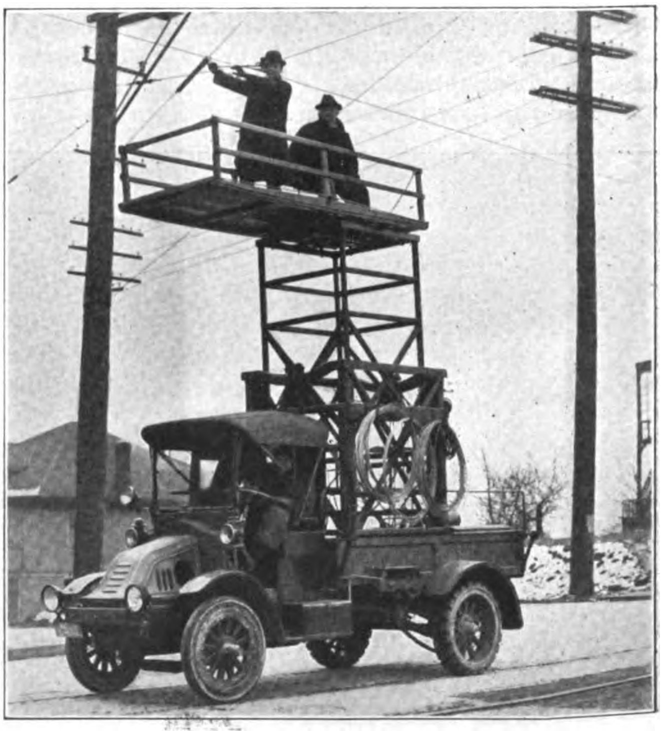
In an Ohio power plant a bonus system has been introduced under which each employee gets from $1 to $15 per month when the coal consumption is between 2.95 lb. and 2.55 lb. per kilowatt-hour. There was an almost immediate reduction from 3.10 lb. or more to 2.85 lb. or less when the plan was put into effect, a part of which was undoubtedly due to the system.

Motor Trucks in Seattle

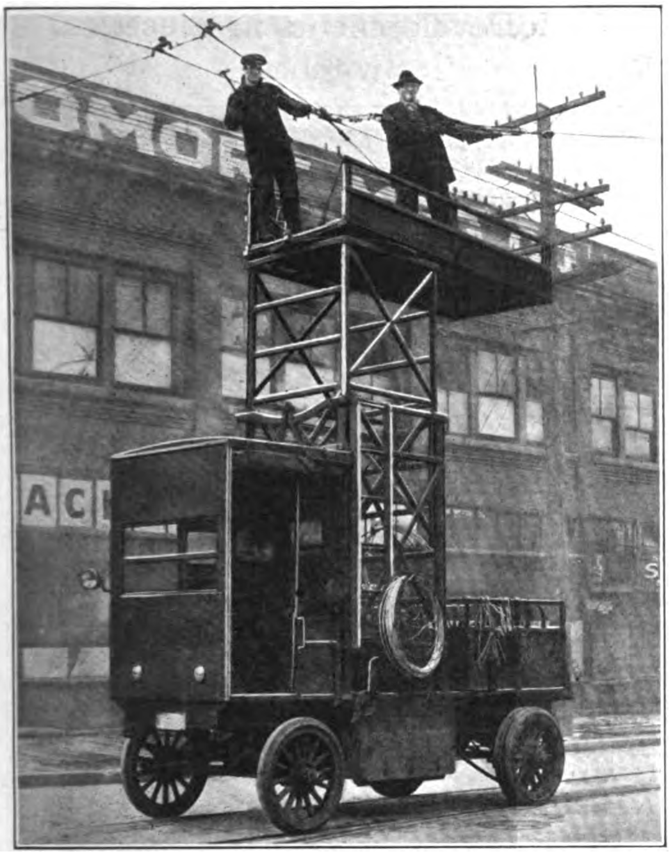
Costs of Operation of Gasoline and Storage-Battery Vehicles in Railway and Lighting Service

For several years past the Puget Sound Traction, Light & Power Company has had in service a number of gasoline and storage-battery trucks in both the railway and the lighting and power departments. The latter department makes use of the major part of the equipment, and the most common type is the 1½-ton White truck, although there is a 5-ton ash car and a ¾-ton truck that is used for such light work as connecting and disconnecting services at scattered points about the city. There are also a ½-ton meter car and two 1½-ton units with storage-battery drive. Two of the 1½-ton gasoline trucks are used on heavy line construction work and another is equipped with a power-driven winch, just back of the driver's seat, and is used by the pole gangs. With the latter equipment poles are hauled out and delivered at the job by means of a regular pole wagon trailing behind the truck. Poles are loaded on this wagon by using the winch to wind up a line extending across the wagon and looped around the pole. Poles are also snaked short distances by means of a line on the winch where the ground is not good traveling for the truck. The company also has a derrick mounted on a gin wagon which is hauled as a trailer behind the pole truck and is used for raising and setting poles with the line from the winch, while transformers are frequently raised to crossarm platforms by the same means. In consequence, the company is able to do with this car all work requiring a horizontal pull without obstructing the street, as is the case when the truck drives off pulling a line attached to its rear.

As some of the trucks have been in service for a considerable period reasonably reliable cost data are available, and these are given in the accompanying table. This table shows the figures covering operation of four White gas trucks and three General Vehicle storage-



MOTOR TRUCK TOWER WAGON FOR RESERVE



STORAGE BATTERY TOWER WAGON OPERATED IN SEATTLE

battery trucks for one year. Of the trucks shown on the list only one, that used as a tower wagon, is used by the railway department, the others being lighting department equipment. The trolley trouble crews, however, have two cars, one a 1½-ton Kelly-Springfield gasoline machine that is kept at the carhouse for emergencies and the other the 1½-ton electric truck that is listed in the table, this latter being used for regular repair work to the overhead lines.

As an example of the cost of operation of a gasoline line truck extending over a longer period of time than covered in the table, there may be cited cost data on a truck that was placed in service on Oct. 15, 1912, the data extending to Dec. 31, 1915. This car was a 1½-ton White truck. The original cost was $3,300, and during the thirty-eight and one-half months included in the period under observation the car made 24,100 miles. The average mileage per gallon of gasoline was 6.1 and the average cost of gas per gallon was 13 cents. Approximately 30 miles were run per quart of lubricating oil at a cost of 14 cents per quart. On a basis of cost in cents per mile the following figures obtained:

Cost of gasoline	2.15
Cost of oil	0.36
Cost of miscellaneous operating expense	0.86
Total operating cost (cents per mile)	3.37
Cost of tires	2.41
Cost of repairs	3.58
Total maintenance cost (cents per mile)	5.99
Total operation and maintenance cost	9.36
Interest	2.53
Depreciation	9.15
Additional equipment	0.20
Total cost (cents per mile)	21.24

In the compilation of the above figures the wages of the drivers were in each case charged to the job on which the truck was operated. Depreciation was figured from an assumed present value of $1,000 for the car.

COST DATA ON TRUCKS OF PUGET SOUND TRACTION, LIGHT & POWER COMPANY

Service	Cap'y of Truck, Tons	Miles Made for the Year	Total Cost per Mile, Cents	Cost per Mile for Fuel or Power, Cents	Miles per Gal. of Gas or per Kw.-Hr.	Cost per Mile per Driver, Cents
Gasoline trucks:						
Line car	1½	3,584	23.7	3.0	5.14	9.31
Line car	1½	7,735	24.2	2.33	5.75	12.0
Line car	1½	7,743	20.6	2.86	5.41	9.04
Ash car	5	8,654	42.6	5.10	3.05	28.2
Electric trucks:						
Meter car	½	4,392	26.0	1.78	1.38	9.6
Tower wagon	1½	2,332	27.0	3.15	0.79	18.5
Dump car	1½	4,543	47.5	6.22	0.42	27.0

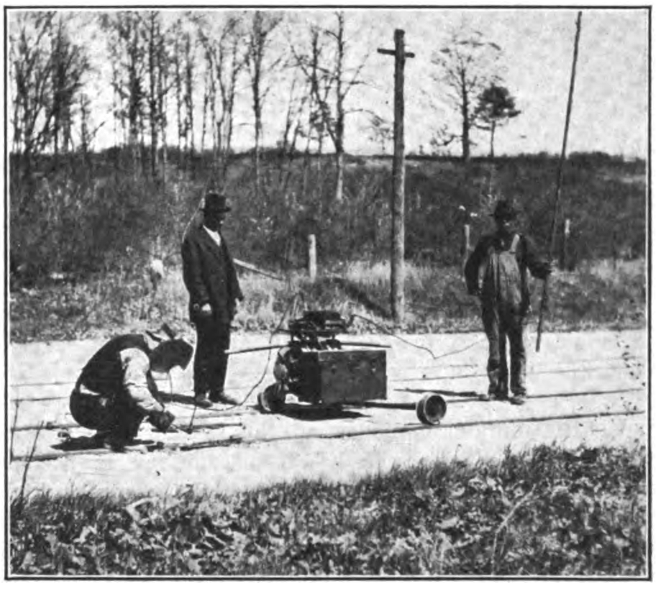
NOTE—Cost of fuel for gasoline trucks includes lubricating oil. Line cars used by lighting department; tower wagon by traction department

Distinguishing Between Limited and Local Trains

The Chicago, North Shore & Milwaukee Railroad has adopted a plan of painting the front end of its limited cars above the window sills an orange color in order that they may be distinguished from the local passenger cars. This was done for the safety of both employees and passengers waiting for trains, since by this means they can tell if an approaching train is a limited and will not stop. This coloring also sets the cars off from the general green of the landscape and helps to avoid crossing accidents due to failure on the part of pedestrians or vehicle drivers to see approaching trains.

Good Results from Electric Bonding Machine

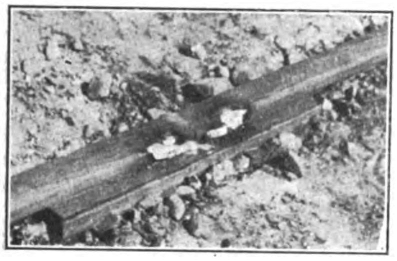
One hundred joints are bonded in a nine-hour day by the regular track men of the Worcester (Mass.) Consolidated Street Railway, an electric-arc bonding equipment being used. The accompanying illustrations show a general view of the bonding gang, the mold set in position at the joint and the completed bond after the welding has been performed. The equipment was made by the



TRACK BONDING WORCESTER (MASS.) CONSOLIDATED STREET RAILWAY

Lincoln Bonding Company and has been previously described in the ELECTRIC RAILWAY JOURNAL. It consists essentially of a motor-generator set which supplies a bonding current of 250 to 300 amp. at a low voltage, the supply power being taken from the 600-volt overhead trolley.

MOLD IN PLACE FOR ARC-WELDED BOND

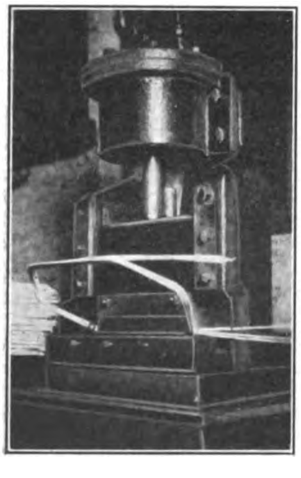

ARC-WELDED BOND AFTER COMPLETION

The apparatus is compactly mounted on a three-wheeled truck made to operate on the running track. As it can be removed by two men in twenty seconds on approach of a car, the bonding is done without interrupting traffic. It requires about three minutes to make a complete bond, including the attachment of the mold, the starting up of the motor-generator set, the welding process, the removal of the mold and the rounding up of the bond terminals. The time required for the actual welding is forty to fifty seconds. After removing the mold the ends of the bond are hammered round to divert wagon wheels.

Air Press for Armature Coils

BY G. B. SISSON
Mechanical Department, Georgia Railway & Power Company, Atlanta, Ga.

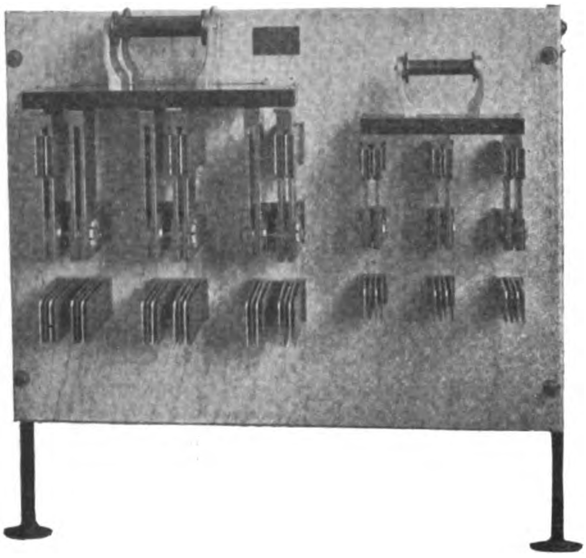
One of the features of our armature room is a home-made pneumatic press devised by J. E. Eaves, master mechanic, for pressing armature coils. It replaces a slow hand-operated screw press, and makes a more uniform coil than was possible with the varying human pressure exerted with the screw press. The controlling mechanism is made from an old whistle valve and is operated by a pedal so that both the operator's hands are left free to hold the coil. This press has been in satisfactory use for several years.


HOME-MADE PNEUMATIC PRESS FOR ARMATURE COILS

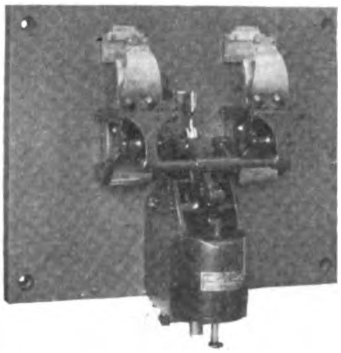
Ventilation of manholes on the system of the Augusta-Aiken Railway & Electric Company is accomplished by connecting to the manhole a 4-in. pipe which extends several feet in the air and supports a small wooden box. In this box there is an electric fan which forces fresh air into the manhole while the warm air is being discharged through the openings in the manhole cover.

New Developments in Electrical Switches

In order to reduce the effort necessary to operate the enormous lever switches used for starting large synchronous converters from the a.c. side in conjunction with auto-transformers, the split-lever starting switch shown in the accompanying illustration has been developed by the General Electric Company. The illustration shows two triple-pole lever switches for starting a six-phase converter. The switch at the left is of the new type. It comprises actually two triple-pole switches, each with its own handle and crossbar. Thus it is necessary for the attendant to move only one part of the switch at a time instead of handling the entire weight, as in the older type. Switches of this type have been built up to 5000 amp. capacity.


NEW TYPE OF ROTARY CONVERTER STARTING SWITCH

To start a synchronous converter, the switch blades are connected to the two-thirds voltage tap for but a short time, the switch jaws being constructed so that contact is made only with the outside switch; *i.e.*, the part which is thrown first. When this half of the switch, with one-half the blade area, is thrown down, it carries the current until the remaining or back half of the switch has been thrown into the lower position


SOLENOID-OPERATED FIELD SWITCH WITH FIELD DISCHARGE FEATURE

A type of double-pole solenoid-operated field switch has been developed by the same company which is similar in construction to the non-automatic solenoid-operated air circuit breakers, the principal points of difference being the omission of carbon secondary contacts and the addition of a field-discharge switch. The field-discharge switch is so arranged that the opening of the solenoid-operated field switch introduces a resistance across the field of sufficient value to prevent injury to the field-coil windings by the inductive kick.

London Letter

London Has Bus Strike—London County Council Lines Under Heavy Burden—Tramway and Vehicle Workers Consider Status of Women Employees

(From Our Regular Correspondent)

London suffered during the past month from a bus strike. For five days no buses were in use on the streets, except for a few running on the munition routes in the Woolwich neighborhood. The withdrawal of nearly all bus communications in London was seriously felt. The tubes naturally became extremely overcrowded, and it was with a feeling of satisfaction that the public learned that an agreement had been reached by the intervention of the government. A conference was held between representatives of the London General Omnibus Company and the London & Provincial Union of Licensed Vehicle Workers, with representatives of the Transport Workers' Federation present. The Right Hon. Arthur Henderson, M. P., intervened on behalf of the government. It is understood that the application for a war bonus will be proceeded with by the committee on production, and arrangements have been made so that the relations between the company and the Union of Licensed Vehicle Workers are again placed on a satisfactory basis. The conference took place in Mr. Henderson's private room. Afterward a meeting of the representatives of the men was held, and as a result the men accepted Mr. Henderson's terms. The next day London had a full complement of buses at work again. The war bonus asked for is 10s. a week for drivers and conductors, and 5s. for the skilled and semi-skilled garage staff. This matter will be settled by arbitration at a conference to be presided over by Sir George Askwith.

War conditions have imposed heavy financial burdens on the London County Council Tramways. In order to secure additional revenue the highways committee has decided to suspend halfpenny fare stages and ordinary return tickets. Workmen's return tickets and children's fares will not be affected. It is estimated that these changes will increase receipts by £60,000 and £45,000 a year respectively. In its report the committee pointed out that the annual cost of war wages and bonuses and allowances to dependents was £268.-400. The revenue estimates for the current financial year showed a deficit of £89,402, which would more than exhaust the general reserve fund. Under the abnormal conditions now prevailing the difficulties in the way of efficient fare collection have been considerably increased, and 54 per cent of conductors at the present time are women, most of whom have only recently entered the service. Distances are covered very rapidly, and the size of the Council's cars, and the conditions under which they are operated, make it extremely difficult to deal with halfpenny passenger traffic, distances being covered with such rapidity. The Council's cars are of the largest type in use, and the average speed of approximately 9 m.p.h. is in excess of that prevailing on any other tramway in this country.

Terms have now been agreed upon for the purchase by the London County Council of the portion of the undertaking of the London United Tramways, Ltd., within the county area. The lines affected are situated in the borough of Hammersmith, are about 5½ route-miles in length, and are worked on the overhead trolley system. They include the London terminals of the system at Hammersmith Broadway and at Shepherd's Bush Green, the system itself extending to Hampton Court, Hounslow, and other points in Middlesex. The agreement includes provision for running arrangements between the Council and the company; for the transfer to the Council of the Chiswick power station and plant, and for the supply by the company of power for the running of cars on the purchased lines for twenty-one years free of cost. Including the purchase price (£235,000) and costs and expenditure on reconstruction work, the capital outlay will amount to £320,899. As regards the lines to be purchased it is estimated that there will be an annual surplus on working of £22,917 after providing for renewals, but exclusive of power and debt charges.

Sir Edward Henry, commissioner of police of the Metropolis of London, has given notice regarding motor omnibuses that new vehicles presented for licensing must be lighter in weight and with a better form of power transmission than the existing type. He invites the co-operation of manufacturers. In the past it has been found that motor omnibuses approaching the maximum allowed of weight unloaded and of permissible speed caused much annoyance and damage through noise, vibration, etc. The present vehicles weigh without load about 3½ tons, and when fully loaded with passengers about 6 tons.

The men in the employ of the Dundee tramways department are to receive another increase in wages. The advance proposed is 5s. per week in the case of drivers and conductors and 2s. in the case of cleaners. This decision was reached at a recent meeting of the tramways committee when a deputation was heard in support of the application. The request was for an increase of 6s., and was made through the local branch of the Amalgamated Association of Tramwaymen & Vehicle Workers. Prior to hearing the deputation the committee considered a report on the relative rate of wages paid to tramway employees in other towns in Scotland. Only in Glasgow are the men better paid than those of Dundee. The decision was unanimous. The increase is granted on a fifty-four-hour week and makes the minimum and maximum rates as follows: Drivers, 35s. to 39s.; conductors, 31s. to 37s.; cleaners, 32s. to 34s., exclusive of 5s. extra for a sixty-hour week.

Interesting information is set forth in the annual report of the Nottingham tramways committee. While there was an increase of £7,762 in the total receipts last year, the expenditure also increased by £17,450, due chiefly to car repairs, war bonuses and separation allowances. There was a reduction of 118,911 in the number of miles run by the cars, yet the passengers carried totaled 1,739,726 more than the previous year. The number of penny tickets issued was 30,-115,111, workmen's penny tickets 4,028,572, halfpenny ordinary tickets 4,028,572 and three-halfpenny ordinary tickets, 3,748,623. The depletion of the staff and inability to secure necessary supplies caused great difficulty in meeting the traffic requirements. Since the commencement of the war 305 men have joined the colors. Of these twelve have given their lives for their country. One motorman and one conductor have been awarded the military medal for conspicuous bravery at the front. Upward of 100 men have also left the service for munitions and other work.

The twenty-seventh annual delegate meeting of the Amalgamated Association of Tramway & Vehicle Workers was held at Leicester during the month of May. It was stated that one of the difficult problems that the society had to consider was the question of women tram drivers. The hope was expressed that the members in every town would oppose the introduction of women, and that where circumstances were too strong for them successfully to resist the innovation, the members would insist on the same rate of wages being paid to the women as to the men. The position taken by the Board of Trade and the Ministry of Munitions was that there could be no interference on the part of the authorities until it was demonstrated that the employment of women drivers was a danger to the public. The conference passed a resolution that in view of the dangers attending the introduction of women drivers the Council should take definite action, and that there were sufficient discharged soldiers and sailors capable of the work if the maximum rate of the town were paid.

Edinburgh magistrates have considered the further renewal of licenses for the cable cars in Edinburgh. Reports were submitted by the burgh engineer and the hackney carriage inspector which showed that, despite the fact that the company was very badly handicapped by the lack of material and men, considerable improvement had been made in the running plant. The tramway asked that the licenses should now be granted for one year, as formerly. The magistrates decided, however, to limit the licenses to three months, as they had been doing more recently.

It is expected that as a result of the scheme submitted to the Middlesex County Council recently, fares will be increased on the Metropolitan Electric Tramways, Ltd., at an early date. Since 1911 the company has not yielded any divisible profit, and there has been a steady increase in the amount by which capital charges and working expenses have exceeded the receipts, owing to increased competition and a steady rise in the cost of operation. It is further estimated that the war bonus to employees, recently asked for, would add £30,000 to the bill for wages. A. C. S.

News of Electric Railways

Traffic and Transportation
Financial and Corporate **Personal Mention** **Construction News**

St. Louis Settlement Terms

First Joint Conference Between City and Company Representatives Results in Publication of Proposal of the City

The first joint conference on a tentative plan to compromise the United Railways mill tax was held on June 26 in the office of Mayor Kiel of St. Louis, Mo. The five members of the United Railways committee, headed by Richard McCulloch, president, conferred with the city's committee headed by Mayor Kiel. Eight proposals were submitted to the joint conference committee by City Counselor Daues, as forming the basis of a possible agreement between the city and the United Railways. They represent the city's reply to the company's proposals of last November. The list of proposals is as follows:

WHAT THE CITY PROPOSES

1. The mill tax ordinance shall be repealed on the date when the new agreement becomes operative, and shall be paid in full, with accrued interest, up to that time.

2. For the accrued mill tax and interest to be paid the city, the company may issue bonds and add the amount to its capital valuation on which a reasonable return may be earned in future. The bonds are to be retired by amortization within a term of years to be fixed.

3. New indeterminate franchises, subject to the provisions of article 19 of the charter, shall be granted to the company. The city shall have the right to acquire the company's property, paying for it in municipal 4-per cent bonds, at the end of the first ten-year period, or the end of any five-year period thereafter, as provided in the charter. The franchises shall be for a term ending in 1948, or for fifty years, the limit fixed by the charter for the life of a franchise.

4. The board of directors to consist of twelve members, of whom —— shall be city officials, the railway to elect qualifying shares to and elect on the board of directors —— city officials, who shall be ex-officio members.

5. The management of the company to be under a board of control, consisting of the president or acting manager of the company and the director of the public utilities of the city, or his commissioner or deputy, said board to decide also on all necessary rearrangements, extensions, additions and improvements to be made by the company as fast as required and as the earnings permit. All difficulties and disagreements between the members of the board of control to be adjusted by arbitration. A third member to be appointed by the St. Louis Court of Appeals in the event of a disagreement. All official salaries and expenses to be subject to the approval of the board of control.

6. The city and company to agree on a fair capital value on which the company shall be permitted to earn a return of —— per cent, which shall be cumulative. The company also to be permitted to earn a reasonable return on sums expended for extensions, additions and betterments, to be determined by accounting methods set out in the ordinance.

7. All earnings shall be disposed of as follows: (a) Operating expenses, including accident reserve, depreciation funds and taxes. (b) A percentage, to be fixed, on capital valuation. (c) Surplus after providing for (a) and (b) to be divided between city and company on a percentage basis to be fixed, or applied to the improvement of transportation.

8. An ordinance containing these provisions shall be passed by the Aldermen and accepted by the company.

The committee which considered the matter on June 26 consisted of five members of the city government and five representatives of the company. At the opening of the meeting Mr. Daues expressed the hope that the plan would be adopted. It was first intended that the protocol should fix the company's new capitalization at not more than $60,000,000, and that the rate of earnings on this amount should be 6 per cent, with a further provision that the net surplus be divided in the proportions of 60 per cent to the city and 40 per cent to the company. In a preliminary conference between Counselor Daues and Attorney Thomas M. Pierce, for the company, these specific conditions were omitted, and it was decided to refer them to a joint committee of four, two members to represent the city and two the company. In addition the questions of the number of directors and the manner of paying the mill tax also were left open. The first proposition that the city should have four officials—the Mayor, comptroller, president of the Board of Aldermen and director of public utilities—as directors of the company, was not urged very strongly at the conference. The Mayor suggested that the chairman of the Aldermanic public utilities committee be included in the directorate, but this was disapproved by Mr. Daues. President McCulloch of the company held that as the city wanted "only representation on the company's board, and not control," three officials would be as good as four or five to protect the city's interests. He urged that only the three elective officials be named.

Mr. Daues said that he thought the company ought to be allowed to earn 6 per cent dividends, and that an additional 1 per cent of earnings might be allowable for extensions and improvements. He said that he believed a fifty-year franchise was necessary to get best results, and that the city had no power, under a recent Supreme Court decision, to fix the rate of fare by ordinance. The Supreme Court, he pointed out, decided that the rate-making power rested solely with the Public Service Commission.

The joint conference was to meet again on July 6.

Mr. Beeler Retained in Boston Case

He Will Report to Massachusetts Commission in Connection with Boston Elevated Revenue Case

John A. Beeler has been retained by the Public Service Commission of Massachusetts under Chapter 373, acts of 1917, to assist the board in studying the revenue problem of the Boston Elevated Railway. The commission is to report to the next Legislature whether the existing 5-cent fare contract between the company and the State should be altered on behalf of affording the company increased net revenue. Mr. Beeler will investigate the possibilities of increasing the net revenue and was selected by the board because of his extended experience as a street railway manager. He was formerly vice-president and general manager of the Denver (Col.) Tramway and has lately devoted his entire time to consulting work in connection with public utility problems and has recently completed a report upon operating methods on the Bay State Street Railway. Mr. Beeler's office is at 52 Vanderbilt Avenue, New York City. His report on the Boston Elevated case will be submitted to the commission in the early fall.

Mr. Beeler, who has established himself in New York as a consulting engineer, resigned from the Denver Tramway in September, 1915. He was born in Towanda, Ill., on June 28, 1867, and entered street railway work in Cincinnati in 1886. His connection with the railways in Denver dated from 1888. Mr. Beeler was among the first to adopt a double-truck trail car for handling rush-hour loads or peak traffic. He also introduced a number of other features that created much interest in the railway field. One of these was the employment of student conductors, selected from local universities and high schools, to man the trailers operating during the periods of heaviest travel.

Philadelphia Legislation Lost

Measures Sought by the City and Opposed by the Philadelphia Rapid Transit Company Not Passed in Legislature

The program of rapid-transit legislation sought by the city of Philadelphia has been lost in the Legislature. The whole matter was tied together in four bills, the provisions of which have been reviewed previously in the ELECTRIC RAILWAY JOURNAL. Briefly these measures sought to give the city the power to take over the lines of the Philadelphia Rapid Transit Company by exercising the right of eminent domain, compensation to be fixed by the Public Service Commission; a constitutional amendment increasing the city's borrowing capacity so as to provide this compensation, and the so-called Salus bill to provide through routing of the city's lines on the Philadelphia Rapid Transit Company's lines and also to empower the commission to decide the question of fares and transfers.

The fight on the measures was a hot one. In the closing hours A. Merritt Taylor, former director of the department of city transit, issued a statement in which he "scotched" the resolution backed by Mayor Smith. On the other hand the Mayor threatened reprisals and is said to be looking toward independent operation of the rapid-transit lines now under construction. He has, however, signed the ordinance recently passed by Councils which empowered the city to draw another lease and submit it to the Philadelphia Rapid Transit Company. In the first flush of his disappointment at the loss of the so-called Salus bill the Mayor pilloried the entire electric railway interests of the State. He is quoted as follows:

"The united power and influence of all the street railway interests of the State were exerted to defeat the Salus bill. Whole delegations were turned away from us through telegrams which reached them to-day.

"Before we arrived at Harrisburg to-day (June 27) I am certain that we had votes enough to carry the bill, but as it developed, we were eight votes short of a constitutional majority. This change, to my mind, was wholly brought about because of the coercion of the street railway interests of the State working together."

Dallas Deal Delay

Messrs. Strickland and Hobson Secure Extension of Time in Which to Consolidate Electric Railway and Lighting Services

The city of Dallas, Tex., has extended for a period from July 2 to Sept. 27 the time in which J. F. Strickland and C. W. Hobson, to whom were granted the service-at-cost franchises for operation of electric railways and electric lighting plants in Dallas, may carry out their agreement to consolidate the present lines under the companies which they propose to organize. The extension was granted at the request of Messrs. Strickland and Hobson, and after the favorable action had been taken by the City Commission, Messrs. Hobson and Strickland gave out the following statement to the public:

"We regret we were obliged to ask for an extension of time in which to accept the light and street railway franchise ordinance, but the delay incident to the litigation involving the validity of said ordinances made it imperative. The things necessary to be arranged preliminary to the acceptance of said franchises are numerous and time-consuming, and some of them could not be undertaken so long as the validity of said franchise ordinances was involved in litigation.

"This litigation has but very recently reached a conclusion, and the time since then has been entirely inadequate for arranging a matter of such magnitude and detail. An extension has been asked and granted until Sept. 27, 1917, but this does not necessarily mean that acceptance will be postponed until that time, for we shall push matters diligently and will not delay any longer than is actually necessary. It must be remembered that the transfer of the properties in question is one that requires very considerable time and that both properties must be transferred, as the transfer of one without the other would be of no avail."

New York Men Present Demands

Committee of Third Avenue Railway Employees Seeks Conference with Management on Wages and Other Matters

A committee of four employees of the Third Avenue Railway, New York, N. Y., on July 4 sent the following letter to Edward A. Maher, president of the company:

"We, the undersigned committee representing the employees of your company, have been instructed by your employees to submit to you the following requests:

"First—We request that the company, through its accredited officers, will meet and treat with the committees and representatives of the men on all grievances and complaints that may arise in the future.

"Second—We request that the wages for motormen and conductors on and after July 10, 1917, shall be as follows: For motormen and conductors, first year in service of the company, 35 cents an hour; for motormen and conductors who have been one year or over in the service of the company, 40 cents an hour.

"Third—We request that the workday for motormen and conductors shall be on the basis of a maximum of ten hours, to be completed in twelve consecutive hours, and that time and one-half be paid for all work after the completion of the regular scheduled run as above provided.

"We would request that you set a date and name a place where we can take up with you, as the representatives of the employees, these questions."

The letter was given out for publication by William B. Fitzgerald, general organizer of the Amalgamated Association of Street & Electric Railway Employees of America. He stated that since it had become known that demands would be made the company had circulated among its men a petition to the effect that the men were satisfied with the new scale of wages established on July 1. This scale raised the pay of a man who had been in the employ of the company for six months from 27 cents to 30 cents an hour; the pay of the man who had been with the company for more than a year to 32 cents, and the pay of a man who had been in the company's employ for fifteen years to 34 cents an hour. At the time of the strike in New York about a year ago the demands submitted were for 30 and 33 cents, as compared with 35 and 40 cents in the new demands.

Mr. Maher, president of the road, gave out a statement on the night of July 4 explaining his reasons for not choosing to treat with the committee of four appointed by the union and said that the men had been dismissed from the service of the company for their action in rejoining the association. Mr. Maher said he knew that the men appointed did not represent the employees of the Third Avenue Railway, but that they represented an association that had no regard for "its obligations, contracts or promises."

The Amalgamated is said to be looking first toward the unionization of the men on the Third Avenue lines with the end in view of calling a strike there. The Third Avenue Railway has replied to the committee which presented the demands to it by discharging the men on the committee.

The brotherhoods organized after the strike last year on the lines of the Interborough Rapid Transit Company and the New York Railways passed resolutions on July 5 denouncing the leaders of the Amalgamated and condemning any proposal to force a strike at this time. Copies of these resolutions were sent to the Mayor, Public Service Commission, United States District Attorney and district attorneys of New York and Bronx Counties. The resolutions adopted by the Interborough lines quoted President Wilson's proclamation to the men who run the railways, reviewed the attempt made last fall to interrupt service on the Interborough lines, called attention to the dynamiting of the subway during the last strike and the convictions that followed, and concluded with the demand for "all of our rights to carry out our obligations to the community and to the nation peaceably and without interference." The resolution adopted by the brotherhoods of the employees of the New York Railways were along similar lines. Committees of the brotherhoods of both companies called on officials of the companies and told them that they were satisfied with the conditions and wages which now prevail.

Ten Killed in Niagara Gorge

Car of Niagara Gorge Railway Drops Into Gorge Near the Whirlpool Rapids

Heavy rains undermined a section of track on the Niagara Gorge Railway about 50 ft. south of the cantilever bridge at Niagara Falls, N. Y., and a large double-truck open observation car carrying between fifty and sixty-five passengers running upon this stretch of roadbed on the afternoon of July 1 toppled down a 30-ft. embankment into the lower gorge of the Niagara River. Three days after the accident ten known dead and thirty-one injured had been accounted for by company officials, but estimates disagree as to the number of missing. The register was not recovered in the wreckage. The motorman of the car jumped and was saved, but the conductor was lost.

The Niagara Gorge Railway operates the double-track electric line in the lower American gorge between Lewiston and Niagara Falls. This route with the line of the International Railway between the upper steel arch bridge at Niagara Falls, Ont., and Queenstown, Ont., constitutes the Niagara Gorge belt line. On the day of the accident cars were being operated under a fifteen-minute headway. The route of the railway winds in and out among the large rocks in the lower gorge, and for a great part of the distance the roadbed is supported upon a bed of concrete. Every morning before regular travel is started over the line a pilot car is sent over the route to report on the condition of the track and roadbed.

SOLDIER SOUNDS ALARM

About twenty minutes before the accident, a soldier guarding the lower abutments of the Cantilever and Lower Steel Arch bridges saw part of the roadbed under the track slip into the gorge. Realizing the immediate danger, he telephoned officials of the Niagara Gorge Railway of the undermined track and the company's inspector at Lewiston was advised not to allow any more cars pass that point. One car was then between Lewiston and the point of the wash-out. A special Gorge Route car started from Niagara Falls, N. Y., with company officials and others, but when they arrived the regular car had reached the danger point and had fallen into the river. When the car ran upon the undermined track, it toppled toward the river and fell bottom side up onto submerged rocks and again tipped over into the river. Before the car took its first somersault, the motorman leaped and several passengers jumped. Others were hurled into the gorge and some are said to have been carried down the river into the Whirlpool only a short distance below.

National guardsmen jumped into the river with ropes tied about their bodies and rescued a number of passengers. Several others were pulled from the wreckage an hour after the car fell from the rails. Special cars carried the dead and injured to Niagara Falls. The International Railway sent a wrecking car to the scene of the accident and hauled the trucks and floor of the car from the river, but the roof and other parts of the car were carried down the river into the Whirlpool.

Burt L. Jones, vice-president and general manager of the Niagara Gorge Railway, was on the scene within twenty minutes after the accident. In a statement to the newspapers, Mr. Jones placed the responsibility for the accident upon the soldier who saw the roadbed slide into the river because he did not rush down upon the tracks and flag all approaching cars. City officials of Niagara Falls, N. Y., also placed some blame upon the soldiers for not making an effort to stop the approaching car by firing a gun or giving some other sign of warning.

Two investigations are being made into the accident. One is being conducted by the Niagara county authorities and the other by the Public Service Commission for the Second District through Charles R. Barnes, its electric railway inspector. At the investigation before the county authorities, officials of the Niagara Gorge Railway were asked why power was not shut off immediately warning of the washout was received. The superintendent of the company and its general manager said that the time between the warning and the accident was too short for them to stop the approaching car.

Twenty-four hours after the accident the undermined track had been repaired and regular traffic was resumed over the entire route from Lewiston to Niagara Falls.

M. O. Agitation in New York

Tammany Will Seek to Capitalize Present Plight of Utilities by Promising to Fight for Municipal Ownership

Tammany Hall came out on July 1 for a municipal ownership platform in the present New York City municipal campaign. A statement issued by the Democratic County Committee, which includes its proposals for incorporation in the Democratic Fusion platform, says:

"The supply of transportation, light, heat and power is of the utmost importance to the community. The services rendered have become a necessity to the life, health, comfort, convenience and industry of the city. These great services are monopolies, and whatever is of necessity a monopoly should be a public monopoly, especially where it offers a service of universal use. Thus only can the cost of these indispensable public services be reduced to the cost of similar services in more progressive cities. and thus only can the selfish resistance of the public utility corporations be made to give way to a progressive development of the city in the interest of the people.

"We oppose the further granting of franchises for public utilities. The prodigality with which these public assets in the past have been given or bartered away for inadequate consideration explains the penury of New York City.

"The present city administration was elected on pledges that the city government would be conducted on progressive lines, in the interest of the citizens as a whole and not of special privilege. These pledges have been forgotten or ignored, and the Fusion administration has steadily pursued a course of obsequious deference to the public utility corporations and predatory and privilege seeking business.

"New York City faces the enlightened demands of the present day for a scientific extension of municipal function with a depleted treasury and an exhausted borrowing power, while there is not a valuable privilege or franchise, an immunity or a power of extortion sought or proposed by the public utility corporations of the city which has not found in the present Fusion administration eager and artful advocates and apologists. The city's revenues have been wasted in ill-considered and improvident undertakings, which today stand as costly and futile commitments without possibility of completion."

On July 3 the newspaper men at the City Hall pressed Mayor Mitchel for a statement in regard to his views on municipal ownership. He is reported to have answered:

"I think now as I have always thought. I have always been in favor of municipal ownership in many fields. Particularly was I in favor of it in the subway matter. I should like to see the city acquire the electrical subways (conduits). If we only had the money we might do it tomorrow. And it may be, before we get through, that we will have the money."

On the same day Public Service Commissioner Hervey also had something to say about municipal ownership. His remarks were taken as indicating the sentiment of at least a majority of the commission. Mr. Hervey said in part:

"The representatives of at least two of the surface railway systems of the city have declared that unless they are granted new sources of revenue they will be forced into the hands of receivers, with consequent inconvenience to the public through the disintegration of their systems. Those statements become increasingly important in view of the threat of renewed labor strikes on the lines of the companies and with the at least coincident revival of municipal ownership as a local political issue.

"It would be unfortunate, in view of the large measure of control of the situation possible under the present laws, if the public should get the impression that its only protection was through municipal ownership of these roads. If we are going to have municipal ownership, let us begin by acquiring those public utilities which are making great profits out of the public and not those which their own managers declare are on the verge of bankruptcy."

Truce in Seattle

Difference Between Employees and Company to Be Arbitrated—President Leonard Reviews Situation Confronting Company

A truce was declared on June 26 following several conferences between representatives of the Puget Sound Traction, Light & Power Company and the employees of the Seattle division, and arbitrators were appointed by the company and the union to consider the matters that had previously made a strike seem likely. C. J. Franklin, a consulting engineer of Portland, Ore., formerly general superintendent of railways of the Portland Railway, Light & Power Company, was named by the company as its choice for one of the three members of the arbitration board before which will be submitted the claims of the employees for better wages and shorter working hours. James A. Duncan, secretary of the Seattle Central Labor Council, was appointed by the representatives of the employees as their choice as arbitrator. Mr. Franklin and Mr. Duncan will appoint the third member of the board. The board will then organize and begin the hearings. The decision of the arbitrators will be binding upon both sides to the arbitration, for a period of one year.

A. W. Leonard, president of the company, says that a schedule of increases asked by the employees will be submitted to the board of arbitrators. Negotiations on behalf of the employees are being conducted by the officers of Local 587 of the Amalgamated Association of Street & Electric Railway Employees of America, first organized in Seattle in 1912, and comprising, it is stated, 1000 employees of the company. President Leonard, Vice-President McGrath, and Manager Kempster represented the company at the conferences held with the employees.

WHAT THE MEN DEMAND

The present situation had its beginning, it is asserted, on June 20, when twenty-seven platform men signed a petition for membership in the Seattle division of the Amalgamated Association. The subsequent suspension of these men by the company is alleged by the employees. On June 21 a committee of trainmen called on President Leonard of the company, made certain requests regarding wages and working conditions, and set June 23 as the time for reply. On June 22 the company voluntarily advanced the wages of all its trainmen, the third time since the first of the year. On June 23 the committee was invited to President Leonard's office for a conference. At this meeting the trainmen presented the following requests: That all platform men receive 37½ cents an hour during the first year, and 40 cents an hour after that; that the workday be reduced to eight hours in eleven consecutive hours; that time and a half be paid for all time served in excess of eight and one-half hours; that extra men, those just breaking in or those who are substituting without regular runs, be paid $75 a month.

PRESIDENT LEONARD'S STATEMENT

In a statement which he made, President Leonard said:

"We were asked to arbitrate certain requests made by a committee of our employees. The arbitration the men ask for they specifically stated was that provided for in the franchise under which we are operating in Seattle. We expressed our willingness to arbitrate the questions submitted. The franchise provides: 'That if any dispute shall at any time arise between the said grantees, their successors or assigns, and their employees as to any matter of employment or wages, such dispute shall be submitted to arbitration. The grantees, their successors and assigns, and their employees, shall be parties to any submission and shall be entitled to be heard by the arbitrators, and any award when made shall be made binding and conclusive for the period of one year from its date, upon the grantees, their successors and assigns, and upon their employees.'

"Observance of that provision will protect the public against unnecessary or embarrassing loss of service. On June 21 the committee presented its requests. No answer was given at that time. The appearance of the committee at the executive office of the company followed our announcement of a 2-cent an hour raise in wages and a reduction from ten to six years in the period of service within which the maximum wage is reached. The committee returned on June 23 and asked if we would arbitrate as provided in our franchise. The members were assured that we would do so, and we were immediately called upon by a second committee, with written demands for the very arbitration to which we had already consented.

"The matters in question are requests for a shorter day and a higher rate of pay per hour, together with a guaranteed wage for extra men, and the reinstatement of several suspended men. The request that the suspended men be reinstated was acted upon as soon as it was decided that arbitration would be granted.

COMPANY REALIZES CHANGED CONDITIONS

"The company has always stood behind its loyal men, and these men can depend upon us to continue to stand behind them. We realize that living conditions have changed and we have done what we could to help meet those changed conditions by making three wage increases in six months. In addition to the wages paid, we give free tickets to trainmen and their families, the latter provision being extremely unusual. The increases announced have added more than $140,000 to our annual payroll. All equipment and material that we use costs us from 50 per cent to 450 per cent more than it did before 1914, but we are still furnishing 7 and 8-cent rides for the same nickel, a nickel that has shrunk to 2½ cents in its diminished purchasing power.

MAKING A POLITICAL ISSUE OF THE COMPANY

"We have been harrassed, embarrassed and annoyed in every conceivable manner by those who have sought to make a political issue of this company. Unfair and illegal competition has been permitted with a view to crippling us financially, but we have continued to work under these handicaps, believing that ultimately a sense of fair play and justice will prevail in this community."

It is understood that the shop men in the employ of the company are to be taken into the union. The requests with respect to the shop men, tentatively agreed upon, are an eight-hour day in all cases and an advance from the present pay of $2.75 a day to $3.50, and $4 a day in case of machinists.

Terminal for Los Angeles

California Railroad Commission to Consider Matter of a Union Passenger and Freight Railroad Terminal

The question of establishing a union passenger and freight railroad terminal in Los Angeles will be considered by the Railroad Commission of California sitting *en banc* in Los Angeles on July 24. The Supreme Court of the State recently gave the commission undisputed jurisdiction over railroad crossings, both within and without incorporated municipalities. This jurisdiction had been opposed by the Los Angeles city attorney, who claimed that while the commission had complete authority over union terminals in Los Angeles, it did not have control of grade crossings within that city.

The decision has eliminated the opposition and the commission has promptly laid plans for complete investigation of the demands which are being made for the consolidation of Los Angeles railroad terminals. The case carries with it both freight and passenger service, includes all steam roads entering Los Angeles, and the question of how crossings shall be protected throughout the city. The case is formally known as the complaint of the Municipal League, the Central Development Association and the Civic Center Association of Los Angeles, and the cities of Pasadena, Alhambra, San Gabriel and South Pasadena against the Southern Pacific, the Pacific Electric, the Santa Fé and the Salt Lake Railroads.

The applicants have asked the commission to require the railroad companies to build a union terminal, and to reconstruct their tracks running to and from the terminal so as to eliminate grade crossings, which are the cause of death and injury.

Dayton Strike Settled

The sixty-six striking motormen and conductors of the Dayton (Ohio) Street Railway returned to work on June 28, after a conference with W. A. Keyes, president of the company, and W. L. Smith, general manager, and Mark Crawford, representing the Department of Labor. Chris Cline, who organized the local branch of the union among the men, joined with the executive committee in recommending a settlement. The terms of the settlement were not made public, but it has been stated that the company agreed to meet and deal with committees appointed by the union in case of disagreements, without a formal recognition of the organization. Apparently both sides made concessions. The strike was called on June 16 after the company had refused to recognize the union and yield to some other demands.

Berkshire Strike Conference

A conference was held at Springfield, Mass., on July 2 between representatives of the employees of the Berkshire Street Railway and President L. S. Storrs regarding wage conditions. C. Q. Richmond, general manager of the company, was also in attendance. Union representatives have threatened a strike on this property unless the demands of the men now before the management are granted. The company has offered substantial increases and has asked for sufficient time to allow it to apply to the Public Service Commission of Massachusetts for an increase in fare. At the conference the hope was expressed that the company and the men might be able to come to terms without a strike. No statement was made as to the result of the conference, except that it was agreed among the parties that further consideration of the wage question would take place at Pittsfield later in the week through conference with Mr. Richmond.

Lake Shore Advances Wages.—Motormen and conductors on the Lake Shore Electric Railway, Cleveland, Ohio, have been granted a voluntary advance in wages of 2 cents an hour. The minimum has been advanced from 27 cents to 29 cents and the maximum from 33 cents to 35 cents. Other employees received a proportionate increase.

Franchise Approved in East Cleveland.—The City Council of East Cleveland, Ohio, has approved a twenty-five-year franchise to the Cleveland Railway with a rate of fare of 5 cents in cash or six tickets for a quarter for passengers traveling to and from Cleveland, and 3 cents within the limits of East Cleveland. The franchise will be submitted to a referendum vote on July 31, and if it is approved will become effective at once. The company is to pave its portion of the streets, extend the Superior Avenue line to Euclid Avenue and build a crosstown line.

Strike Settled in Steubenville.—Motormen and conductors reached an agreement with the Steubenville, Wellsburg & Weirton Railway, Steubenville, Ohio, on June 30, after having been on a strike for two weeks. They accepted an increase in wages of from 2 cents to 4 cents an hour, with a maximum of 34 cents an hour, although they had demanded 40 cents an hour. W. L. Chambers, federal mediator, spent some days in an endeavor to bring about a settlement, but left for Washington on June 28, after apparently exhausting all efforts. Cars were not operated during the strike.

Increase in Wages in Lexington.—An increase of 1½ cents an hour in wages paid the motormen and conductors of the city and interurban lines of the Kentucky Traction & Terminal Company, Lexington, Ky., became effective on July 1. The increase is the result of the operation of the co-operative plan agreed on a year ago between the company and its employees. Under this agreement a percentage of the gross earnings is placed in a fund from which the expense of maintenance and damage claims are paid and the balance distributed in increased wages to the men.

Municipal Railway Favored in Lincoln.—Citizens of Lincoln, Ill., have expressed themselves overwhelmingly in favor of a municipal street railway for the city. At a recent election a bond issue of $30,000 was voted, the proceeds of which will be used to purchase the old railway plant of the Lincoln Railway & Heating Company, which has been idle for a number of months, and to rehabilitate the same and place it in operation. The property lost money as a private venture and after disagreement with the Council of Lincoln the State Public Utilities Commission authorized the company to suspend operations.

Franchises Surrendered for Commission Permits.—The Louisville & Southern Indiana Traction Company, the Louisville & Northern Railway & Light Company, together with the United Gas & Electric Company, serving a number of communities in southern Indiana opposite Louisville, have served notice that they are surrendering city franchises in the towns in which they operate and will hereafter operate under direction of the Indiana Public Service Commission. The city railway service in New Albany and Jeffersonville will continue as at present and the county franchises will not be given up, for the time being.

Wage Conferences Continue in Rhode Island.—Conferences between representatives of the car men's union and officials of the Rhode Island Company, Providence, R. I., are continuing, almost every day, and a new agreement to take the place of the one which ended on May 30 is likely to result. The document submitted by the union is a lengthy one, and it is being argued section by section. A tentative schedule for the platform men has been reached by the conferees, who are now engaged in working out a new scale for the men in the mechanical departments. By mutual agreement the old contract remains in force until a new one is adopted. Any increase will date back to June 1.

Another New York Subway Connection Opened.—The Interborough Rapid Transit Company, New York, N. Y., on July 1 put in service the new West Farms subway connection between the Second and Third Avenue elevated railroads in the Bronx and the West Farms branch of the first subway. The connection extends through private property, Willis and Bergen Avenues, from 143d Street to the elevated portion of the subway. Actual operation began on July 2 under direction of the Public Service Commission for the First District when some twenty Second Avenue elevated express trains originating at Freeman Street were placed in service by this route. The new connection will relieve congestion at the 149th Street elevated station.

Increase in Pay in Denver.—Trainmen employed by the Denver (Col.) City Tramway have voted to accept the company's offer of an increase in wages of 3 cents an hour. About 900 men are affected by the raise in pay. The vote to accept the offer was taken at a meeting held on June 24. This offer was made by the company several weeks ago, along with an offer of a similar increase in all other departments. Employees in other branches accepted, but action was deferred by the trainmen. The decision to accept means that $102,000 will be added to the annual expense of the tramway. The Denver men have a brotherhood of their own. Some time ago the men, through the brotherhood, appointed a committee to confer with the officers of the company with respect to wages.

Increase in Wages in Tacoma.—The Tacoma Railway & Power Company, Tacoma, Wash., and the Pacific Traction Company, operated by Stone & Webster, under the supervision of the Puget Sound Traction, Light & Power Company, Seattle offices, announced that the following scale of wages would become effective on July 1 for the trainmen of these companies: Passenger and freight motormen and conductors, first six months, 26 cents an hour; second six months, 27 cents; second year, 28 cents; third, 29 cents; fourth, 30 cents; fifth, 31 cents, and sixth year and thereafter, 33 cents. Freight brakemen: 27 cents; one-man car operators, in addition to above scale, 2 cents; gripmen, in addition to above scale, 1 cent. The trainmen's wage scale which went into effect on June 1 was as follows: First year, 25 cents; second, 26 cents; third, 27 cents; fourth, 28 cents; fifth and sixth, 29 cents; seventh and thereafter, 31 cents. Additional amounts were granted for gripmen, student instructors and one-man car operators. The employees of the Tacoma Railway & Power Company and the Pacific Traction Company have received three increases in pay since Dec. 1, 1916. The second increase was granted on June 1, this year.

Financial and Corporate

Annual Reports

Lake Shore Electric Railway System

The comparative income statement of the Lake Shore Electric Railway System (comprising the Lake Shore Electric Railway, the Lorain Street Railroad, the Sandusky, Fremont & Southern Railway, the People's Light & Power Company, and the Bellevue Illuminating & Power Company) for the calendar years 1916 and 1915 follows:

	1916		1915	
	Amount	Per Cent	Amount	Per Cent
Gross income	$1,618,551	100.00	$1,387,143	100.00
Operating and taxes	1,022,712	63.20	898,136	64.70
Net	$595,839	36.80	$489,007	35.30
Interest paid	436,647	26.96	433,202	31.25
Surplus	$159,192	9.84	$55,804	4.05

According to the foregoing table, the gross income of the whole system in 1916 increased $231,408 or 16.6 per cent. The operating expenses and taxes rose $124,576 or 13.9 per cent, so that the net gained $106,832 or 21.8 per cent. Interest showed a slight increase, but the surplus for the year was almost tripled.

The gross earnings of the Lake Shore Electric Railway, the largest one in the system, increased $155,192 or 14.14 per cent in 1916, this comparing with a decrease of $23,286 or 2.07 per cent in 1915. In 1916 the passenger revenues rose $122,065 or 13.5 per cent, and the freight revenue $26,418 or 23.4 per cent. The operating expenses and taxes in 1916 increased $84,540 or 11.7 per cent. This company expended $63,694 out of the total of $72.113 for additions and improvements in 1916.

Miscellaneous statistics for the various parts of the system follow:

	1916	1915	Increase
LAKE SHORE ELECTRIC RAILWAY			
Operating ratio (per cent)	64.18	65.55	*1.37
Car-miles	3,518,305	3,361,869	156,436
Income per car-mile (cents)	35.59	32.63	2.96
Oper. and taxes per car-mile (cents)	22.84	21.39	1.45
Net earnings per car-mile (cents)	12.75	11.24	1.51
Passengers carried	5,768,899	5,210,750	558,149
Earnings per passenger (cents)	18.00	17.57	0.43
LORAIN STREET RAILROAD			
Operating ratio (per cent)	62.90	69.34	*6.44
Car-miles	676,683	559,678	117,005
Income per car mile (cents)	30.35	26.83	3.52
Oper. and taxes per mile (cents)	19.09	18.60	0 49
Net earnings per car mile (cents)	11.26	8.23	3.03
Passengers carried	3,563,829	2,543,530	1,020,299
Earnings per passenger (cents)	5.76	5.90	*0.14
SANDUSKY, FREMONT & SOUTHERN RAILWAY			
Operating ratio (per cent)	66.22	71.50	*5.28
Car-miles	237,849	229 781	8,068
Income per mile (cents)	39.00	33.37	5.63
Oper. and taxes per mile (cents)	25.81	23.86	1.95
Net earnings per car mile (cents)	13.19	9.51	3.68
Passengers carried	337,602	299,746	37,856
Earnings per passenger (cents)	25.54	24.29	1.25

*Decrease.

Honolulu Rapid Transit & Land Company

The outstanding feature of the operations of the Honolulu Rapid Transit & Land Company, Honolulu, T. H., for 1916 was the growth in traffic over the whole system. The passenger revenue increased from $575,583 in 1915 to $641,054 in 1916, an amount of $65,471 or 11.4 per cent. This was an increase of nearly $45,000 over the passenger revenue of any other year of operation. The freight revenue in 1916 rose from $9,350 to $13,440, and these increases with other slight changes made a total increase of $69,332 in the revenue from transportation. The gross revenue from operation at $669,981 showed an increase of $70,417 or 11.8 per cent.

The operating expense total for 1916 was $355,435, while that for 1915 was $372,411. Thus the expenses for the last year decreased $16,975 or 4.5 per cent. This decrease arose from decreases in maintenance of way and structures, traffic, and general and miscellaneous, with increases in the maintenance of equipment and conducting transportation. The net revenue from operation at $314,546 represented an increase of $87,392. This was cut somewhat by an increase of $30,268 in deductions, so that the net income for the year at $84,313 showed an increase of $57,124.

During 1916 there was expended on account of additions to plant the sum of $27,664. Various comparative statistical data follow:

	1916	1915
Average fare per revenue passenger	$0.0486	$0.0488
Average expenses per fare passenger	0.0264	0.0310
Revenue from transportation per car mile	0.3208	0.2955
Revenue from transportation per car hour	3.0230	2.7480
Operating revenue per car mile	0.3277	0.3020
Operating revenue per car hour	3.0870	2.8090
Operating expenses per car mile	0.1738	0.1876
Operating expenses per car hour	1.6380	1.7450

Washington Railway & Electric Company

The comparative income statement of the Washington Railway & Electric Company, Washington, D. C., and its subsidiaries for the calendar years 1915 and 1916 follows:

	1916		1915	
	Amount	Per Cent	Amount	Per Cent
Gross earnings from operation	$5,539,465	99.5	$5,191,627	99.6
Miscellaneous income	27,509	0.5	22,328	0.4
Gross income	$5,566,975	100.0	$5,213,955	100.0
Operating expenses (including taxes and depreciation)	3,280,486	58.9	3,009,071	57.7
Gross income less operating expenses	$2,286,489	41.1	$2,204,884	42.3
Fixed charges	1,194,035	21.5	1,187,997	22.8
Surplus income	$1,092,454	19.6	$1,016,887	19.5

The gross earnings from operation during 1916 showed an increase of $347,838 or 6.7 per cent, owing to the greater activity in the national capital. Miscellaneous income also increased, but the combined gain was cut to quite an extent by the advance of $271,414 or 9 per cent in operating expenses, taxes and depreciation. The expenditure for maintenance and depreciation in 1916 totaled $955.161, as compared to $921,939 in the year preceding. The fixed charges in 1916 showed a small increase, and the net result for the year was an increase of $75,567 or 7.4 per cent in the surplus income.

The expenditures for construction in 1916 amounted to $832,835, the largest sum since 1912. During the year the cars of the system traveled 11,013,409 miles and carried 90,035,285 passengers, of whom 21,489,744 were free transfer passengers. The average fare per revenue passenger was 4.2887 cents, and the average fare per passenger was 3.2397 cents. The last figure has remained practically constant for sixteen years, in spite of extensions, improvements and higher costs. It would seem that the time has come, the annual report says, when a spirit of fair dealing would suggest that a 5-cent fare is deserved if the system is to be maintained on a scale worthy of the capital.

Delaware & Hudson Electric Lines

The annual report of the Delaware & Hudson Company for the calendar year 1916 states that the revenues of the electric railways in which it is interested were somewhat better during 1916 than during 1915, but that they did not, on the whole, recover sufficiently to regain the level of 1914.

In comparison with 1915, the total operating revenues of the United Traction Company, Albany, N. Y., increased $79,346 in 1916, but were still lower by $55,292 than the total of 1914. The net operating income was $64,417 higher than in 1915, but $241,667 less than in 1914. It is said that the reduced net corporate income of this company (due to (a) the diminished use of its facilities by the public; (b) heavily increased operating expenses resulting from high wages and high prices of materials and supplies, and the reconstruction of equipment compelled by the Public Service Commission, and (c) greatly augmented taxation) has produced a condition which should not be permitted to continue. In speaking of the general strike during Oct. 2-4 in which the arbitration award sustained the company officials, the report states that the wages sacrificed by the employees amounted to about $4,616 and the direct cost of the strike to the company approximated $5,666.

Compared with 1915, the 1916 operating revenues of the Hudson Valley Railway, Glens Falls, N. Y., increased $60,955, and the increase over 1914 was $10,634. Operating expenses decreased $2,428 below 1915, but exceeded 1914 by $8,606. The net operating income, therefore, was $63,604 more than in 1915, and $839 more than in 1914. The 1916 operating revenues of the Plattsburg (N. Y.) Traction Company exceeded those of 1915 by $6,688 and those of 1914 by $4,712. The operating expenses amounted to $2,707 more than in 1915 and $2,462 more than in 1914, while the net operating income was $3,811 greater than in 1915 and $1,983 greater than in 1914. The 1916 operating revenues of the Troy & New England Railway, Troy, N. Y., increased $1,671 over 1915, but were still $889 less than in 1914. The operating expenses decreased $775 as compared with 1915, but exceeded those of 1914 by $4,644, so that the net operating income increased $2,274 over 1915, but fell $5,624 below those of 1914.

Consolidation Plan at East Liverpool

Application has been made to the Ohio Public Utilities Commission to consolidate the Steubenville & East Liverpool Railway & Light Company, the East Liverpool Traction & Light Company, and the Ohio River Passenger Railway, under the name of the Steubenville, East Liverpool & Beaver Valley Traction Company. The light plants in East Liverpool, Wellsville and Chester, W. Va., are to be sold to a new corporation, the Buckeye Power Company, for which authority is also asked in the application. Temporary directors of this company are B. J. Jones, F. A. Boutelle, A. G. Lee, Paul R. Bowles and J. B. McCullough. The properties are now operated under lease to the Ohio River Power Company. This, it is said, will be continued.

The new railway company will have a capital stock of $9,900,000, as compared with $14,000,000, the combined capital stocks of the old companies. It is also said that there will be a readjustment of the outstanding bonds. The consolidated lines connect Steubenville, Wellsville and East Liverpool, Ohio, and Midland, Pa. The company will also operate the bridge across the Ohio River at East Liverpool.

C., D. & M. Reorganized

Statement of Capitalization of Successor Company—New Securities Approved by the Ohio Public Utilities Commission

The sale of the Columbus, Delaware & Marion Railway to the Columbus, Delaware & Marion Electric Company was confirmed by Judge E. B. Kinkead at Columbus, Ohio, on June 28. The property was purchased at receiver's sale for the new company on June 11 by Ralph H. Beaton for $417,494, subject to the certain mortgages and other claims.

The new company will have outstanding issues: $1,900,000 of 5 per cent bonds; $650,000 of 7 per cent preferred stock and $700,000 of common stock. The bonded debt of $1,900,000 will include $1,533,000 of underlying bonds and $367,000 of first and refunding mortgage bonds of the new company. The reduction in the capitalization of the new company as compared with the old is $2,203,000. All of the new securities, including the common stock, have been approved by the Ohio Public Utilities Commission. The total authorized issue of preferred and common stocks is $1,000,000 each.

Eli M. West, who served as receiver of the old company, will be president and general manager of the new company. Among the directors will be Mr. West, H. J. Catrow, Miamisburg, Ohio; Earl Turner, Dayton, Ohio, and J. J. Bodell and L. C. Gerry, both of Bodell & Company, Providence, R. I.

The Columbus, Delaware & Marion Electric Company operates 60 miles of standard gage electric railway connecting Columbus, Worthington, Delaware, Prospect, Radnor and Marion and also operates the city railway service in Marion and Delaware. In addition it furnishes electric light and power in the city of Marion and energy to the Prospect Electric Light & Power Company and the Columbus, Marion & Bucyrus Railroad. It owns Glenmary Park and its railway lines serve Olentangy Park in North Columbus.

C., D. & T. Property Sold

The property of the Cincinnati, Dayton & Toledo Traction Company was sold at receiver's sale in Cincinnati, Ohio, on June 30 to the bondholders' protective committee at the upset price of $400,000, subject to the underlying bonds. The property was appraised at $2,900,000 and was ordered sold by the Common Pleas Court at a price not less than two-thirds the difference between the appraisement and the equity of the underlying bonds, amounting to $2,300,000. The difference was $600,000, so the price received was exactly the minimum amount. The bondholders' protective committee, which represented about $2,500,000 of the $2,700,000 of consolidated mortgage bonds of the Cincinnati, Dayton & Toledo Traction Company, consists of James M. Hutton, Cincinnati, chairman; Otto Armleder, Leo J. Van Lahr, Edgar Friedlander and Claude Ashbrook.

For some time the road has been operated by the Ohio Electric Railway in connection with its properties. When the sale has been approved it is probable that the committee will endeavor to make some arrangement by which this connection can be continued. If this cannot be done, a new company may be organized to operate it. The line extends from Spring Grove Avenue, Cincinnati, to Dayton, with a branch between Miamisburg and Germantown.

Securities' Association Officers

S. Davies Warfield, President—Several Electric Railway Men on Executive Committee

The officers and executive committee of the National Association of Owners of Railroad Securities, organized on May 23, at a conference held in Baltimore, for the purpose of stabilizing the securities of the carriers by maintaining their credit, were announced on June 30, as follows:

President, S. Davies Warfield; vice-president, Eastern district, Forrest F. Dryden, president Prudential Insurance Company of America; Southern district, T. K. Glenn, president Atlantic Steel Company and a director of the Georgia Railway & Power Company; Central district, John J. Mitchell, president Illinois Trust & Savings Bank; Western district, Charles C. Moore of Charles C. Moore & Company, Inc., engineers, and president Panama-Pacific International Exposition; Southwestern district, I. H. Kempner, president Texas Bank & Trust Company; treasurer, J. Hough Cottman of J. H. Cottman & Company, Baltimore, Md.

Executive committee: S. Davies Warfield, chairman; Charles F. Adams, Boston, Mass.; John T. Baxter, Minneapolis, Minn.; Louis F. Butler, Hartford, Conn.; James E. Caldwell, Nashville, Tenn.; Walter F. Coachman, Jacksonville, Fla.; David R. Coker, Hartsville, S. C.; F. H. Ecker, New York, N. Y.; Crawford H. Ellis, New Orleans, La.; Jacob Epstein, Baltimore, Md.; Henry Evans, New York, N. Y.; William M. Hayden, Baltimore, Md.; Robert Jemison, Sr., Birmingham, Ala.; George K. Johnson, Philadelphia, Pa.; F. J. Kell, Wichita Falls, Tex.; Darwin P. Kingsley, New York, N. Y.; Harold Kountze, Denver, Col.; George C. Markham, Milwaukee, Wis.; Henry A. Page, Aberdeen, N. C.; Walter J. Raymer, Chicago, Ill.; Henry A. Schenck, New York, N. Y.; Henry T. Scott, San Francisco, Cal.; A. L. Shapleigh, St. Louis, Mo.; John G. Walker, Richmond, Va.; Clarence W. Watson, Fairmont, W. Va.; John F. Wilkins, Washington, D. C.; Ernest Woodruff, Atlanta, Ga.; Clifford B. Wright, Cincinnati, Ohio.

Mr. Shapleigh, St. Louis, is a director of the United Railways of that city, and C. W. Watson, Fairmont, W. Va., is a director of the Monongahela Valley Traction Company.

Chicago City & Connecting Railway, Chicago, Ill.—A semi-annual dividend of $1.50 a share has been declared on the preferred participation certificates of the Chicago City & Connecting Railway, payable on July 1 to holders of record of June 23. This compares with $2.25 a share paid in January last.

Cleveland (Ohio) Railway.—The statement of operation of the Cleveland Railway for May shows a net surplus of $30,794, which goes to the interest fund, making a balance of $466,881 in the interest fund on June 1. There was a deficit of $26,369 in the operating fund due to an increase of 1 cent an hour in the wages of the men on May 1. A surplus of $6,974 in the maintenance fund reduced the maintenance deficit to $19,394. Accident claims cost the company $49,538 as compared with $34,961 for the corresponding month in 1916. The total number of riders for May was 34,409,231, an increase of 7.51 per cent over May last year. The total number of car-miles was 3,092,311, an increase of 7.31 per cent over the corresponding month of 1916.

Duluth-Superior Traction Company, Duluth, Minn.—The Duluth Street Railway, controlled by the Duluth-Superior Traction Company, has purchased the plant and 3-mile line of the Park Point Traction Company on Park Point, which is separated from the rest of the city by the ship canal. The deal was closed at a conference between A. M. Robertson, president of the Duluth Street Railway, and Robert R. Dunn, president of the Park Point Traction Company, in Duluth on June 26. President Robertson announced that his company would take over the operation of the line on July 1 and that a 5-cent fare with free transfer privileges to and from Park Point would go into effect on Sept. 1. The transfer privilege now costs 2 cents in addition to the 5-cent fare. The Park Point line cost $145,475 and there are outstanding $100,000 worth of income bonds and $14,000 worth of mortgage bonds issued in 1913. Mr. Dunn, the president, owned the controlling interest in the company. In 1916 the road was operated at a loss of $48.87.

Jefferson County Traction Company, Beaumont, Tex.—The City Commission of Port Arthur, Tex., has ordered an election to be held on July 10, at which the voters will pass on the franchise sought by the Jefferson County Traction Company, authorizing it to merge its properties with those of the Beaumont Traction Company and Beaumont Electric Light & Power Company, all controlled by the Eastern Texas Electric Company. The merger would simplify intercorporate relations.

Ohio Electric Railway, Cincinnati, Ohio.—The application of the Ohio Electric Railway for authority to issue $100,000 of equipment notes has been approved by the Public Utilities Commission. The company will purchase four motor express cars, sixteen flat trail cars and sixteen box trail cars at a cost of $130,000, the additional $30,000 being paid from the funds in the company's treasury.

Orleans-Kenner Electric Railway, New Orleans, La.—Application has been made for the appointment of a receiver for the Orleans-Kenner Electric Railway by J. D. Purcell, trustee, representing certain of the security holders. The indebtedness of the company to Bertron, Griscom & Company and the plans for local interests through which the road operates to take it over have been referred to in recent issues of the ELECTRIC RAILWAY JOURNAL. In referring to the receivership application the New Orleans *Item* said: "The receivership proceedings are apparently of a friendly nature, and intended to clear up the interurban's difficulties so that a sound method of financing the company may be instituted. Harry K. Johnson, promoter of the road, and Mr. Purcell are the chief owners of the bond issue of $250,000, the greater part of which stands pledged to Bertron, Griscom & Company, New York, for money advanced."

Rochester, Syracuse & Eastern Railroad, Syracuse, N. Y.—The plan of reorganization of the Rochester, Syracuse & Eastern Railroad dated May 18, 1917, prepared by the protective committee representing the holders of the first mortgage bonds, of which committee Arthur W. Loasby is chairman, was declared operative on June 21. A review of the terms of the proposed reorganization was published in the ELECTRIC RAILWAY JOURNAL of May 26, page 977.

Western Ohio Railway, Lima, Ohio.—Because of the expenditure of a considerable sum in the development of its light and power business and the great increase in the cost of fuel during the past six months, the holders of first preferred stock of the Western Ohio Railway were notified recently that the July dividend would be omitted. For the twelve months ended May 31, 1917, the company states that $74,713 remained after the payment of expenses, taxes and interest. This exceeds by a substantial amount the sum required to pay dividends on the first preferred stock. The capital expenditure in power development, however, was $34,336 this year compared with $7,166 last year, but the output of energy increased 18½ per cent. The cost of fuel increased $48,943 or 108 per cent.

Dividends Declared

Athens Railway & Electric Company, Athens, Ga., quarterly, 1¼ per cent, preferred.

Cleveland & Eastern Traction Company, Cleveland, Ohio, quarterly, 1 per cent, preferred.

Columbia Railway, Gas & Electric Company, Columbia, S. C., quarterly, 1½ per cent, preferred.

Columbus, Newark & Zanesville Electric Railway, Springfield, Ohio, quarterly, 1½ per cent, preferred.

Georgia Railway & Power Company, Atlanta, Ga., 2¾ per cent, first preferred.

Monongahela Valley Traction Company, Fairmont, W. Va., 83⅓ cents, preferred; quarterly, 1¼ per cent, common; 1¼ per cent, common, extra.

Montreal (Que.) Tramways, quarterly, 2½ per cent.

National Properties Company, Philadelphia, Pa., 3 per cent, preferred; 2 per cent, common.

Northern Ohio Traction & Light Company, Akron, Ohio, quarterly, 1½ per cent, preferred.

Omaha & Council Bluffs Street Railway, Omaha, Neb., quarterly, 1¼ per cent, preferred; quarterly, 1 per cent, common.

Pine Bluff (Ark.) Company, quarterly, 1¾ per cent, preferred.

Rome Railway & Electric Company, Rome, Ga., quarterly, 1 per cent, common.

South Carolina Light, Power & Railways Company, Spartanburg, S. C., quarterly, 1½ per cent, preferred.

Springfield & Xenia Railway, Springfield, Ohio, quarterly, 1½ per cent, preferred.

United Gas & Electric Corporation, New York, N. Y., quarterly, 1¾ per cent, first preferred.

United Railways & Electric Company, Baltimore, Md., quarterly, 50 cents, common.

Virginia Railway & Power Company, Richmond, Va., 3 per cent, preferred.

West Penn Power Company, Pittsburgh, Pa., quarterly, 1¾ per cent, preferred.

York (Pa.) Railways, quarterly, 62½ cents, preferred.

Youngstown & Ohio River Railway, Leetonia, Ohio, quarterly, 1¼ per cent, preferred.

Electric Railway Monthly Earnings

ATLANTIC SHORE RAILWAY, SANFORD, ME.

Period		Operating Revenue	Operating Expenses	Operating Income	Fixed Charges	Net Income
1m., May,	'17	$14,885	$12,938	$1,947	$431	$1,516
1 " "	'16	11,194	10,932	262	220	42

HUDSON & MANHATTAN RAILROAD, NEW YORK, N. Y.

1m., May,	'17	$523,146	*$255,109	$268,037	$216,801	$51,236
1 " "	'16	502,544	*222,629	279,915	219,395	60,520
5 " "	'17	2,630,660	*1,209,886	1,420,774	1,085,980	334,794
5 " "	'16	2,484,255	*1,080,135	1,404,120	1,073,376	330,744

NORTHERN OHIO TRACTION & LIGHT COMPANY, AKRON, OHIO

1m., May,	'17	$532,732	$325,646	$207,086	$84,424	$122,662
1 " "	'16	422,045	210,220	211,825	95,624	116,201
5 " "	'17	2,553,061	1,543,114	1,009,947	413,783	596,164
5 " "	'16	1,940,627	936,939	1,003,688	484,609	519,079

PHILADELPHIA & WESTERN RAILWAY, UPPER DARBY, PA.

1 m., May,	'17	$47,777	$23,519	$24,258	$12,527	$11,731
1 " "	'16	46,011	21,403	24,608	12,528	12,080
12 " "	'17	531,371	259,117	272,254	150,476	121,778
12 " "	'16	485,774	232,261	253,513	149,143	104,370

PORTLAND RAILWAY, LIGHT & POWER COMPANY, PORTLAND, ORE.

1 m., Apr.,	'17	$473,358	*$260,594	$212,764	$183,824	$28,940
1 " "	'16	447,967	*250,968	196,999	181,537	15,462
12 " "	'17	5,617,994	*3,048,517	2,569,477	2,182,930	386,547
12 " "	'16	5,458,798	*3,065,985	2,392,813	2,203,132	189,681

TWIN CITY RAPID TRANSIT COMPANY, MINNEAPOLIS, MINN.

1m., May,	'17	$841,764	$531,928	$309,836	$149,942	$159,894
1 " "	'16	849,056	515,264	333,792	145,206	188,586
5 " "	'17	4,322,748	2,865,833	1,456,915	730,414	726,501
5 " "	'16	4,156,224	2,631,142	1,525,082	713,387	811,695

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*Includes taxes.

Traffic and Transportation

New York State Fare Hearing

Up-State Commission Discusses Procedure in Case of Twenty-eight Electric Railways Asking an Increase to 6-Cent Fare

The applications of twenty-eight electric railways of New York State, outside of New York City, for an increase in fare from 5 cents to 6 cents were taken up on July 6 by the Public Service Commission for the Second District. The first hearing was devoted to discussion regarding procedure. In opening the railways' case, Joseph K. Choate, chairman of the New York Electric Railway Association special committee on ways and means to obtain additional revenue, outlined the general financial troubles confronting the carriers. He then made the following proposal:

"We ask the commission to set down several days for the consideration of general questions. We ask that the commission set down three consecutive days in each of two weeks, at which time we will introduce proof relating to the rising costs of materials and labor; the effect of these increased costs upon operating expenses; the shrinkage in the purchasing power of a nickel; the decline in the net returns of these properties to their security holders; the gradual and serious impairment of the margin of safety for their bonds; the consequent increasing unattractiveness of electric railway securities to investors, and the extent to which the companies have failed to show an adequate return after making proper provision for maintenance, depreciation, surplus and contingencies.

"We propose to show further by affirmative proof that a 6-cent fare will increase the revenues of these companies, by introducing testimony as to the volume of traffic and the operating revenues of properties in other parts of the country where 6-cent fares have been allowed and charged.

"After this testimony has been submitted, we propose that each company shall, in such order as the commission may determine, present proof relating to its particular case; the financial results which it has achieved from operation; the return which has been secured upon the capital actually invested in the public service; the extent of the deficiency in its return, and the estimated earnings which would be produced with the proposed 6-cent fares."

New York Passes Welsh Bill

New Highway Traffic Law Is Very General in Its Application and Provides for Its Enforcement

One of the most important bills affecting street traffic, known as the Welsh bill, was passed recently by the New York Legislature and became effective on receiving the Governor's signature. It was the uniform traffic regulation act, proposed by the New York State Conference of Mayors and introduced in the Legislature by Assemblyman Clarence F. Welsh of Albany. The law is to be known as the general highway traffic law. It defines reckless driving as "driving or using a vehicle or street surface car or any appliance or accessory thereof in such a manner that it unnecessarily interferes with the free and proper ues of the highway or unnecessarily endangers users of the highway." The bill does not apply to the city of New York.

One of the provisions of the new law is that prohibiting automobiles from passing closer than 7 ft. from an electric railway car when passengers are alighting from or boarding the car. The police of Albany recently tried to enforce a similar provision of a city ordinance, but the automobile men fought the case in court and won out.

The law provides that during blockades a clear space of 10 ft. shall be maintained between street cars opposite any alley or the middle of the block if there be no alley. Subject to certain provisions pertaining to privileges of emergency and official vehicles, and except by order of a traffic officer, street cars shall have the right of way between cross streets over all other vehicles. Every electric railway car, by a signal approved by the Public Service Commission, shall warn all traffic in its rear of an intended stop or turning of the car. The driver of any vehicle proceeding upon the tracks in front of the car shall turn out as soon as possible upon signal of the motorman. The section of the law dealing with speed regulations specifies that electric railway cars shall be brought to a full stop and all other vehicles shall use extreme caution when approaching a crossing or place designated by signs as a traffic point. Local authorities are vested with power to designate by ordinance, rule or regulation the places at which such signs shall be placed.

The major portion of the law deals with regulation of motor vehicles in respect to right-of-way, signals, speed, safety zones, cab stands, and loading and unloading. When walking on the travel part of the streets and when meeting or passing vehicles, pedestrians shall obey the rules governing vehicles except as to signals.

Power is given to local authorities in cities to make, enforce and maintain reasonable ordinances and regulations governing traffic which the particular conditions make necessary. The law specifically states that it will be the duty of the members of the police department of every town or city to enforce the law strictly and impartially. The penalty for violating any provision is a fine not to exceed $10 for the first offense and not more than $25 for the second offense, or imprisonment for not less than two nor more than fifteen days. The third or any subsequent offense within one year shall be a misdemeanor and upon conviction may be punished by a fine not exceeding $100 or imprisonment not to exceed six months or both.

Duluth Fare Case Settled

In consideration of the withdrawal of legal proceedings against the Duluth (Minn.) Street Railway to test the validity of the 10-cent fare charged for rides between Duluth proper and its western suburb, Morgan Park, the company has agreed to put a 5-cent fare into effect after Jan. 1, 1918, on all of its lines in the city with universal transfer privileges. The City Council on June 18 agreed to drop condemnation proceedings against the property, and the company consented immediately to construct the New Duluth extension of its Morgan Park line and to put the 5-cent fare, with universal transfers, into effect on Jan. 1, 1920, or sooner if the war ended. The compromise reached on June 18 was reviewed on page 1157 of the ELECTRIC RAILWAY JOURNAL for June 23. On July 2, when the company announced that it would put the 5-cent fare into effect next January, instead of two years later, the litigation was dismissed. A. M. Robertson, president of the company, in a statement made before the City Council said:

"The concessions which the company is making to meet the demands of the public are costly and the city officials should consider carefully any further requests for extensions, particularly at this time when the prices of material and labor are so high."

More Skip Stops in Detroit

The Detroit (Mich.) United Railway on July 1 placed the skip-stop method of operation into effect on its Fort line. The company's weekly publication, *Electric Railway Service*, says that this form of express service on the Woodward and Jefferson Avenue lines, where it has been in operation for several months, is no longer an experiment and that the patrons on those lines, having become accustomed to the new method, would not change back to the old system. The poles along the Fort line have been painted to indicate the "car stop" corners, and measures have been taken to inform the patrons of the change, so that they may be inconvenienced as little as possible while the new system is being introduced. The skip stop on this line has been authorized for trial for a period of thirty days, and the company sees no reason why it will not prove satisfactory. The City Council has also authorized skip-stop operation on the Hamilton line, for which the stops are now being selected by the traffic bureau of the police department, and it is hoped to put it into effect about July 8.

Fares Raised to 7 Cents.—The Cumberland Railway, which connects Carlisle with Mount Holly and Newville, Pa., has increased its fare from 5 cents to 7 cents.

Mobile Cab Drivers Must Have Bonds.—As the result of the murder of a woman passenger by a taxicab driver, the city of Mobile, Ala., has passed an ordinance requiring all drivers of cabs, taxicabs, etc., to be bonded to the extent of $500.

Uniform Signal System Recommended.—At a recent discussion at Wheeling, W. Va., on the causes of accidents an official of the Baltimore & Ohio Railroad suggested the use of uniform signals by electric and steam railroads. Trainmen could thereby readily understand each other, which is highly desirable in cases of emergency.

Lighter Uniforms for Portland Men.—For the first time in its history the city of Portland, Ore., is presenting "shirtwaist" men as electric car conductors and motormen. The carmen of the Portland Railway, Light & Power Company have received permission to wear blue chambray shirts and light-weight blue trousers during the hot weather.

Lehigh Valley Has Not Asked Increase.—Contrary to recent reports in the press that the Lehigh Valley Transit Company, Allentown, Pa., had petitioned the Public Service Commission for permission to increase its fare from Allentown to Bethlehem from 10 cents to 15 cents, the company has no case pending, according to a statement by H. R. Fehr, president and general manager.

Middlesex & Boston Hearing Continued.—The second hearing on the petition of the Middlesex & Boston Street Railway, Newtonville, Mass., for authority to increase its fares was held on June 25, the day that the proposed increases were to go into effect. No decision was reached, and it is expected that several more hearings will be held. The commission has ordered that the effective date of the increase be postponed to Sept. 1.

Skip Stop Agitated in Richmond.—About 2500 people signed a petition which was presented to the Virginia Railway & Power Company, Richmond, asking that skip-stop operation be tried on Main Street. The petition was put before the City Council, but as yet has not received favorable consideration. Officials of the company say they are willing to give the plan a trial and, if it proves satisfactory, to put the skip stop in effect on all lines running into the suburbs.

Ohio Coal Business Increases.—Owing to the great demand for coal, the Hocking-Sunday Creek Traction Company of Athens, Ohio, has been engaged rather extensively in the transportation of that commodity and is preparing to increase its business. Ten mines have been opened along the line and the company is engaged in hauling the output to the steam railroads. Two additional cars were purchased recently to carry coal exclusively.

Louisville Papers Encourage Traffic Rule.—The papers of Louisville, Ky., are supporting editorially the recommendation of a committee of the Louisville Board of Trade that pedestrians on the downtown streets be required to cross streets only at established crossing places. One editorial states that "to forbid pedestrians to cross the crowded streets willy-nilly would not be a greater interference with individual liberty than their use of the streets is to drivers of vehicles."

Publicity Talks in Pamphlet Form.—The Union Electric Light & Power Company, St. Louis, Mo., which like the United Railways of St. Louis is controlled by the North American Company, has issued in pamphlet form a series of publicity talks which have appeared in the local papers in 1917. The statements were written by Frank Putnam. They deal in an interesting, frank way with rates, service, capitalization and other important phases of utility operation in which the public is interested.

School for Motormen and Conductors.—Thomas C. Moore, for many years a motorman and conductor on the local line of the Mahoning Valley Railway at Youngstown, Ohio, has been placed at the head of a school of efficiency for new men. Heretofore the new men were instructed by older employees, but in the future Mr. Moore will give them a thorough course of instruction before they are sent out on the road. He will then teach them the practical part of the work and remain with them until they are proficient.

Inducing Discussions of Carelessness.—The following paragraph is printed on the time-table folders of the Arkansas Valley Interurban Railway, Wichita, Kan.: "The management of the A. V. I. Railway requests the passengers on its trains to observe instances of reckless automobile driving near grade crossings, and when they get home to comment upon the instance at the family dinner table. In so doing they may save a life as effectually as the recipient of a Carnegie hero medal."

Misuse of Transfers Results in Fine.—Three residents of Cambridge, Mass., pleaded guilty on June 22 in the Cambridge District Court when charged with the improper use of transfer checks at the Central Square station of the Cambridge subway, a part of the Boston Elevated Railway. Each was fined $10. The defendants were William P. Clough, Charles E. Linton and Louis Kennon. One paid his fare with an old transfer check, another used a transfer check issued to him for a return ride, and the third used a check that had not been issued to him but had been obtained outside the station.

Car Crews to Report Speeding Autoists.—Thomas Lees, general superintendent of the Bay State Street Railway has issued an order to the employees calling to their attention the provisions of the law which prohibits automobile drivers from passing electric railway cars in a manner to jeopardize the safety of passengers while they are boarding or alighting. The law states that at such times a motor vehicle shall not approach within 8 ft. of the car except at points designated as safety zones or at the direction of a traffic officer. The conductors and motormen will report the license number of violators to the superintendent and he will make complaint to the police.

Military Order Contested.—In accordance with the military order respecting railroad trains on bridges across navigable streams, the windows of the Louisville-Jeffersonville and the Louisville-New Albany interurban cars are closed at the approaches to the bridges over the Ohio River. Passengers open them after the bridge is crossed. Since the middle of June, on account of higher temperatures and specially heavy traffic, passengers have made vigorous complaints. The same order is preventing the companies from using the open trailers heretofore used in the summer. Efforts have been made by officials of the Louisville & Southern Indiana Traction Company to obtain a withdrawal of the order, but thus far without success.

Mileage System of Fares Adopted.—The Western New York & Pennsylvania Traction Company, Olean, N. Y., has prepared a new schedule of rates which will become effective on July 18. The change is from the zone system of fare, now in use on all the company's interurban lines, to the straight mileage system. The rate per mile has been fixed at 3 cents, with a minimum charge of 6 cents. Commutation tickets will be sold as at present for rides between important points, and, in addition, regular 500-mile and 1000-mile mileage books will be sold at 2¾ cents per mile, good on all divisions for one year from date of purchase. The former fare charged was 7 cents. The company does not consider the change to be a rate increase since the new schedule will mean a decreased charge to many patrons. The cash fare registers used heretofore will also be eliminated and cash fare receipts adopted instead.

Free Service to Soldiers a Burden.—A. E. Potter, president of the Rhode Island Company, Providence, R. I., recently sent to Secretary of State Parker the company's reply to a resolution passed at the last session of the General Assembly requesting the company to give free transportation to the soldiers and sailors of the United States and the National Guard, while on duty. Mr. Potter wrote that the company was now carrying passengers at a loss; that the property was being operated at a loss, and that the deficit for four months of this year was $144,695. He said that in April of this year a deficit of $100,000 was shown. Mr. Potter also said that in other states no similar request was made, and that in Massachusetts the State paid the fares of its soldiers. Although there are but few troops in service in Rhode Island now, no doubt later there will be thousands, and to give free transportation to all these men would involve a very heavy expense. He said that the directors of the road had voted upon the question, and saw no reason why the company should furnish such service free.

Personal Mention

A. D. Mackie has been elected a vice-president of the Springfield (Ill.) Consolidated Railway.

S. W. Hatfield has been appointed claim agent of the Macon Railway & Light Company, Macon, Ga., succeeding M. L. Corbett.

Patrick J. Lucey, Chicago, formerly attorney-general of Illinois, has been named a member of the Public Utilities Commission of that State by Governor Lowden.

Duffy Bolls has been appointed chief lineman for the Cincinnati, Milford & Loveland Traction Company with headquarters at Milford, Ohio, to succeed Edward Lawler.

F. P. Gutelius has been elected vice-president of the Schenectady (N. Y.) Railway to succeed C. S. Sims. Mr. Gutelius has succeeded Mr. Sims also as vice-president of the Delaware & Hudson Company at Albany, N. Y.

H. L. Doherty of H. L. Doherty & Company, New York. who has been vice-president of the Cumberland & Westernport Electric Railway, Cumberland, Md., has been elected president of the company to succeed Ferdinand Williams.

M. G. Stratton of Sanderson & Porter, engineers, New York, has been appointed general manager of the Shore Line Electric Railway, Norwich, Conn., effective July 1. Mr. Stratton succeeds W. C. Callaghan of the J. G. White Management Corporation, which had charge of the operation of the road during the past year.

Howard A. Holmes has returned to the Mahoning & Shenango Railway & Light Company, Youngstown, Ohio, as assistant electrical engineer. Mr. Holmes was formerly connected with that company in various capacities until about eight years ago. He was employed at the aeronautic station of the Pensacola navy yard before returning to Youngstown.

J. B. Shickel has been appointed superintendent and electrical engineer for the Menominee & Marinette Light & Traction Company, Menominee, Mich., to succeed J. C. Sprong. Mr. Shickel was graduated from Rose Polytechnic Institute, Terre Haute, Ind., in the year 1907. Since that time he has been with the General Electric Company at Schenectady, N. Y., first in the testing department and later in the special engineering and sales departments.

H. J. MacDonald, purchasing agent and storekeeper for the Spokane & Inland Empire Railroad, has resigned to accept the position of supply agent for the Copper River & Northwestern Railway at Kennecott, Alaska. Mr. MacDonald has been connected with the Spokane & Inland Empire for two and one-half years. Prior to that time he was employed in the purchasing departments of the Spokane, Portland & Seattle Railway and the Great Northern Railway. He will be succeeded at Spokane by E. E. Pike of the Oregon Electric Railway.

Gresham Thomas, for the last six years chief clerk in the purchasing department of the Georgia Railway & Power Company, Atlanta, Ga., resigned July 1 to become buyer for the Mill Power Company with headquarters at Charlotte, N. C. Mr. Thomas was employed as a wireman seventeen years ago by Ford, Bacon & Davis, engineers, who had charge of construction work on the Atlanta property. After two years in this work he was made clerk in the company storeroom and later served as storekeeper for several years. In his new position Mr. Thomas will have charge of the purchases, through the Mill Power Company, for the Southern Power Company and allied companies.

W. O. Morgan, New York, has been elected vice-president of the Buffalo, Lockport & Rochester Railway, Rochester, N. Y., to succeed F. A. Dudley. Mr. Morgan has been connected with electric railways for many years, during most of which time he was vice-president of the Sheboygan Railway & Electric Company, Sheboygan, Wis. He was also for a time an officer of the Greensboro (N. C.) Electric Company. Mr. Morgan was associated with Ernest Gonzenbach in handling finances and legal matters in connection with properties under the management of Mr. Gonzenbach and served with the latter when he was president of the Sheboygan Railway & Electric Company. Later, when Mr. Gonzenbach became manager of the Empire United Railways, Inc., Syracuse, N. Y., Mr. Morgan was made vice-president of the company. Mr. Morgan has contributed articles to the technical press, among which was a summary of the Public Utility Law of the State of Wisconsin.

B. W. DUNCAN

B. Waller Duncan, general manager of the Cumberland & Westernport Electric Railway, Cumberland, Md., in addition to his other duties has been elected vice-president of the company succeeding H. L. Doherty. Mr. Duncan is a native of Missouri After he completed his education at one of the State normal schools he began railway work with the St. Joseph Railway, Light, Heat & Power Company operated by H. L. Doherty & Company and has been with the Doherty organization almost continuously since that time. He worked for seven years as a conductor, beginning under J. H. Van Brunt, who was at that time superintendent. Several promotions placed him in the position of trainmaster, which he held for four years and then resigned from railway service, but later returned to the St. Joseph Company. He accepted a position in a carhouse to add to his experience and in 1913 was recommended by Mr. Van Brunt, who had become general manager of all the Doherty properties in St. Joseph, for the position of superintendent of the City Light & Traction Company at Sedalia, Mo. The next step in his upward climb was made two years later when he became general manager of the Cumberland & Westernport Electric Railway, the position he still holds.

Obituary

John A. Lafferty, division superintendent of the Nashville Railway & Light Company, Nashville, Tenn., died recently at the age of fifty-three. Mr. Lafferty had been in the service of that company for twenty-seven years. He started as a motorman, but rose quickly to the position of division superintendent, which he held at the time of his death.

C. G. Abercrombie, a prominent citizen of Montgomery, Ala., died recently from a stroke of apoplexy. Mr. Abercrombie was the organizer and president of the Alabama Traction Company, which was formed several years ago, but has not yet completed its development work.

H. O. Dwight, organizer and first general manager of the Northampton (Mass.) Street Railway, died recently in Roselle, N. J. Mr. Dwight served in the Civil War and was on Sherman's march to the sea. From 1868 to 1900 he was treasurer of a missionary society, with headquarters at Constantinople. Among his most notable accomplishments was the translation of French-Turkish and English-Turkish dictionaries. For some years before his death he was secretary of the American Bible Society.

James W. Crawford, supervisor of claims of the Philadelphia (Pa.) Rapid Transit Company, died at Atlantic City on June 25. Mr. Crawford had been identified with electric railway claim department work for nearly twenty years. He began his career in this field as clerk in the claim department of the Milwaukee (Wis.) Electric Railway in 1898. In 1902 he was made claims agent of the International Railway, Buffalo, N. Y., and later was appointed comptroller and secretary of the company in charge of claims and accounting. In 1908 he resigned to become claims agent for the Chicago City Railway, where he remained until 1912, when he accepted the position of supervisor of claims of the Philadelphia Rapid Transit Company. Mr. Crawford had, in a rare degree, all of the qualifications essential to success in his chosen field. He was born in Maine in 1871 and spent his boyhood days in Minneapolis, Minn.

Construction News

Construction News Notes are classified under each heading alphabetically by States.

An asterisk (*) indicates a project not previously reported.

RECENT INCORPORATIONS

***Southwestern Utilities Company, Alva, Okla.**—Incorporated in Oklahoma to own, maintain and operate street railway and lighting properties in numerous Oklahoma cities and towns. Headquarters, Alva. Capital stock, $500,000. Incorporators: Albert Emanuel, president of the Kansas Electric Utilities Company, Dayton, Ohio, and Noel R. Cascho and W. A. Parr, Alva, Okla.

FRANCHISES

Los Angeles, Cal.—The Railroad Commission of California has authorized the Pacific Electric Railway and the Southern Pacific Company to build and use jointly connecting tracks at Baldwin Park.

Canton, Ohio.—The Northern Ohio Traction & Light Company has accepted the city's franchise on Belden Avenue S. E. to Eighth Street and Belden Avenue N. E.. to the Eighth Street corporation line N. E., and work on the extension will be begun as soon as possible.

Cleveland Heights, Ohio.—The Cleveland Railway accepted the franchise granted it by the City Council of Cleveland Heights on June 28. The present line on Cedar Road is to be extended to Lee Road, while the extension from Coventry Road to Lee Road must be completed within five years. A portion of the extension work will be done this year.

Northampton Heights, Pa.—The Easton Transit Company has received a franchise from the Town Council of Northampton Heights to operate its cars on and over the tracks of the Lehigh Valley Transit Company on Hellertown Road from the Fourth Street bridge to the western borough line of Northampton Heights.

Northampton Heights, Pa.—The Lehigh Valley Transit Company has received a franchise from the Town Council of Northampton Heights to operate its cars on and over the tracks of the Easton Transit Company on Fourth Street, from the western borough line of Northampton Heights to the east end of the Fourth Street bridge. The company has also received a franchise to construct a second track on Fourth Street from Bessemer Street to the division line between the Borough of Northampton Heights and the Township of Lower Saucou.

Dallas, Tex.—The Dallas Northwestern Traction Company and the Dallas Southwestern Traction Company have asked the City Commission for an extension of three months' time on their franchises, agreeing to begin actual construction work on their proposed lines from Dallas to Slidell and from Dallas to Cleburne within this time. The companies propose that in lieu of the extension of the franchises for a period of three months, they would assume responsibility for any damage that might result from the construction of a viaduct across the Trinity River near Commerce Street. The companies asked this agreement instead of that originally planned, whereby they would deed to the city 14 ft. of the street where the viaduct was to be built. E. P. Turner, Dallas, president. [June 16, '17.]

Seattle, Wash.—The City Council of Seattle has been petitioned for a franchise for the construction of 2 miles of single-track railway to serve the Carleton Park addition, along Puget Sound, from Magnolia Bluff, by Arthur A. Phinney, David P. Eastman and R. V. Ankeny. The line would connect with the tracks of the Puget Sound Traction, Light & Power Company on Fifteenth Avenue West at Lawton Way viaduct, between Smith Cove and Interbay. It is proposed that the franchise expire on Dec. 31, 1934, the date of the expiration of the franchises of the Puget Sound Traction, Light & Power Company. It is assumed that this company is to furnish the service over the new line.

TRACK AND ROADWAY

Miami (Fla.) Traction Company.—A report from the Miami Traction Company states that it will construct 1½ miles of new track at once, material for which has already been purchased.

St. Johns Electric Company, St. Augustine, Fla.—Work will be begun at once by the St. Johns Electric Company reconstructing its track in St. Augustine.

Atlanta & Anderson Electric Railway, Atlanta, Ga.—The Atlanta & Anderson Electric Railway, which proposes to build an electric line from Atlanta to Anderson, S. C., has filed a petition with the Railroad Commission of Georgia in which it asks to be allowed to issue $7,500.000 of common stock, $7,500,000 of preferred stock and $20,000,000 of bonds. It proposes to use the proceeds of these issues to build and equip its line from Atlanta to Anderson, the estimated length of the line being 140 miles, the estimated right-of-way being 100 ft. wide, and the equipment to consist of up-to-date electric locomotives, electric power cars, trail cars and other rolling stock. The towns and cities to be traversed by the line are Atlanta. Decatur, Chamblee, Doraville, Norcross, Duluth, Hoschton, Jefferson, Commerce, Royston and Anderson. The line will cross the Savannah River at a point near Brown's ferry. J. L. Murphy, Atlanta, is president. [April 28, '17.]

Rome Railway & Light Company, Rome, Ga.—The Railroad Commission of Georgia has ordered the Rome Railway & Light Company to pay one-third of the actual cost of the Fifth Avenue bridge over the Oostanaula River and Second Avenue bridge over the Etowah River, to lay tracks over the bridges and thereafter regularly operate its cars over the bridges on or before Aug. 1, 1917. The commission has also ordered that upon the completion of the Broad Street bridge over the Etowah River the company shall, upon similar terms and conditions, lay its tracks and operate cars over the bridge.

Chicago (Ill.) Surface Lines. — Announcement has been made by the Chicago Surface Lines that during the present year it will construct 20 miles of new track in addition to its regular program of track renewals.

Chicago, North Shore & Milwaukee Railroad, Highwood, Ill.—This company has been promised delivery of steel for the building of its extension to the tannery on North and Glen Flora Avenues by July 15.

Northern Illinois Light & Traction Company, Ottawa, Ill.—Work will be begun at once by the Northern Illinois Light & Traction Company, a subsidiary of the Illinois Traction System, improving its street car line and lighting system in Ottawa. It is estimated that the improvements will cost about $80,000.

Rockford & Interurban Railway, Rockford, Ill.—It is reported that the Rockford & Interurban Railway will make improvements in Freeport during the coming summer to cost approximately $25,000, providing the City Council grants it the right to extend its tracks on Mechanic Street from the present end of the line southward to Galena Street, where the company has leased a site for a new station.

Iowa Railway & Light Company, Cedar Rapids, Iowa.—This company reports that it has added 1½ miles of single track to its line in Marshalltown.

Wichita-Walnut Valley Interurban Railway, Wichita, Kan.—Right-of-way has been practically secured by this company from Wichita to Augusta, and work of grading will start within the next few weeks. Charles Payne, secretary. [May 19, '17.]

Washington, Baltimore & Annapolis Electric Railway, Baltimore, Md.—It is expected that this company will make extensive track improvements near Annapolis Junction for the army cantonment to be established there.

Kensington (Md.) Railway.—This company reports that when prices for material and labor are normal its proposed extension to Sandy Spring will be completed.

Ironwood & Bessemer Railway & Light Company, Ironwood, Mich.—A report from this company states that construction would be begun on July 1 on its proposed extension from Gile to Montreal, about 1½ miles.

McComb & Magnolia Railway & Light Company, McComb, Miss.—Announcement has been made by A. H. Jones, manager of the McComb & Magnolia Railway & Light Company that this company's proposed line to connect McComb, Magnolia and Summit will be constructed immediately. [April 29, '16.]

Kansas City (Mo.) Railways.—Work will soon be begun by the Kansas City Railways on the construction of its line on Eighteenth Street from Central to Kansas Avenue.

***Montana Power Company, Butte, Mont.**—Surveys have been begun for the construction of an electric railway and power line from Twin Bridges to the Bielenberg-Higgins and Lake Shore mines. The railway will be 14 miles long. The line will be built under the supervision of the Montana Power Company, but is to be the property of the Bielenberg-Higgins and Lake Shore mines, which will pay the cost of construction, estimated at $26,000. A high-tension line from Twin Bridges, carrying about 49,000 volts, will supply the power, but will be reduced to about 2000 volts at the Higgins mines and carried from there to the Lake Shore mines.

***Dillon, Mont.**—It is reported that a company is being organized to construct an electric railway from Dillon to Piedmont, via Twin Bridges, about 60 miles. A. J. Wilcomb, Twin Bridges, is reported interested.

New York (N. Y.) Railways.—The Board of Estimate has adopted the report of the franchise committee recommending the construction of a two-track surface railway through West Eighty-sixth Street from Central Park West to Broadway.

Southern Public Utilities Company, Charlotte, N. C.—An extension is being built by the Southern Public Utilities Company from Winston-Salem to Kernersville, 11 miles.

*** Hillsboro, Cynthiana, Bainbridge & Chillicothe Traction Company, Hillsboro, Ohio.**—The Public Utilities Commisson of Ohio has approved the application of the Hillsboro, Cynthiana, Bainbridge & Chillicothe Traction Company to issue $400,000 of bonds, the proceeds of which are to be used in building its proposed line from Hillsboro to Chillicothe. J. C. Anderson, Chillicothe, secretary. [March 17, '17.]

Muskogee (Okla.) Electric Traction Company.—R. D. Long, general manager of the Muskogee Electric Traction Company, announces that he is prepared to build an interurban railway line from Tulsa to Henryetta and from Henryetta to Oklahoma City, with a branch line from Muskogee to Okmulgee. The line has already been financed, Mr. Long says, and actual construction work will begin as soon as he is able to get materials on the ground.

Southern Pacific Company, Portland, Ore.—The electric railway service in Albany has been discontinued by the Southern Pacific Company. According to its agreement with the City Council, when it was awarded the franchise, the company will have to remove the tracks and repair the street within a year from the discontinuance of service.

Montgomery Transit Company, Philadelphia, Pa.—This company reports that it has under consideration an extension from Harleysville to Soudertown, 4.3 miles, and from Harleysville to East Greenville, 12 miles.

Stroudsburg, Water Gap & Portland Railway, Stroudsburg, Pa.—Subject to the approval of the Public Service Commission of Pennsylvania, a new company, to be known as the Stroudsburg Traction Company, will lease and in future operate the Stroudsburg Passenger Railway and the Stroudsburg, Water Gap & Portland Railway. The new company will have a capital of $200,000 with a bond issue of $100,000, and an issue of $164,000 on the Water Gap Road will be assumed. The arrangement is expected to go into effect on Aug. 1. Physical connection between the two roads will be made during the fall and track connection will then be complete, with the exception of one grade crossing, from the Delaware, Lackawanna & Western Railroad passenger station in East Stroudsburg to Sixty-ninth and Market Streets, Philadelphia.

Williamsport (Pa.) Passenger Railway.—Surveys will soon be made for the construction of an extension of the Williamsport Passenger Railway from Third Street, Williamsport, to Newberry.

Houston (Tex.) Electric Company.—Plans are being contemplated by the Houston Electric Company for the construction of an extension to the coming National Guard mobilization camp west of the city. The extension will be about 1 mile, beginning at the western end of the West End line.

San Antonio (Tex.) Traction Company.—This company has under consideration the construction of an extension of its lines to South San Antonio, which would furnish transportation service to Camp Kelly, the aviation post.

Salt Lake & Utah Railroad, Salt Lake City, Utah.—Nearly all the grading has been completed and track laying is well under way on this company's 12-mile extension from Salt Lake City to Pleasant Green, via Chesterfield and Granger, and it is expected that the line will be ready for operation by the end of the summer.

Yakima Valley Transportation Company, North Yakima, Wash.—A report from the Yakima Valley Transportation Company states that it is now extending its Selah-Taylor line about 2½ miles.

Seattle & Rainier Valley Railway, Seattle, Wash.—This company reports that construction is under way on its Dearborn and Genesee Street extensions.

Eastern Wisconsin Electric Company, Sheboygan, Wis.—A proposed contract has been submitted by the Eastern Wisconsin Electric Company to the city of Oshkosh whereby it will spend between $200,000 and $250,000 on local improvements, provided the city will permit the elimination of certain unproductive track.

SHOPS AND BUILDINGS

Boston, Mass.—Bids will be received by the Boston Transit Commission until July 12 for the wall finish of the Andrew Square and Broadway stations of the new South Boston tunnel, which is nearing completion.

Kansas City (Mo.) Railways.—It is reported that this company will build new car shops at Ninth Street and Lister Avenue.

Hocking-Sunday Creek Traction Company, Nelsonville, Ohio.—A report from this company states that it contemplates building a new carhouse.

POWER HOUSES AND SUBSTATIONS

Chicago, Milwaukee & St. Paul Railway, Chicago, Ill.—Preparations are being made for the construction of the large substation to be erected in Tacoma in connection with equipping the Cascade division of the Chicago, Milwaukee & St. Paul Railway for electrical operation. The Tacoma station will furnish energy for the Tacoma yards and for the division between Tacoma and Seattle.

Iowa Railway & Light Company, Cedar Rapids, Iowa.—This company reports that it is installing a G.E. 500-kw, 600-1200-volt automatic substation, also a 2000-kw. G.E. automatic hydroelectric plant.

Ottumwa Railway & Light Company, Ottumwa, Iowa.—This company is installing a new 12,500-kw. capacity turbine generator unit.

Bangor Railway & Electric Company, Bangor, Me.—This company will extend its transmission line from Somerville to Southwest Harbor, 12 miles. Another line will be extended from Milford to Lincoln, 33 miles.

City Light & Traction Company, Sedalia, Mo.—This company plans to spend about $60,000 on improvements to its light plant on East Broadway, Sedalia. A 150-ft. stack will be erected and a new switchboard and new generating unit installed.

Interborough Rapid Transit Company, New York, N. Y.—A new one-story power plant, about 30 ft. x 60 ft., will be built by the Interborough Rapid Transit Company at 600 West Fifty-ninth Street. The structure will cost about $15,000.

West Virginia Traction & Electric Company, Morgantown, W. Va.—This company will increase the capacity of its local plant by the installation of a 1250-kw. turbo-generator unit, giving the plant a total capacity of 3500 kw. The generator will be moved from the plant of an affiliated company at Lebanon, Pa.

Manufactures and Markets

Discussions of Market and Trade Conditions for the Manufacturer, Salesman and Purchasing Agent

Rolling Stock Purchases Market Quotations Business Announcements

What Are Business Prospects for the Next Six Months?

No Reduction in Prices Expected—Equipment Orders Are Small in Amount—Fair Increases May Bring Relief

Many divergent views are now obtainable on the business prospects for electric railway manufacturers during the last half of 1917. Never before have authoritative news and statistical estimates on business been sought so eagerly by the manufacturer or the railway operator. There are really no precedents by which business policies for the coming months can be determined, but there are many fundamental principles which do not change.

Recently a man of large business affairs in the Southwest, whose remarks are pertinent to any industry at this time, in addressing a representative gathering of salesmen on the subject of "Keep Business Going as a Patriotic Duty," had this to say about building operations: "Some people reason that lower prices will prevail later. I cannot understand how they arrive at this conclusion, because the change has come about by the decrease in the supply of almost everything and by the increase in the supply of money. So long as the war continues the number of producers will not increase, but, on the contrary, will continue to decrease. The demands in this country will increase by reason of our entering into the war; the labor supply will decrease; and, hence, the price of everything must increase."

EQUIPMENT ORDERS ARE SMALL

Some manufacturers report a sharp falling off in electric railway inquiries, but state that their general business is fine because of increased sales in other fields. In the railway equipment section of the electric railway field, which is considered a good index for the entire field, the number of inquiries for the purchase of railway equipment is said not to have dropped off during the month of May as compared with April. However, the total value of the equipment covered by such inquiries was very much less in May than in April. In other words, the inquiries were for small quantities of equipment.

It is the opinion of some manufacturers that inquiries for the next few months will drop off materially. But, in explanation, it must be remembered that the summer months usually produce less inquiries for car equipment than do the spring and fall seasons. To quote one manufacturer: "Observations give me the firm impression that equipment buying generally is going to be pretty slow during this summer season, with the exception of here and there where pressure will demand additional service, due to activities in connection with supplying materials for war purposes."

BOOST THE RAILWAYS' GAME

Most manufacturers express a hopeful view for their electric railway business. They recognize the conditions which have surrounded the operation of the properties, but in the future they see relief for the roads through reduced municipal burdens, increased fares and improved operating methods. Those manufacturers who really have the welfare of the electric roads at heart are sympathetically assisting in every consistent way to gain for the roads much-needed relief. And now that the increased fare campaign is in full swing in many cities it will behoove thoughtful manufacturers and their representatives to keep well informed on the news of progress being made before engaging in conversation with a railroad executive who also has the welfare of the industry at heart.

Purchasing Agent and Salesman Co-operate

Salesman Should Be Referred to Proper Department Heads—Frankness Will Cure the Long-Winded Salesman

By L. A. HALL
Purchasing Agent Fonda, Johnstown & Gloversville Railroad, Gloversville, N. Y.

I fully agree with the spirit of the article by W. McK. White on page 1031 of the June 2 issue of the JOURNAL. Two of the points touched on I think are of special interest, first, the purchasing agent who permits a salesman to assume his department has final decision on a definite deal, and second, "the long-winded salesman."

It is the duty of the purchasing agent to refer a salesman to the proper department in connection with the sale of any particular article in which the purchasing agent thinks his company may be interested. This is true especially where the practice is to have the head of the department pass on the merits of the article. There is nothing to be gained in trying to mislead the salesman. The purchasing agent knows the system followed in his own organization, the salesman may not; so we not only save our time but that of the salesman by putting him on the right road.

As regards the "long-winded salesman," why cannot this difficulty be taken care of by being open or frank with the salesman? If he happens to call when you are busy and you intend to give him an interview, why not do it? Come right out and let the salesman know you are busy; take up with him anything you have in mind and let him do likewise, but do not enter into conversation on subjects entirely foreign to your business. It takes two to start an argument, likewise a conversation. I believe a purchasing agent should give due consideration to the time of the salesman, and likewise the salesman with the purchasing agent. Nowadays, I do not think we have to worry much about the "peddler." They do not last long with their own employers, and while they do last the purchasing agent can put up with a little trouble. There are many things of interest to gather from the salesman and possibly vice versa. Our interests to some degree are dependent upon each other, so why not work together? Taking the thing as a whole, I think it can be boiled down to a "Be Brief" proposition.

Deliveries on Fenders and Wheel Guards Fair

Railways Anticipating Demands—Poor Freight Service and Crowded Mill Conditions Cause Many Delays—Car Designers Should Take Fenders Into Account

The manufacturer of fenders and wheel guards is affected by the raw material situation as are other specialty makers, but where orders are placed sufficiently in advance of actual requirements, no difficulty is experienced in meeting the demands for this equipment. In cases where fenders and wheel guards are ordered as soon as the car order is placed, the manufacturer can make deliveries by the time the car builder or railway company is ready to install them. Although stock has been ordered well in advance, it is practically impossible to get any reasonable delivery of freight shipments from mills, and this has caused embarrassment on several occasions. Again, malleable castings cannot be obtained from the foundries in less than four to six months, and this has necessitated delays in a number of deliveries.

The railways generally are now seeing the advisability of equipping cars with accessories that will give the maximum amount of protection. They are standardizing on a fender or wheel guard that has shown the highest efficiency under actual service conditions. Companies desiring to equip their entire systems many times do not care to make the entire investment at one time and therefore contract to equip two or three cars per month. This can be done at a very nominal cost, thus enabling them to equip their entire system probably within a year. Front-end protection was formerly looked upon only as being necessary to comply with the law, but the efficiency of proved devices has forced the railways to recognize the value of this protection. Front-end accidents in many instances have called attention to this condition, with the result that they are now considered just as important as accidents caused by people alighting from or boarding cars.

FENDERS SHOULD BE TAKEN INTO ACCOUNT IN DESIGN OF CAR

When cars are designed the fender question should not be left to a point where it is said, "Now that the design is finished, where shall we hang the fenders?" The matter has often been put up to the fender people to try to adjust their equipment to suit the car. In some instances, very little clearance is given; in fact, many times clearances, etc., for fenders or wheel guards have been entirely overlooked. It is just as important to make provision for wheel guards or for the protection of the front end as it is to lay out platforms or any other part of the car. A good many railways have given careful consideration to this problem, and as a result of their co-operation the proper provision for front-end protection is thereby secured, giving the maximum form of protection to the public as well as to the railway.

Co-operation Will Reduce Selling Costs

Constructive Criticism Should Be Welcomed—Discussion of the Sore Spots Invited

The "safety first" attitude of salesmen toward customers is clearly illustrated in several communications recently received. One of these letters discussess the article on "Reducing the Selling Cost," by W. McK. White (on page 1031 of the June 2 issue). This letter illustrates the fact that a salesman will converse freely on the merits of his goods, but when the topic under discussion centers around possible deficiencies on the part of his customers, the salesman is not prone to talk freely. As one man puts it: "I have read this article with a great deal of interest and can say frankly that few of us have the courage to state this thing as positively as Mr. White has done in his article. I am inclined to agree with him in what he says about the waste of time and expense consumed in bringing to the attention of some electric railway companies the fact that they actually require certain materials."

Because this salesman, before entering his present line of work, successfully filled positions as the department head of a number of large roads, he can, when visiting properties, undoubtedly make good suggestions to the master mechanics. He probably sees the actual need of the road to make purchases of his and other salesmen's products. And when a master mechanic gets hold of a salesman of this sort he should pump him for every worth-while suggestion obtainable.

TALKING ABOUT THE OTHER FELLOW

Referring again to Mr. White's article, one sales manager has mentioned a factor that may contribute to the increase of the selling cost of most any article. He says: "It is a common tendency of electric railway men to consume the time of a salesman in endeavoring to secure information which is usually quite important to the railway company, but which is of no particular concern to the salesman. Such information has to do with the general condition of operation and the labor situation on other railway properties which the salesman visits. No doubt any salesman would be very glad to give this information freely, even at the sacrifice of the time necessary, providing the railway representative then showed his willingness to listen to the salesman tell his own story."

Successful salesmanship requires that characteristic which enables a man to speak out frankly and constructively, even though he may disagree with his possible customer. With this in mind, if there are in the electric railway sales field practices which are working hardships on both the buyers and the sellers, is it not to the best interests of the industry that they be discussed frankly by both parties? The recent articles by Mr. White and Mr. Horne in this department of the ELECTRIC RAILWAY JOURNAL have definitely set down some of these questions, and if the weaknesses are pertinent to the industry rather than to certain individuals, this paper will gladly assist by throwing its columns open for a frank discussion of how closer co-operation between the buyers and sellers may reduce the selling cost.

Activity in Transmission Line Material Sales

Manufacturer Gives Interview on Work in Central States—Railways Installing Branch Power Service—Forehandedness in Buying for 1918—Deliveries Cited

Transmission line materials are selling actively for installation in the central states, according to Max A. Berg, secretary of the Electric Service Supplies Company. The volume of business is not as great as it was six months ago, but still it is especially good. There is a scarcity of large projects, but the installation of branch power lines fed from railway transmission systems and the general expansion work of the existing high-tension transmission systems, combine to warrant the statement that this portion of the field is particularly active.

Some of the properties in the central states which have recently purchased transmission material include the Terre Haute, Indianapolis & Eastern at Terre Haute; Central Illinois Public Service Company; Ohio Electric Railway; Northern Ohio Light & Traction Company; Fort Wayne & Northern Indiana Traction Company; Iowa Railway & Light Company; Fort Dodge, Des Moines & Southern Railway, and the L. E. Myers Company of Chicago, which has recently made purchases for several of its associated properties.

According to Mr. Berg the deterring effect of high prices and slow material deliveries has largely been counteracted by the unusually large demand for power, so that orders are now being placed not only for substantial amounts of material but also for deliveries long into the future. Forehandedness in attention given by companies to the construction and maintenance demands of 1918 will reward many who are now looking that far ahead.

Mr. Berg states that the principal lines of material which his company manufactures for railway and other transmission line work are sharing about equally in the demand. These specialties include the Keystone steel triangle arm, metal truss pins and "never-creep" anchors. Deliveries on pins and metal arms even for large orders can now be made direct from stock if standard sizes are ordered.

Deliveries on high-tension porcelain are now quoted at four to six months, depending upon the design of the insulators, and according to Mr. Berg, if it had not been for the high prices of copper and the crowded condition of the porcelain factories, the 1917 high-tension transmission material business would have far exceeded all earlier records.

Jamaica's Electrical Imports

American manufacturers furnish most of the electrical supplies and equipment used in Jamaica, according to a report recently received by the Bureau of Foreign and Domestic Commerce. There is no local manufacture of these products. The imports are grouped separately under two headings, as follows: (1) Apparatus necessary for generating, storing, conducting, converting into power or light and measuring electricity, and (2) telegraph and telephonic wire and apparatus. The imports of both groups fall under the list of articles admitted duty free.

During 1914 the imports of the first group amounted to $51,252 and in 1915 to $34,021, and the second group to $6,966 and $6,588 respectively. That the United States supplies such a large percentage of the electrical equipment imported into Jamaica may be attributed to the fact that in many instances the original installations consisted of American equipment.

Export Trade Conference at Springfield, Mass.

A conference lasting one week, and devoted entirely to the problems of export trade, closed at Springfield, Mass., on June 30. Emphasis was laid upon the vital necessity of completely fulfilling specifications and promises to foreign purchasers, including shipments on dates agreed upon, and packing as required by foreign buyers. Much time was also given to reviewing credit facilities available through enterprising American banks. Among the speakers were J. W. Brooks, vice-president Pass & Seymour, Solvay, N. Y.; Fred S. Phillips, export manager American Ever Ready Works, Long Island City, N. Y.; and A. W. Gilbert, Chapman Valve Manufacturing Company, Indian Orchard, Mass.

Various points brought out in the conference may be touched upon. The United States needs export trade because it is the greatest producing nation and must have foreign outlets for surplus products or suffer the evils of glutted markets at home to the detriment of capital and labor alike. Patience is necessary in developing profitable foreign trade. Mushroom jobbers should be avoided. The government should foster co-operative efforts by competitive manufacturers seeking foreign outlets. We should freely accord long-time credits to foreign buyers. Foreign trade agencies are the eyes of export business. Relief from restrictive legislation is needed. Co-operation and standardization are also needed in American manufacturing plants to meet foreign competition, including uniform system cost accounting where possible.

Large Circuit Breaker Order

The Interborough Rapid Transit Company, New York City, has ordered 505 Westinghouse carbon-break circuit breakers ranging in capacities from 1000 to 12,000 amp., including 196 600-amp. hand-operated breakers with overload trip, mounted on panels with 2400-amp. knife switches for the direct-current feeders; ninety-eight 12,000-amp. breakers for use with 4000-kw. rotary converters; fourteen 8000-amp. and forty-five 4000-amp. breakers for use with 3000-kw. and 1500-kw. rotary converters, and smaller sizes for equalizers and auxiliaries. This equipment had been ordered for use in new substations and in additions to the existing ones, made necessary by the 170 miles of subway and elevated extensions in New York City.

ROLLING STOCK

Tulsa (Okla.) Street Railway has ordered six double-end, pay-as-you-enter, safety motor cars from the American Car Company, St. Louis, Mo., and has specified the following dimensions and equipment:

Seating capacity	34
Length over bumpers,	27 ft. 9½ in.
Length over vestibule,	26 ft. 9½ in.
Width over all	8 ft. 0 in.
Rail to trolley base	12 ft. 6 in.
Body	Semi-steel
Interior trim	Bronze
Headlining	None, rafter finish
Roof	Arch
Air brakes,	Safety Car Devices Company
Axles	Brill
Bumpers	American Car channel iron
Car trimmings	Brill
Couplers	None, pull bars used
Curtain material	Pantasote
Designation signs	Hunter
Door mechanism	Safety Car Devices Co.—air operated
Hand brakes	American Car, with Pittsburg ratchet drop handle
Headlights	Golden Glow, S-M-95
Journal boxes	Brill, with Gurney ball bearings
Motors	Two inside hung, GE—258
Sanders	Keystone air sanders
Sash fixtures	Bronze
Seats	American Car Co.
Seating material	Cherry wood, steel and canvas lined rattan
Springs	Brill
Step treads	Feralun
Trolley catchers	Keystone
Trucks	Brill 78-M-1 special
Ventilators	Brill
Wheels	24-in. diam.
Special devices	Faraday high voltage push button system

Macon Railway & Light Company, Macon, Ga., is building six city cars in its shops.

Puget Sound International Railway & Power Company, Everett, Wash., has placed an order for twelve one-man safety cars.

Ohio Electric Railway, Springfield, Ohio, expects to purchase four motor express cars, sixteen flat trail cars, and sixteen box trail cars at a cost of $130,000.

Little Rock Railway & Electric Company, Little Rock, Ark., noted in the May 5 issue as ordering six double-end closed motor cars from the J. G. Brill Company through the United Gas & Electric Corporation, has specified the following details for this equipment.

Number of cars ordered	6
Date of order	April 27, 1917
Date of delivery	Oct. 1, 1917
Builder	J. G. Brill
Type	Closed motor
Seating capacity	52
Over bumpers	47 ft. 8 in.
Over corner posts	34 ft. 8 in.
Over all	8 ft. 7 in.
Rail to trolley base	11 ft. 1 in.
Body	Semi-steel
Interior trim	Cherry
Headlining	¼ in. Nevasplit
Roof	Arch
Air brakes	West.
Axles	Hammered steel
Bumpers	Rico anti-climbers
Car trimmings	Bronze
Control	West.
Curtain fixtures	Forsythe No. 88
Curtain material	Pantasote
Designation signs	Keystone, Ill.
Door mech.	Burdette Rowntree
Wheelguards	H. B. lifeguards
Gongs	12 in. Brill Dedenda
Heaters	Consolidated
Headlights	Crouse-Hinds
Journal boxes	Brill
Lightning arresters	not placed
Motors	Four West. 506-A-2
Registers	International
Sanders	not placed
Sash fixtures	O. M. Edwards
Seats	Hale & Kilburn No. 300-A
Seating material	Cherry wood
Step treads	Amer. Abrasive Co.
Trolley catchers	Earle No. 7
Trucks	Brill 77-E-1
Ventilators	Railway Utility Co.
Wheels,	So. W. Co., 26-in. cast iron
Special devices	Consolidated buzzer system, Ellcon stanchions, Railway Utility thermostats, Brill center and side bearings, Brill graduated spring system and Brill bolster guide arrangement.

NEW YORK METAL MARKET PRICES

	June 28	July 5
Prime Lake, cents per lb	32½	31¾
Electrolytic, cents per lb	32½	31¾
Copper wire base, cents per lb	36	36
Lead, cents per lb	11¾	11⅜
Nickel, cents per lb	50	50
Spelter, cents per lb	9⅜	9¼
Tin, Straits, cents per lb	62	62
Aluminum, 98 to 99 per cent, cents per lb	61	59

OLD METAL PRICES

	June 28	July 5
Heavy copper, cents per lb	28½	28
Light copper, cents per lb	25½	25
Red brass, cents per lb	17½	20
Yellow brass, cents per lb	18	18
Lead, heavy, cents per lb	8¾	8¾
Zinc, cents per lb	7¼	7¼
Steel car axles, Chicago, per net ton	$53.00	$50.00
Old Car wheels, Chicago, per gross ton	$43.00	$39.00
Steel rails (scrap), Chicago, per gross ton	$48.50	$49.50
Steel rail (relaying), Chicago, per gross ton	$53.50	$59.50
Machine shop turnings, Chicago, per net ton	$20.00	$19.50

CURRENT PRICES FOR MATERIALS

	June 28	July 5
Rubber-covered wire base, New York, cents per lb.	36½	36½
No. 0000 feeder cable (bare), New York, cents per lb.	36½	36½
No. 0000 feeder cable stranded, New York, cents per lb.	33¾	33¾
No. 6 copper wire (insulated), New York, cents per lb.	33	33
No. 6 copper wire (bare), New York, cents per lb.	36	36
Rails, heavy, Bessemer Pittsburgh	$38.00	$38.00
Rails, heavy, O. H., Pittsburgh, per gross ton	$40.00	$40.00
Wire nails, Pittsburgh, per 100 lb	$3.20	$4.00
Railroad spikes, 9/16 in., Pittsburgh, per 100 lb.	$4.50	$5.00
Steel bars, Pittsburgh, per 100 lb	$4.50	$4.50
Sheet iron, black (24 gage), Pittsburgh, per 100 lb.	$7.90	$8.40
Sheet iron, galvanized (24 gage), Pittsburgh, per 100 lb.	$9.30	$9.55
I-beams over 15 in., Pittsburgh, cents per lb.	10	10
Galvanized barbed wire, Pittsburgh, cents per lb	$4.85	$4.85
Galvanized wire, ordinary, Pittsburgh, cents per lb.	$4.85	$4.85
Cement (carload lots), New York, per bbl	$2.22	$2.22
Cement (carload lots), Chicago, per bbl	$2.31	$2.31
Cement (carload lots), Seattle, per bbl	$2.60	$2.60
Linseed oil (raw, 5 bbl. lots), New York, per gal.	$1.18	$1.16
Linseed oil (boiled, 5 bbl. lots), New York, per gal.	$1.19	$1.17
White lead (100 lb. keg), New York, cents per lb.	12¾	12¾
Turpentine (bbl. lots), New York, cents per gal.	43	42½

TRADE NOTES

Lincoln Electric Company, Cleveland, Ohio, has opened an office at 10 High Street, Boston, Mass., under the direction of W. A. Blachford.

Walter A. Zelnicker Supply Company, St. Louis, Mo., has added W. H. Dayton to its sales staff. Mr. Dayton was formerly secretary and purchasing agent of the Railroad Supply Company, Chicago.

D. B. Mugan, formerly associated with the Illinois Central Railroad Company, in charge of its electrical department at New Orleans, La., has been appointed resident manager of the Edison Storage Battery Supply Company, with headquarters at 201 Baronne Street, New Orleans.

McGovern & Company, New York, N. Y., announce that they have opened an office at suite 514, 25 Broad Street, and will conduct a general brokerage business, specializing in public utilities. William J. and Hugh A. McGovern are the principal members of the firm.

T. G. Whaling, who has been assistant general manager and sales manager of the Westinghouse Lamp Company, has been appointed general manager. Mr. Whaling will continue also to exercise the functions of sales manager of the company.

Dunn Wire-Cut Lug Brick Company, Conneaut, Ohio, reports that the Medora Shale Brick Company, Medora, Ind., has taken out licenses under the Dunn wire-cut patents. The addition of the Medora company gives the Dunn company forty-six licensees, operating seventy-one plants in twelve states.

J. E. Johnson has been elected vice-president in charge of purchases and sales of the Laconia Car Company and will be in charge of the New England sales office at 60 Congress Street, Boston. L. N. Hathaway has been appointed purchasing agent of the company, reporting to Mr. Johnson. Mr. Hathaway will make his headquarters at Laconia, N. H.

W. W. Butler, vice-president of the Canadian Car & Foundry Company, Montreal, has announced the appointment of R. H. Parks as operating manager of the company. Mr. Parks will have operating charge of all the car plants of the company. He has been identified with the car building industry for many years and went to Canada from the Bettendorf Car Company of Davenport, Iowa. W. S. Atwood has been appointed assistant to the vice-president and managing director.

L. B. Stillwell Engineering Corporation, New York, N. Y., has been organized to act as constructing engineer in the design and construction of steam and hydroelectric, lighting, railway and power plants; electric transmission, electrification of railroads, the design and construction of steel rolling stock, railroad terminals, steam heating plants and general engineering construction work. The officers are: Lewis B. Stillwell, president; H. St. Clair Putnam, vice-president and general manager; Hugh Hazelton, vice-president; W. Everitt Rundle, secretary and treasurer. The principal office of the corporation will be at 100 Broadway.

David A. Munro has assumed the management of the railroad department of the Railway Specialties Corporation, with offices at 29 Broadway, New York City. Mr. Munro was born in Scotland and came to this country in February, 1907. His first entry into the railroad field was with the receiver of the Metropolitan Street Railway, New York City, whose service he entered in October, 1907, in the auditor's office. He resigned from that position to enter the service of George W. Linch, receiver Second Avenue Railroad, as assistant to the auditor. He was shortly afterward appointed purchasing agent to the receiver in addition to his other duties. On Dec. 1, 1916, he resigned and entered the supply field as manager of the J. N. Johns Manufacturing Company, a position he held until his present connection with the Railway Specialties Corporation.

Samuel L. Nicholson, who has been sales manager of the Westinghouse Electric & Manufacturing Company since 1909, has been promoted to the position of assistant to the vice-president, with headquarters at East Pittsburgh. Mr. Nicholson is unusually well known throughout the electrical profession because of his varied activities bringing him in contact with its numerous branches. His first electric railway work was with the Philadelphia office of the Sprague Electric Railway & Motor Company, and while with this company he assisted in the construction of the Neversink Mountain Railway at Reading, Pa. Later he built the Bristol (Tenn.) Belt Line Railway. In 1892 he became connected with the Short Electric Company. On the absorption of this company by the General Electric Company in 1893 he spent several years successively with the Technic Electric Works, James Boyd & Brothers, the Cutter Electric & Manufacturing Company, and the C. & C. Electric Company, until, in 1898, he joined the New York sales office of the Westinghouse Electric & Manufacturing Company. On the reorganization of the sales department in 1904, he was made manager of the industrial department, which position he successfully filled until his selection as sales manager of the company in 1909. Mr. Nicholson is well known in the electric railway field as a tireless and indefatigable executive of unquestioned ability, and his hosts of friends all over the country will rejoice to learn of the increased field of activities awarded him in his new position.

CHARLES S. CLARK

Charles S. Clark has been elected vice-president and general manager of the Laconia Car Company, with headquarters at Laconia, N. H. Mr. Clark is widely known in steam and electric railway circles. He is a native of Winchester, Mass., and entered the steel business in early life, becoming New England representative of the Pennsylvania Steel Company with headquarters at Boston, Mass., in 1890, and retaining this post for twenty-six years. For the past twenty-one years Mr. Clark has been secretary of the Massachusetts Street Railway Association, and holds a unique place in the regard and affections of all connected with this organization, which is otherwise composed exclusively of officials or legal advisers of operating companies. About fifteen years' service in the First Corps of Cadets, M. N. G., stand to the credit of the Laconia company's new manager, who was retired in 1911 with the rank of captain.

NEW ADVERTISING LITERATURE

Cutler-Hammer Manufacturing Company, Milwaukee, Wis.: A booklet on magnetic separator pulleys, used in removing tools, iron bars, etc., from coal as it passes to a crusher.

General Electric Company, Schenectady, N. Y.—Bulletin No. 44,424 on "GE-203-P Ventilated Commutating Pole Railway Motor." This motor is an improved form of the GE-203 and is of the box frame type. The GE-203 600-volt motor has a rated capacity of 50 hp. on 600 volts, with an input of 74 amp. The continuous rating for a temperature rise of 65 deg. C. by thermometer is 46 amp. at 600 volts. The same manufacturers have also issued a twenty-four page bulletin, No. 45,601-A, on "Aluminum Lightning Arresters for Alternating-Current Circuits." This bulletin supersedes bulletin No. 45,601, and contains valuable data and diagrams on this installation. The General Electric Company claims that the aluminum type of lightning arrester is superior in protective qualities to any other.

New Publication

Electrical Measurements in Practice. By F. Malcolm Farmer, chief engineer of the Electrical Testing Laboratories. McGraw-Hill Book Company, Inc., New York. 359 pages. Cloth, $4 net.

This book is a compilation of the available information regarding instruments and methods for practical electrical measurements of all kinds. Coming as it does from an engineer prominently identified with one of the leading commercial testing laboratories the book may be assumed to describe only those instruments and methods which are of a practical character. It is interesting to note, however, that it is not substantially different from books along the same lines prepared by teachers, who might be under suspicion of being academic. Mr. Farmer's descriptions are concise and clear, but he does not compare the several methods of making any one of the numerous electrical measurements as fully as might be desired. The book will, however, be useful to anyone who has electrical testing to do, in furnishing him with several practical plans for making any desired measurement.

Electric Railway Journal

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Consolidation of Street Railway Journal and Electric Railway Review

Volume 50 NEW YORK, SATURDAY, JULY 14, 1917 Number 2

A Conference Will Replace the Convention

THE decision of the executive committee of the American Electric Railway Association, announced last week, to have the fall conference take the form of an open meeting of the executive committee is undoubtedly the best solution of the existing situation. To those who can leave their work for a day of two it gives an opportunity to discuss national issues. At the same time, it permits the association to dispense with the election of officers and other business which would have to be transacted if an annual meeting were held. Obviously, it would hardly be suitable for important matters to be determined by those who could gather at a conference to last a day, or two at most. In view of these facts, we have decided that it would be appropriate for us to modify the form in which our usual "Convention Number" is published. Instead of a special number, we shall publish an enlarged regular issue somewhat similar in appearance to our maintenance issue. It will be dated Sept. 22. The special subject to be discussed in this number is how electric railway companies can best improve their service at a reduced cost. It will be a "More Service, Less Cost" issue, and we promise that for the interest of its contents it will equal or exceed any Convention Issue which we have published in previous years.

Street Congestion Not an Ineradicable Evil

MANY persons have got into the habit of looking upon street congestion as a necessary evil of city life, but this should not be so. The fact that the large number of automobiles now in use has greatly increased this congestion during the last few years makes its prompt relief by vigorous action more important than ever before. We present this week the results of an extended study on this subject by F. W. Johnson, who describes several very practicable methods of ameliorating the conditions brought about by congestion in our city streets. In addition to these means of relief, two other reforms must be adopted. The first of these is that every occupant of the highway, the electric railways included, must so order their travel over it and stops on it as not unduly to interfere with its use by others. Much more in this direction can be done, provided strict traffic rules are passed and enforced, than most municipal officials realize. The largest cities in the country have been obliged to obtain relief in this way in their crowded avenues, but in the smaller cities much remains to be done. The second part of the program for making the streets of the greatest use to the greatest number is to recognize the superior right on the highway of the electric car. The decision of the Pennsylvania Supreme Court on this point, quoted by Mr. Johnson, is founded on the broad principle of the convenience and accommodation of the public as a whole. Of this principle there should be greater recognition in other states.

Employment of Women Involves No Concession

"EVEN if the staggering Russian republic can work a miracle and really get back into the war, every ounce of your country's strength will be necessary —supremely necessary—and after all is said and done, it is woman's work that will save you; just as it is saving us. The women here have been and are absolutely marvelous. Get your women interested, then instructed and generally introduced. Labor simply must co-operate, and labor must make concessions." We quote this excerpt from the letter of a correspondent in England, not only for the generous recognition of the English women's part in the war, but also because of the emphasis laid upon the implied opposition of labor to women workers which appears in the last sentence. In the United States this part of the problem of women's employment appears almost negligible. Two or three years ago, perhaps, labor might have granted a concession in admitting women to its ranks, because men might thus have been left unemployed. To-day, however, conditions are wholly changed, and jobs for every one are going begging. For labor to accept ungrudgingly the employment of women at tasks within the range of their physical ability is, therefore, by no means a concession; it is a patriotic duty, and we believe that American labor recognizes the fact. Especially is this true upon electric railways, where women conductors have been demonstrated, through British experience, to be equally as efficient as are men. For each woman conductor who fills a vacancy there is, in consequence, the saving of one man for work that can be performed only by men. To fill a vacant conductor's position with a man means in effect that some industry has been unnecessarily deprived of a man's services, and when that industry is such that it can be operated only by men the injury to the nation is just as definite as if the man had lost his life on the battlefield. Indeed, if there is any concession at all in connection with the employment of women conductors, it is not to be made by labor. Instead, it will be made by government if any men whatsoever are allowed virtually to intern themselves on the rear platforms of electric railway cars.

A Word of Cheer to Electric Railway Men

THERE is no occasion for serious worry among electric railway men because the voice of unreason makes itself heard through the newspapers. It would, indeed, be a miracle if no strong opposition arose to an increase of fares from 5 to 6 cents. No matter how unanswerable your argument may be, there will be opposition both reasoning and unreasoning. To the reasoning and reasonable opposition you will make your argument with confidence.

The people as a whole are fair and stand for the square deal. To hold otherwise is to lack faith in the people, it is to argue against democracy itself. Democracy looks to the people for its last judgments. And this nation is unalterably committed by its position in this war to fundamental faith in the people. But while the voice of unreason will be heard, it will not control. The demagog of the press shall no more prevail in the long run than the demagog of the platform.

Thus far the applications made by the electric railways for an increase of fare have been received by the press in a spirit that is wholly satisfactory. Editorials have been generally to the effect that if the companies can prove their case, a readjustment of fares by the Public Service Commission must follow as a matter of justice and of duty, not only in the preservation of the companies from loss or even bankruptcy, but the preservation to the public of good service.

On the other hand there is the unreasoning critic, the kind well known everywhere, who opposes as an "outrage" anything that a public utility company proposes. Let us quote from an editorial of this type from one of the up-State New York papers:

> The people of New York State are being skillfully doctored to meet with least resistance a proposal of public service corporations to raise their car fare to 6 cents. It is evident that the corporations are together on this plan and they are cleverly sounding out sentiment here and there and preparing, by unity of action, to inflict this outrage upon the public. . . .
>
> If the people of New York State submit to the introduction of the 6-cent fare as a general proposition they will submit to an infamous validation of crooked securities.
>
> They will acquiesce in the doctrine that even if a road has been looted it shall be allowed to bleed the public in order that the plunder may be taxed out of straphangers.
>
> They will virtually O.K. the plunder of the public through leased lines and disadvantageous contracts that benefit insiders.
>
> (And so on in extra large type two columns wide, nearly a page deep.)

And this, mind you, before the companies had presented their case or the Public Service Commission had heard a line of testimony.

It is well worth while to reprint this as a type. But in our judgment anxiety over the ultimate effort of this sort of unreasoning, inflammatory diatribe is useless worry and time wasted. Abraham Lincoln's observation that "you cannot fool all of the people all of the time" is the basic truth that should hearten the railway man whose local paper subjects him to such an attack.

A newer conception of the function of public officials is obtaining. The function of a district attorney, for instance, is not wholly to make a record of convictions but to assist the courts in doing justice and to guard the legal rights of all prisoners. The function of the public service commissioners is not limited to "protecting the people"; it is to preserve the fair relationship of both the public and the utility companies. To damage either is to harm both.

So with the press. It, too, has a public function, by reason of which it has a special status under the law. And it cannot be true to that function by assuming that the public utility company is always guilty. The outstanding phenomenon indeed in the recent history of the press is the growth in influence, power and prosperity of the responsible press. The day of the reptile press is a day that is gone. Let no one be dismayed by any other idea. "Truth is mighty and it shall prevail."

When Does It Pay to Develop Water Power?

THE request of Secretary Franklin K. Lane that in the production of electrical energy water power be utilized as far as possible gives especial timeliness to the paper by H. St. Clair Putnam, delivered at the recent New York meeting of the A. I. E. E. While the appeal of his main argument was to the consulting engineer, he enunciated certain principles which should be understood by the railway manager or engineer who has developed or undeveloped water power available.

The problems which Mr. Putnam set for solution were these: To determine when the development of a water power will secure better results than the construction of a steam plant, and when it is better to develop the water power than to extend an existing steam plant. Without going into detail of the reasoning, his conclusions may be summarized as follows: Where a market for the power is available or can be created practically all water power should be developed beyond the minimum power available, and hence the plants require steam plants in connection with them. The development should be carried to the point where the best results can be obtained in combination with such steam plants. It is economical to develop water power farther as the operating costs of the steam plant are increased, and, in general, as the value of money decreases. The general tendency of the items entering into the operating cost of a steam plant is upward whereas that of the value of money is downward. The increase in the efficiency in steam turbines and the construction of steam plants at coal mines both operate to make it difficult to develop water power profitably, especially those with low head where the first cost is relatively high. The development of all possible water power should be encouraged both for the conservation of fuel supply and the economical advantage resulting from the use of power in industries. Hence the public should do everything to encourage power companies in this direction. Any policy under which additional burdens are imposed upon water power development is against the true interests of the public.

This summary brings the water-power situation right up to date. As we pointed out some weeks ago, there is a possible patriotic duty in the situation, also, which may dictate the use of water power even beyond the boundary of exact economics. This boundary should always be discerned clearly, however, even if it is deliberately overstepped in emergency. There is a fascination about water power which has caused many powers to be developed unprofitably. No one likes to see good power going to waste but, unfortunately, most water power is fluctuating in character and at the same time the unit investment cost involved is high compared with that in the steam plant. Again, the load factor of many loads is low, so that available power cannot be utilized effectively. In general a steam auxiliary is necessary as a source of reserve power as well as economy, and the hope for the future of water power lies in so operating it in connection with steam power as to produce an over-all maximum economic efficiency.

Automatic Substations as Labor and Money Savers

AN annual saving in labor and energy cost of nearly $1,600 in a single substation by the use of automatic control is sufficient to attract attention at any time, and particularly now when it is so difficult to make ends meet. This is the estimate of the result on an interurban line of the Milwaukee Electric Railway & Light Company. Better yet, the saving is largely produced by the liberation of two men for work on other service which cannot be done by mechanical devices. How the saving is being made is explained in detail in an article elsewhere in this issue. It is one of several which we have published by means of which the brief but promising history of the automatic substation can be traced.

The span of three years covers this history as far as the electric railway is concerned, and the progress made in this short time is surely creditable. Year before last we expressed our conviction, based upon observation of electrical apparatus and experience with it, that the technical difficulties in the way of making the automatic control operate properly could be overcome. The limitations in the way of its application were stated to be economic rather than technical. The opinions of the railways which have had occasion to consider and in some cases adopt the plan seems to have confirmed the accuracy of this view. In the substation described in this week's article, the complication of the equipment is greater than in previous automatics due to the use of two 600-volt rotaries in series to produce 1200 volts, but no insuperable difficulties were encountered, and as a practical matter the trick was turned simply enough. The electrical engineers will be pleased in following through the mazes of the circuit diagram which tells the story (to the initiated). The others will be interested in the method as a transportation matter, particularly with relation to a possible increase in the shrinking surplus.

How the Association Should Help the Industry

A BULL'S-EYE shot! The letter in last week's issue from Leake Carraway, director of publicity Southern Public Utilities Company, Charlotte, N. C., certainly hit the mark when it showed the desirability of a publicity bureau for the American Electric Railway Association.

The present electric railway situation is not local; it is national. But the association, as a national organization, has not done all within its power to aid the railways. It has a duty to perform along the line of encouraging electric railway publicity and better public relations. There are many progressive companies whose publicity ideas are well developed and their public relations activities honest and sane. But there are other railways—too many, in fact—whose inertia in this regard needs to be overcome by the furnishing of not only inspiration but also concrete material from association headquarters.

At the last convention the committee on public relations proposed that a bureau on public relations be formed by the association, to have charge of the preparation and the distribution of absolutely authentic and attractively prepared information on public relations matters. The psychological time for that bureau is now. If it were in existence, how much it would mean to the industry!

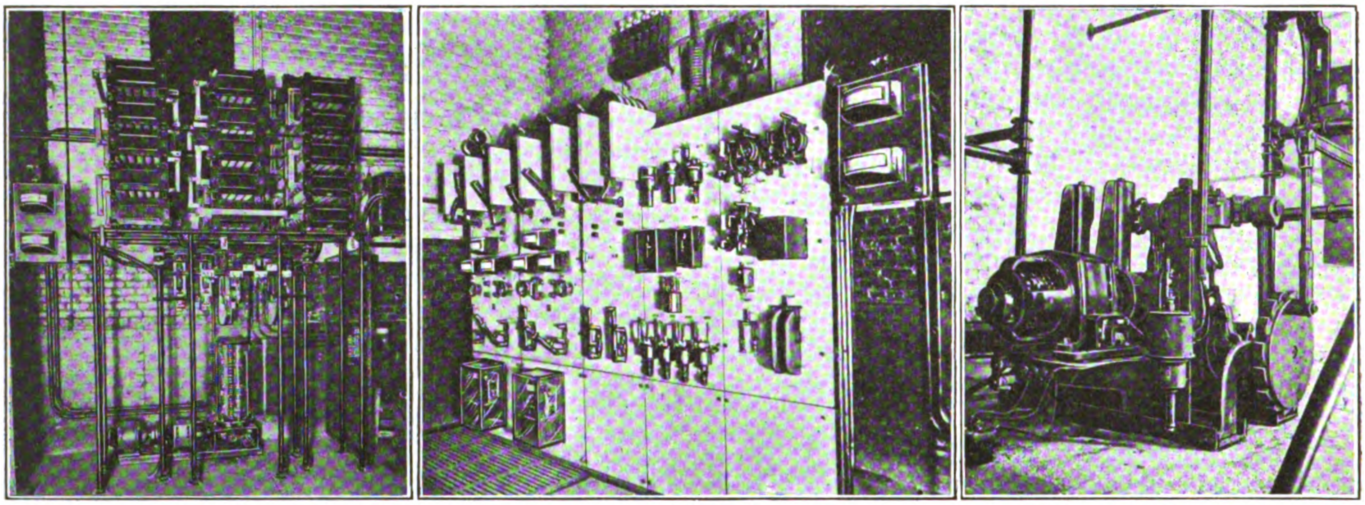
As H. G. Bradlee stated in our issue of June 30, to meet successfully the present situation under war conditions and furnish satisfactory service to the public will require the combined ingenuity of all utilities. The employment of women, one-man car development, the raising of the load factor, the increasing of fares—these and other topics must be considered. The practicability of all such ideas ought to be thoroughly investigated by the association, and concrete data compiled for publicity use in the case of any railway. It is not enough for the association to stand ready to make an inquiry into any point raised by a company. It should be prepared not to get but to furnish information on the vital issues of the present situation, so that its assistance can be secured immediately when occasion arises.

Without doubt an opportunity exists for constructive work by the association and co-operative work by the companies along such lines as above indicated. There has been too little leading by the association; too much individualism among some companies in the efforts to establish better public relations; too much of an attitude on the part of some that such work is good for the other man if he is energetic enough to do it. The association ought now to assume the initiative in regard to general publicity, so that no company will have any legitimate excuse for not taking definite steps to better its relations with the public. The association has a well developed and efficient bureau of information, as Secretary Burritt points out in a letter in this issue, but its means for popularizing this information are lacking.

First Automatic 1200-Volt Substation

The Milwaukee Electric Railway & Light Company Has Installed Automatic Equipment in an Interurban Line Substation Which Controls Two Rotary Converters Operating in Series

ONE interurban division of The Milwaukee Electric Railway & Light Company lines connects Milwaukee and East Troy, with a branch line running from St. Martin, a mid-point on the line, to Burlington, Wis. The territory served encircles a number of beautiful lakes which attract a rather heavy week-end travel, but both Burlington and East Troy are small towns, and hence the traffic over the division is not sufficient to warrant better than two-hour service during most of the time. The Burlington car is operated on a shuttle service, connecting at St. Martin with the through Milwaukee-East Troy cars which also meet at this point. Thus three passenger cars are operated normally on the entire division. The distance from both East Troy and Burlington to St. Martin is approximately 20 miles, consequently with two-hour service there are considerable periods during which there is no car operating on either branch and no demand for power.



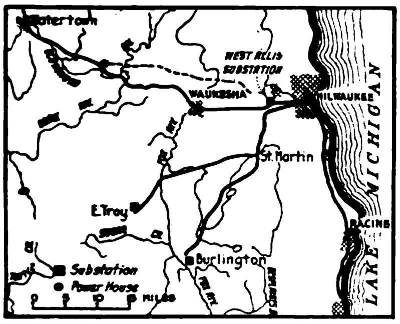
AUTOMATIC SUBSTATION—FIG. 1—MOTOR-GENERATOR SET, CONTROLLER DRUM, MAIN LINE GENERATORS AND LOAD RESISTANCE. FIG. 2—CONTROL RELAYS ON TWO SECTIONS OF SWITCHBOARD ADDED TO FORMER BOARD. FIG. 3—OIL SWITCH AND CONTROL RELAY. MANUAL SWITCH IS JUST ABOVE

This condition gave rise to the consideration of automatic equipment in the substations supplying energy to this division, but the fact that it is a 1200-volt line introduced some complication. Three substations, located one at West Allis, 8 miles north of the St. Martin Junction, and one each at the ends of the lines at Burlington and East Troy, supply the division with power in addition to that received at the Milwaukee end of the line. Of these three, the one at East Troy was selected for the first installation of the automatic equipment since the West Allis and Burlington substations are also used for a rather extensive distribution of commercial energy in those vicinities and require attendants regardless of the railway equipment.

The East Troy station, built in 1910, is of brick and concrete construction, and for manual operation was equipped with four 300-kw. General Electric 25-cycle, 600-volt rotary converters, operating two in series. One set of these machines has been equipped with the General Electric automatic apparatus, and is now handling the load exclusively. The other set will be retained for the time being simply as a standby for use in case transformer or other trouble should make the automatic set inoperative. There is no necessity for retaining this set here and some consideration has been given to moving the two machines to a new location between present substations and operating them automatically there. This would make possible the removal of the 500,000-circ. mil-equivalent aluminum feeder cable which now parallels the trolley over a considerable portion of the line. At present prices this feeder would much more than pay for the new station, but another consideration enters. The substation at East Troy is served by a single transmission line, and if this should fail for any reason and leave the East Troy end of the line without a source of power supply, this feeder would still make it possible to move the cars at the end of the line on the direct-current energy supplied from the West Allis and Burlington substations. With the feeder removed, however, it would not be possible to run the cars with the East Troy substation out, except that a new substation located as mentioned would possibly reduce the trolley voltage drop sufficiently so that there would still be enough power at the end of the line to move a car and gradually to bring it within the range of the next substation.

Rearrangements Made for Automatic Operation

Very little change in the substation arrangement for the automatic equipment was necessary. All of the hand-operated switches were left operative, so that in case of necessity the machines can be started and operated manually. The new solenoid-operated switches were simply paralleled with the old hand-operated switches, which were moved to make room for the automatic starting contactor board seen in the photographs. Two sections of switchboard of the same type and style as the old board were added to accommodate the various control relays. The main oil switch controlling the incoming 13,200-volt high-tension line was changed from manual to automatic control and equipped with a mechanical permanent disconnect which operates in case of a heavy ground or short-circuit. A small motor-generator set completed the automatic installation. This provides the exciting current to control the polarity of the rotaries and also drive the control drum. The equipment also includes the main line contactors, the resistance grids, the bearing and resistance thermostats, the 5-kw., 13,200/220-volt transformer which supplies energy to the control equipment, etc.

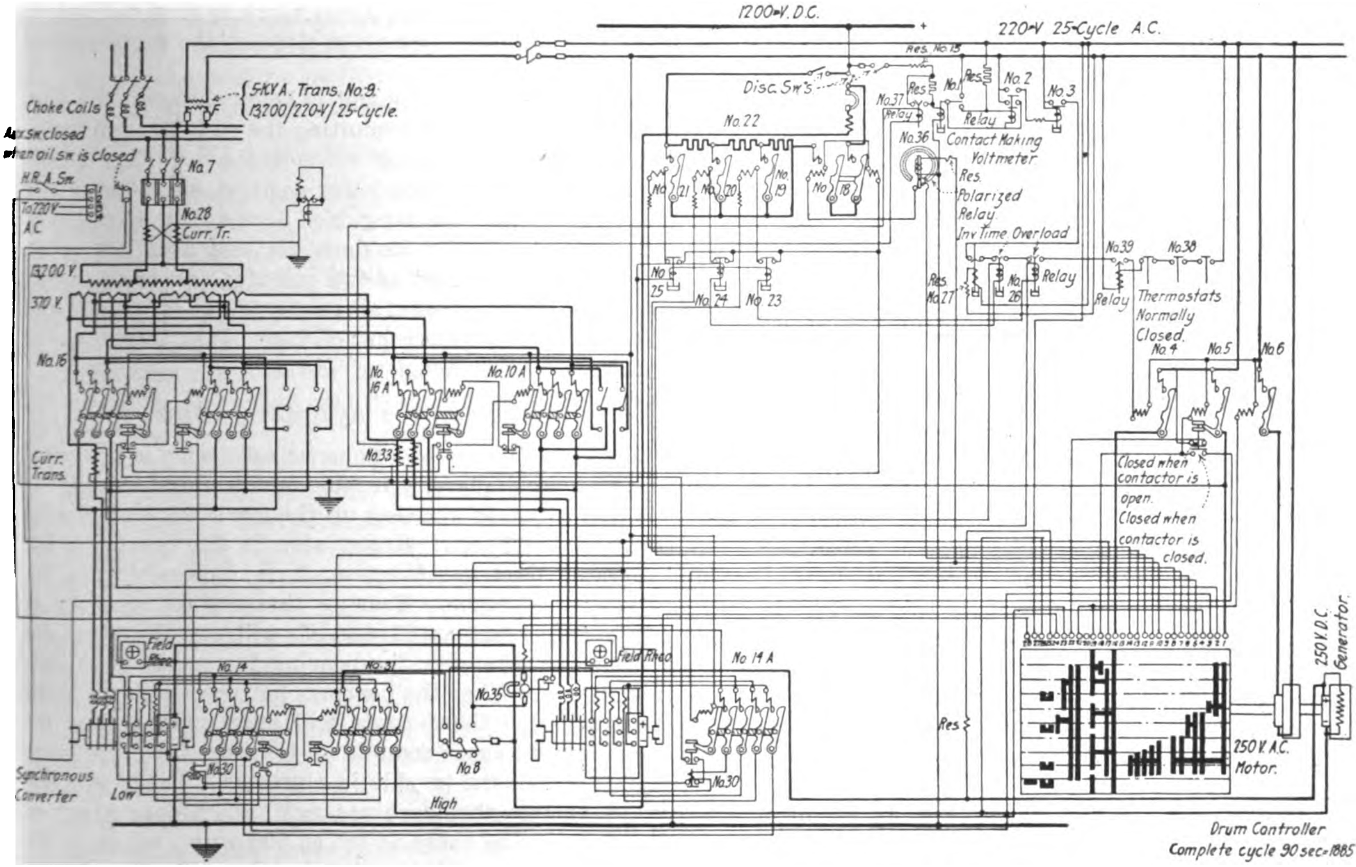

Watertown
West Allis Substation
Waukesha
Milwaukee
St. Martin
E. Troy
Racine
Burlington
Substation
Power House
Miles
Lake Michigan

AUTOMATIC SUBSTATION. FIG. 4—MAP OF MILWAUKEE ELECTRIC RAILWAY & LIGHT COMPANY'S INTERURBAN LINES

Although the steps in the operation of the ordinary single-machine automatic substation have already been described in earlier issues of ELECTRIC RAILWAY JOURNAL, the sequence of operations in this two-machine automatic station will be of interest since the control involves many additional steps, although the theory and the equipment are the same except for expansion to cover the 1200-volt conditions. In general it may be said that a contact-making voltmeter cuts the machine in when the trolley voltage drops to 950. A current relay, which operates as the first step in shutting the rotary down, functions when the current drawn falls to 25 amp. A dash-pot relay, which keeps the machine on the line for a period after the moment the demand for current drops below 25 amp. in order that the ordinary passenger stop of a car will not shut down the rotary, is set in this station for five minutes and ten seconds. The time lag of the power supply behind the demand—that is, the time which elapses between the action of the contact-making voltmeter and the throwing of the converters on the line—is one minute and thirty seconds.

SEQUENCE OF OPERATIONS IN 1200-VOLT AUTOMATIC STATION

Beginning with the machines off the line, everything inside the station is dead except the small transformer which supplies energy to the control apparatus and the contact-making voltmeter which, of course, is always energized. When the voltage drops below 950, the contact-making voltmeter, marked No. 1 in Fig. 5, closes

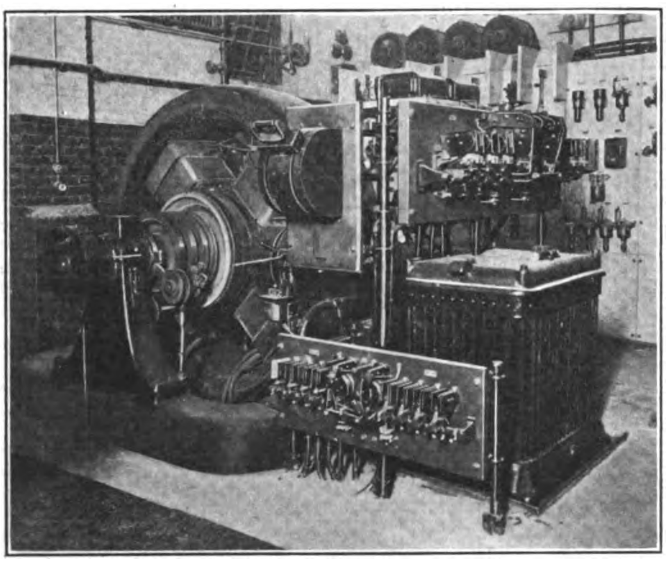

1200-V. D.C.
220-V 25-Cycle A.C.
Choke Coils
Aux. Sw. closed when oil sw. is closed
H.R.A. Sw.
To 220 V. A.C.
5 K.V.A. Trans. No. 9 13200/220-V/25-Cycle
No. 7
No. 28
Curr. Tr.
13200 V.
370 V.
No. 16
Curr. Trans.
No. 16 A
No. 10 A
No. 33
Disc. Sw's.
Res. No. 15
No. 22
No. 21
No. 20
No. 19
No. 18
No. 37
No. 1
No. 2
No. 3
Res.
Relay
No. 36
Contact Making Voltmeter
Res.
Polarized Relay
Inv. Time Overload
No. 25
No. 24
No. 23
Res. No. 27
No. 26
Relay
No. 39
No. 38
Relay
Thermostats Normally Closed
No. 4
No. 5
No. 6
Closed when contactor is open.
Closed when contactor is closed.
Field Rheo.
No. 14
No. 31
No. 35
Field Rheo.
No. 14 A
No. 8
No. 30
Synchronous Converter
Low
High
Res.
250 V. D.C. Generator
250 V. A.C. Motor
Drum Controller
Complete cycle 90 sec.=1885°

AUTOMATIC SUBSTATION FIG. 5—WIRING DIAGRAM OF 1200-VOLT AUTOMATIC CONTROL EQUIPMENT

Key to Diagram

1. Contact-making voltmeter.
2. Double-contact a.c. relay.
3. Dash-potted a.c. relay.
4, 5, 6. A.c. contactor, 50 amp.
7. Oil switch.
8. Triple-pole double-throw switch, 50 amp.
9. 5-kva. 13,200/220-volt tranfsormer.
10. Triple-pole starting contactor, 500 amp.
11. 300-kw., 600-volt rotary converter.
14. Four-pole a.c. contactor, 50 amp.
15. Resistance tubes.
16. 500-amp. three-pole running contactor a.c.
18, 19, 20, 21. 500-amp., 1200-volt, d.c. contactors.
22. Resistance boxes, 1.4 ohms.
23, 24, 25. Instantaneous overload relays.
26. Inverse time-limit overload relays.
27. A.c. low-voltage relays.
28. Current transformers.
31. Four-pole field exciting contactor.
35. D.c. reverse relays.

a circuit through the double-contact relay, No. 2. This in turn completes the circuit through the dash-pot relay, No. 3, which provides the time lag holding the machine on the line for five minutes after the demand for current falls below 25 amp. This third relay is called the master relay, since it really determines whether the machine shall be kept on the line or cut off. With No. 3 relay circuit closed, a circuit is completed through the low-voltage relay which cuts the machines off the line whenever the high-tension voltage drops so that on the 220-volt side of the control-apparatus transformer the voltage has fallen to 180. It also includes two overload relays, one for each machine. No. 39 relay is also connected in this same circuit and is held in the closed position by virtue of a separate circuit off the 220-volt bus, which includes the four thermostats, located on the bearings of the two machines and the two thermostats on the main resistance grids. If any of the thermostats opens the circuit, this de-energizes the No. 39 relay and hence cuts the machines off the line. With No. 39 relay and the previously mentioned relays closed, contactor switch No. 4 is energized and closed, supplying energy to the lower half of the main controller drum. As soon as energy is supplied to the drum, the No. 19 finger completes the circuit through the No. 6 contactor. This closes and energizes the small induction motor which is connected to the controller drum through worm and gear and direct-connected to the small 250-volt direct-current exciting generator. The drum then begins to revolve, and from then on all operations of the apparatus are controlled from this point. The several operations are so timed by virtue of the construction of the drum that each step is given time to complete its function before the circuit operating the next step is completed. The No. 18 finger on the drum is the first to make contact after the drum begins to rotate. This closes a circuit through the No. 5 contactor, which in turn closes the 220-volt circuit to the top half of the drum, and also an auxiliary circuit through all the overspeed cut-outs on the rotaries, the auxiliary control on the main oil switch and the reverse-current relay.



AUTOMATIC SUBSTATION—FIG. 6—STARTING AND RUNNING CONTACTOR BOARD ABOVE MACHINE, REACTANCE AND FIELD-CIRCUIT CONTACTORS AT BOTTOM OF PHOTOGRAPH

When fingers Nos. 1 and 2 make contact on the drum, the half-voltage-tap contactor on the ground-side rotary converter is closed. While the machine is coming up to speed, the drum continues to revolve until the No. 3 finger makes contact and closes a circuit through a contactor which puts current from the small direct-current generator having a fixed polarity through the field of the rotary. This current is supplied just long enough to determine the correct polarity of the converter, when it is disconnected and the main field switch of the machine closed, making it self-excited. This occurs at the same time the half-voltage contactor switch is thrown out and the full-voltage contactor thrown in. These last two contactors are mechanically and electrically interlocked and cannot be connected at the same time. The first machine at this point is operating at synchronous speed, and almost instantaneously with the closing of the full-voltage contactor on the first machine, the half-voltage contactor on the second machine is closed. The same process then follows through for bringing the second machine up to speed, except that its field is energized from the armature of the first machine. This is done because it makes it impossible for the second machine to polarize in the wrong direction and because it eliminates one field contactor. The field of the second machine is continuously excited from the first machine in order to limit the maximum pressure in the field coils of the second machine to 600 volts. If it operated under self-excitation the maximum voltage in the field coils would be 1200. With both machines up to synchronous speed, the last fingers on the controller close the main line contactors, throwing the machines on the line through resistance, which is then cut out by contactors in three successive steps at about one-second intervals.

When the current demand is below 25 amp. the current relay drops, short-circuiting the resistance in series with the contact-making voltmeter coil. This allows the voltmeter to take the lower position, short-circuiting No. 2 relay and allowing No. 3 relay to drop. The latter is retarded by its dash pot and does not break contact for the period of five minutes and ten seconds. When this finally opens, all relays are de-energized and the station is completely cut off back of the transformers at the main oil switch.

Protection for Automatic Control

The operation of the automatic substation is protected against practically any trouble which might occur. In the first place, in starting up the machines and placing them on the line, if at any step in the operation the apparatus does not function, it is impossible for the next step to occur. Bearing thermostats on both of the machines set at 80 deg. C. will cut the machines off the line whenever the bearing temperature exceeds this setting. When the bearings have cooled down below this limit, the thermostats will make contact and the machines will again come in on the line, the cycle being repeated until the trouble is corrected. Three overload relays protect the machines against gradual overload. The first one of these is set at 500 amp., which is the full-load rating, and the other two have higher settings. As each cuts out, it cuts resistance in series with the trolley circuit and thus limits the load. If an overload continues, a thermostat placed on the resistance grid and set at 60 deg. C. will cut the station out when the temperature there has exceeded this setting. A reverse-current relay on the direct-current side will shut the station down in case of machine trouble or opening of the alternating-current line. The low-voltage relay cuts the station out in case the high-tension voltage drops seriously or is interrupted. If the low-voltage relay should not work, in this instance the reverse-current relay mounted on one of the machines, as seen in Fig. 7, would cut the station out. If there was an open circuit in the converter fields, the relays in the field circuits would open the circuit through the No. 18 contactor and the machine could not be thrown on the line, but would be cut off instead. After the machines are on the line, if the field circuit should open up in any way the machines would tend to run away and the overspeed devices would cut out the entire station. The control apparatus would then start to cut them in again, but could not get beyond the step in trouble. If the small direct-current generator should for some reason fail to excite the converter field, and the latter come up with the wrong polarity, the polarized relay would prevent the machine from being thrown onto the line. If the small generator failed and the rotary came up to speed with the right polarity, the operation would then go on and it would be thrown onto the line. In case of a dead "short" on the trolley, the overload trip onto the main oil switch would operate and would not come in again under automatic operation, because opening the oil switch from this source also opens a mechanically operated switch, Fig. 7, which can be closed only by hand. An overload relay connected in the alternating-current side of each converter is simply a check on the thermostat relay on the resistance grids. These also take care of the case where a gradual overload may not be severe enough to open the main oil switch, but too heavy to wait for the thermostatic cut-out to operate.

SAVING REALIZED FROM AUTOMATIC OPERATION

The first cars over the East Troy division leave the opposite ends of the line at Milwaukee and East Troy at 6.15 and 6.20 o'clock respectively, and a two-hourly service is maintained thereafter until 8.20 p. m. The next and last cars leave at both ends at 11 p. m., the last car arriving at East Troy at 1.05 a. m. From this time until the first car in the morning the substation would be shut down under either manual or automatic operation.

When a car leaves East Troy for Milwaukee the automatic substation remains on the line for a period of approximately forty-five minutes, or until the car has reached a point approximately 16 miles from the substation. This is under normal traffic conditions with no other cars on the line. From the time a car leaves this point until the car from Milwaukee arrives at this point, which is approximately thirty minutes, the automatic substation is off the line. The cars then lay over at the East Troy end of the line for approximately thirty minutes, during which time the automatic again cuts out. As a result there is a total of approximately seven hours during the day that the automatic substation is cut out under normal conditions on the line when it would be running under manual operation. Since the automatic substation has been in operation considerable track work has been going on on this division, and the work trains operating have kept the substation on the line a good share of the time, so that it has been impossible to get any accurate figures of the energy saving which would be made under normal traffic conditions. However, the following estimate is considered to represent a close approximation of the savings, the principal factor being the elimination of two operators:

	Manual	Automatic
Operating labor	$1,367.89	$240.00
Supplies and expenses	241.26	61.56
Maintenance substation and transformer equipment	336.16	489.09
	$1,945.31	$790.65
Saving		$1,154.66

Automatic substation off line seven hours a day more than the manually-operated station.

40 kw. assumed as no-load loss for two 300-kw. rotaries.

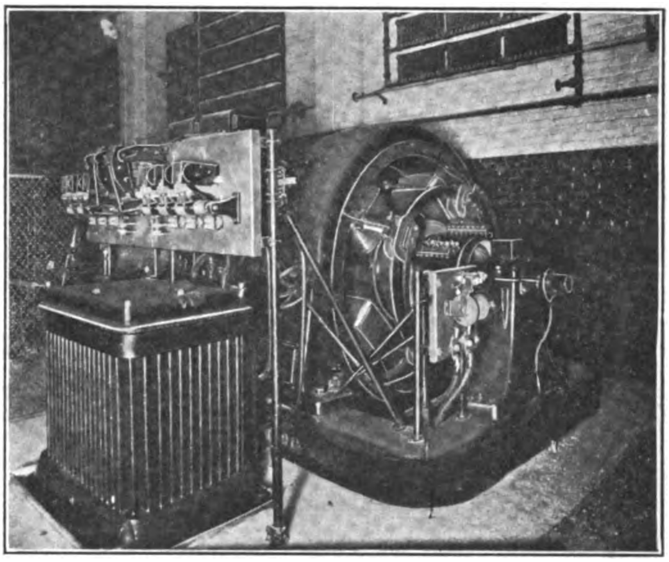
$40 \times 7 \times 365 = 102{,}200$ kw.-hr. yearly energy saving.

$102{,}200 \times \$0.006 = \$613.20$ saving in energy cost.

$\$613.20 + \$1{,}154.66 = \$1{,}767.86$* yearly saving.

*This does not take into account the energy saving due to elimination of the iron and copper transformer losses which are also off the line seven hours a day additional to what they would be with manual operation. Nor does it include the energy saving in line losses during this additional seven hours of no energy flow over the high-tension line.

In the first item under "operating expenses" the $240 charged against the automatic substation for labor is made up from a small part of the time of a man who handles the express and baggage for the company and any line trouble occurring in the vicinity of East Troy. He is also available for any trouble which may occur in the substation. The third item covering "maintenance of the substation and transformer equipment" is higher for the automatic station than for the manual operation, since the equipment for lighting and commercial energy in this substation must be inspected and cared for by a traveling inspector, whereas under manual operation this was taken care of by the station operator but the cost is kept in a separate account.



AUTOMATIC SUBSTATION—FIG. 7—REVERSE-CURRENT RELAY AND BEARING THERMOSTAT ON SECOND MACHINE

The Boston Elevated Railway is mentioned in the annual report of Franklin Union as one of the companies having very large numbers of students at this young and vigorous industrial educational institution. The report shows that Franklin Union has completed nine seasons of instruction, and in that just closed gave instruction to 2056 different individuals at an expense of $43,761.40. The school is supported largely by the Franklin Foundation, consisting of funds bequeathed to the city of Boston by Benjamin Franklin.

The How and Why of Publicity

Every Publicity Effort Should Be Frank, Candid and Responsible—Chief Media Electric Railways Should Use in Present Momentous Situation

By IVY L. LEE

A FEW days ago one of the Washington newspapers published an advertisement evidently inserted by the Roumanian Commission to this country. The advertisement had no signature, and one would not have known that it was an advertisement if it had not been in display type and had not contained a lot of unnecessary verbiage which any intelligent copyreader would have cut out. It was clearly inserted because the news columns of the several days previous had failed to give as complete accounts of the reception of this Roumanian Commission as the commissioners felt was due the importance of their errand. They, therefore, worded their advertisement to read as if the newspaper itself were inserting it as a news article. The expressions, "We have learned" and "We shall not fail to advise our readers," were clearly used to give the readers such an idea.

The foregoing is a method of how *not* to do publicity. One of the fundamentals of any attempt at publicity must be to make it responsible. Any statement made to the public through the press should show clearly from whom the statement comes. If it is a statement on behalf of interested parties, the public should know clearly the source of the inspiration. If the public reaction from the article is then favorable, it redounds to the merit and the credit of the responsible party. If the public reaction is not favorable, the responsible source has at least been frank and deserves credit for its policy at least in that respect.

Some corporations are accustomed to prepare statements for the press as if the publication itself prepared the article. Of course, there may be times when it is worth while and perfectly legitimate to assist a newspaper in preparing its own matter. Anything said on behalf of a particular corporation or inspired by it, however, should in the interests of frankness and responsibility show its source.

It is also a very dangerous thing to issue articles to the press for publication when they are in the nature of comment upon the action or policy of the corporation giving out such statements. Comment should be made by the publication itself or by the public. The corporation should confine itself to telling what it has done and why it has done it.

HOW ELECTRIC RAILWAYS SHOULD TELL THEIR STORY

These remarks are particularly pertinent at a time when electric railways of the country are likely to be telling their story of why their system of fares should be revised. Every statement put out to the public in any locality should be upon the definite responsibility of the company that is seeking to influence public opinion. The company should make it clear to the public that its purpose is to tell its own story and the whys and wherefores of its action. The company must prove its case.

This applies not only to newspaper statements but also to every form of publicity. Many people believe that the beginning and the end of publicity is in the newspapers. But the newspaper, while still supreme, is growing relatively less important each day. This is not because of any fault with the newspaper, but simply because so many other media of publicity are being developed. Moreover, the demand upon newspaper columns is so great that it is impossible through that means to reach the whole public with every important proposition which should be brought to public attention.

Every company which seeks frequently to bring its affairs to public notice should develop a mailing list of prominent citizens in its community, to whom direct statements on important subjects should be sent. The affairs of a public utility are not always exciting, and it is frequently difficult to give them that touch of original interest which Billy Sunday gives to any subject that he tackles. But if these are subjects which should be carefully considered by thoughtful people, and if responsible statements are made to representative citizens directly, tersely and attractively, they will be read and will receive careful consideration by many.

A great many companies neglect great publicity possibilities embodied in the issuance of their annual or even monthly reports. Such reports offer excellent opportunities to add a large amount of comment and interesting operating data that is likely to be read at such a time, whereas it might be considered gratuitous on other occasions. The report of the American Telegraph & Telephone Company in this respect is one after which all public utility corporations might well model their policies.

The great possibilities in car cards and in posters placed in the windows of cars are well known but seldom developed with infinite care. Probably these are the most direct and effective means of reaching the constituencies of electric railways. Nobody can avoid reading these cards or posters, and if they are changed with sufficient frequency they can be made a constantly increasing source of valuable information and education.

Every company should issue some sort of company publication, to serve as a medium of communication to its own employees, to its patrons and to the general public. In this way the company makes itself articulate and speaks with an authoritative voice to the whole community in which it operates. These company publications can be made most effective media of communication to the press, to commercial organizations, public service commissions and public authorities generally, as well as to the public at large. Some companies, notably the Bay State Street Railway, the Wells Fargo Express Company and other corporations, both local and national in their scope, are now using such publications upon a fine plane to the great advantage of the companies themselves and the people that are reached thereby.

Public utility companies are just beginning to realize the value of the moving picture. There is a moving picture which tells the news of the day, and there is another moving picture which relates stories and jokes. But up to now the moving picture which corresponds to the advertisement department of the newspaper has not yet been highly developed, and the audience for it has not yet been cultivated. There is a field here the enormous importance of which will undoubtedly receive increasing attention.

ELECTRIC RAILWAYS ARE AT THE PARTING OF THE WAYS

The foregoing are the principal media of communication with the public. Of these, and all other methods of reaching the people, the electric railway industry should undertake steps to make use. The industry, as I analyze it, is at the parting of the ways. It will be able in the next year or two to put itself on a basis where it can command private capital and thus continue to operate in accordance with the progress of the art and to the satisfaction of the communities it serves. If this does not happen, municipal and government ownership of electric transportation agencies cannot but be inevitable.

The people should be made to see clearly the overwhelming advantages of the present service and the present system of ownership and operation. Unless the people are made to understand this clearly from their own point of view, they certainly will not decide the issue merely with reference to the prosperity and the convenience of corporations conducting electric railways.

The public has made up its mind apparently that it will not permit great speculative profits to continue to be made from public service properties. Such profits as will be made in this line of enterprise in the future will be based upon efficiency and ability of management. If the public can be induced to encourage private capital by permitting it to retain the reward of its initiative and enterprise, the electric railway industry can be saved.

The experience with government and municipal operation generally shows that the ultimate cost to the public of most of such operations is really greater than would be the case with private management and ownership, honestly and efficiently conducted. But that is the keynote of the whole matter and should form the basis for all public education.

This article has indicated what should be the main policy underlying the plan of publicity which electric railways should now develop, and it has also directed attention to the chief media which should be employed. But most vital of all is the feature indicated at the beginning: that every effort of this kind should be quite frankly and candidly put forth and should, above all else, have behind it the absolute responsibility of the person or company on whose behalf the work is done.

Taxing Public Utilities

Franchise Taxes Should Be Avoided in States Where Policy of Regulation Has Been Adopted

A RECENT issue of *The Public*, "an international magazine of fundamental democracy" devoted to single tax and similar economic subjects, contains an article on "The Taxation of Public Utilities" by Morton G. Lloyd. In particularly discussing the usual inclusion of franchises with land values in single-tax campaigns, Mr. Lloyd says that if taxation is to be utilized to take for the public all the value which it gives to a utility franchise by its use of the utility, the tax must be high enough to absorb entirely the income representing this value. Otherwise it fails of its object.

But franchises, Mr. Lloyd states, like land titles, acquire value from their present or prospective ability to collect a toll from industry. If this power is definitely removed, the franchise loses value. Its taxation becomes unnecessary from the standpoint of conserving publicly created values for public use, and may even become objectionable. And the machinery for depriving franchises of value is already available, for the power to fix rates and service is the power to give values to franchise or to withhold such values.

In Mr. Lloyd's opinion, the rational attitude of the government in regulating a utility is to authorize rates for service which will provide revenue for reasonable operating expenses, depreciation and a return upon all necessary investment of capital. If there are no additional profits to be distributed, there will be no franchise value to tax. It thus rests with the regulating power to determine the existence of tolls which give franchises their value. Recognizing this, the framers of some of the state utility laws have included express stipulations that no allowance shall be made in ratemaking for the value of franchises other than expenses actually incurred in securing them. Even then, however, when commission decisions are taken before courts for review, claims may be made that franchise values actually exist and will be confiscated unless recognized. Franchise taxes give color to such claims, and as under regulation they are passed on to the consumer and fail of their purpose, it would be better, Mr. Lloyd avers, to avoid them altogether in states where the policy of regulation has been adopted.

As to proper utility taxes, Mr. Lloyd suggests:

"The proper basis of taxation for utility corporations would seem to be the same as for other industries —the exemption of personal property and improvements and the imposition of a tax rate upon site values which shall absorb the economic rent. As temporary measures pending the attainment of this idea, it may be desirable to tax easements on public lands, as in Houston. Where rates are not regulated, it may be especially desirable to impose other taxes, such as one upon gross receipts or net profits, but it is best that this should not take the form of a franchise tax."

On April 12 St. Joseph, Mo., celebrated her third annual trolley day. From 6 a. m. until 11 p. m. the Federation of Women's Clubs collected fares on the cars of the St. Joseph Railway, Light, Heat & Power Company. After 11 o'clock the federation received all the money taken in above the average day's receipts. This sum amounted to $431.80.

Beginning the Freight Business Right

The Cleveland, Southwestern & Columbus Railway Entered Upon This Branch of Transportation in a Big Way—Rates Higher Than Those Charged by Steam Roads Justified by Quick Service—Co-operation of Merchants Made Venture Successful from the Start

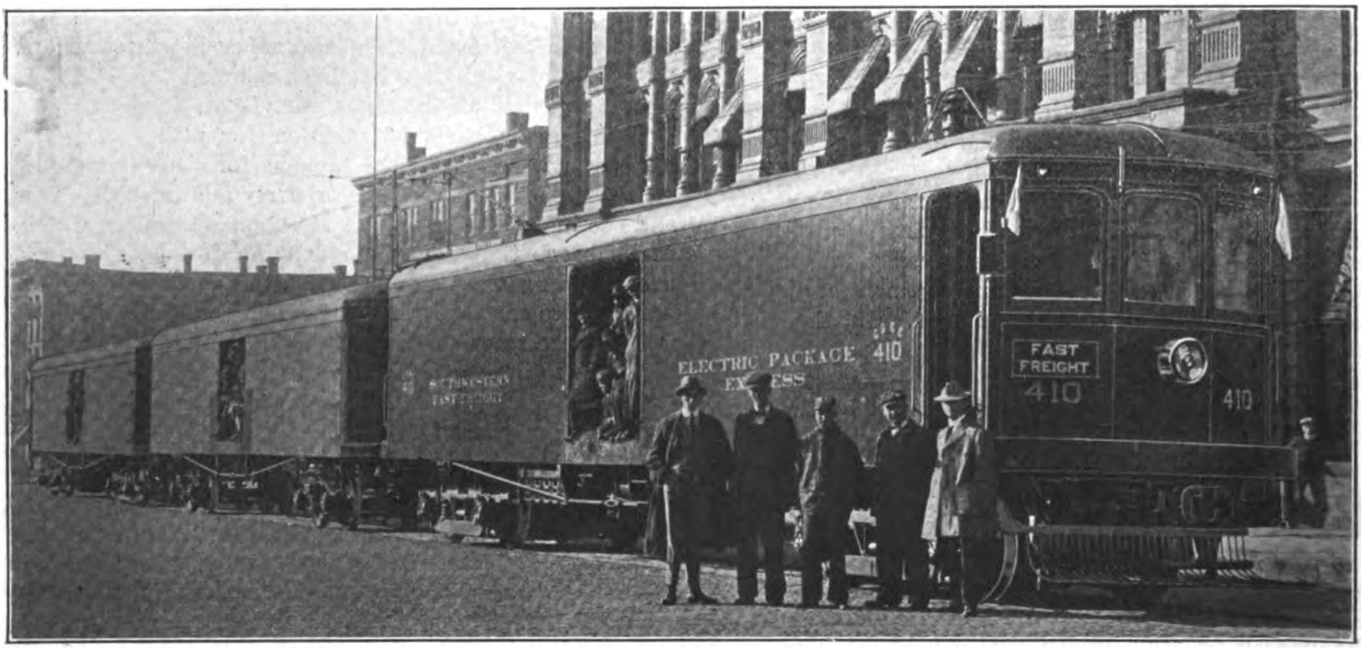
FOR several years the Cleveland Chamber of Commerce had been working with the Cleveland, Southwestern & Columbus Railway in an effort to induce the company to take up a general carload and package freight business over its lines, but not until late in 1916 did this seem feasible owing to various physical limitations, and to certain ordinance provisions which hampered the hauling of freight cars through the streets of Cleveland. These obstacles were finally reduced sufficiently, however, so that E. F. Schneider, general manager, was able to see how such business might be made a profitable supplement to his passenger traffic which was showing the inroad of the automobile. The physical property was accordingly made ready on the Southern division of the road, and on Monday, Oct. 2, 1916, the new freight service was inaugurated and two carloads, 40,000 lb., of merchandise hauled on the initial day.

Previous to this, a committee of twenty-five members of the Chamber of Commerce, comprising the wholesale merchants and manufacturers, made a two weeks' booster tour of the lines of this company, stopping at all the principal towns, addressing the local trade boards and, in general, enlisting the interest of the smaller-town merchants and selling them the service which the electric line was able to give to the various shippers through this territory. This co-operation of the Cleveland business men started the ball rolling, after which the consistent "better service" and the constant solicitation of the traffic department of the company resulted in a 50 per cent increase monthly for the first few months. More recently Mr. Schneider has been scouring the country for additional freight equipment—good evidence of continued growth and expectation for even greater profits ahead. With all the difficulties which usually accompany the beginning of a new service and the trouble met in getting the routine for it working smoothly, the freight claims during the first three months of this freight service amounted to 0.43 per cent of the gross.

Over-Night Delivery the Slogan

One of the principal features of the inauguration of freight service on the Cleveland, Southwestern & Columbus line is the fact that the tariff was made approximately 25 per cent higher than the steam railway rates. This is justified by the very fast service which the company is able to give. And it has been found that the merchants were perfectly willing to pay the premium for this prompt shipment. Any package or carload business received at any point on the line by closing time in the afternoon is delivered at its destination point when daylight arrives the following morning. Compare this with the steam road service from Cleveland to Bucyrus, the southernmost terminal of the electric line, for instance, which requires anywhere from one and one-half to four and one-half days. Similar comparisons might be made for all other towns on the electric line, and this of course is the feature which induces the Cleveland wholesalers to ship and the smaller center dealers to specify shipment via the C., S. & C. Railway.

The regular freight schedule includes two trains each way over the division every day, the principal freight



DEVELOPING FREIGHT—THREE-CAR FAST-FREIGHT TRAIN ON CLEVELAND STREET

SOUTHWESTERN
FAST FREIGHT

DEVELOPING FREIGHT—ASHLAND FREIGHT HOUSE. TYPICAL OF THOSE ON LINE

DEVELOPING FREIGHT—INTERIOR VIEW OF CLEVELAND FREIGHT HOUSE

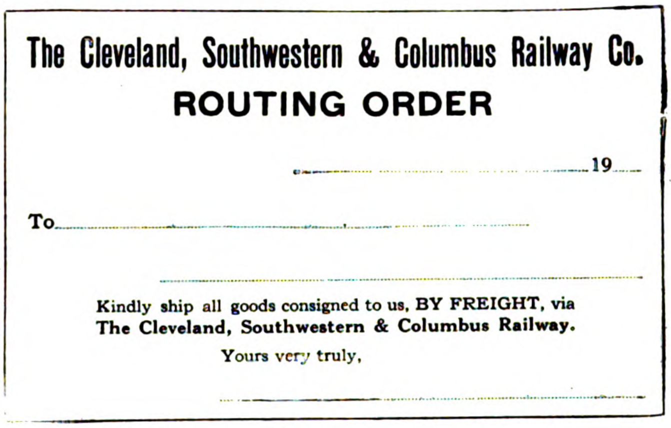
movement being at night in order to avoid having the several car trains on the Cleveland streets during the daytime when traffic is heavy. A morning train leaves Cleveland at 5 o'clock and makes local deliveries over the division to Seville, which is a junction point for a branch line running to Wooster, and then continues on to this destination. Returning, this equipment leaves Wooster at 12.01 p. m., picking up local freight all the way into Cleveland, where it arrives at 3.50 o'clock in the afternoon.

The other train out of Cleveland handles the longer-haul shipments on the line to Bucyrus. It leaves at 7 p. m. and runs through to Seville and makes the local deliveries from there on to Bucyrus. Not more than three cars can be hauled through the Cleveland streets, but four and five-car trains are operated after reaching the city limits. Under normal traffic on the way south, a car is sent off at Ashland and one at Mansfield, and the third goes on through to Bucyrus. It is due there at 2.50 a. m. and then lies over, unloading and loading for the return trip at 5.20 that afternoon, picking up the Ashland and Mansfield cars en route and arriving in Cleveland at 2.30 the following morning. The through trains between Bucyrus and Cleveland meet at West Salem and the crews exchange trains and go back so that they are home every night.

The Southwestern line tariff has been made up to include forty-nine different carload commodities, and interchange arrangements have been completed with four steam lines at eight points. Further interchange is planned later on when the agents have become thoroughly familiar with the local business. No l.c.l. interchange with the steam lines has as yet been attempted.

FREIGHT HAULING EQUIPMENT

Five motor freight cars, six box car trailers and a few flats and gondolas, constitute the present equipment available for handling freight on this 115-mile division of the railway, although other cars are under construction in the company shops at Elyria. The box cars are all 50 ft. long and built with automobile doors in the ends. They are of semi-steel construction and are built to standard M. C. B. dimensions.



The Cleveland, Southwestern & Columbus Railway Co.

ROUTING ORDER

..............................19.....

To..

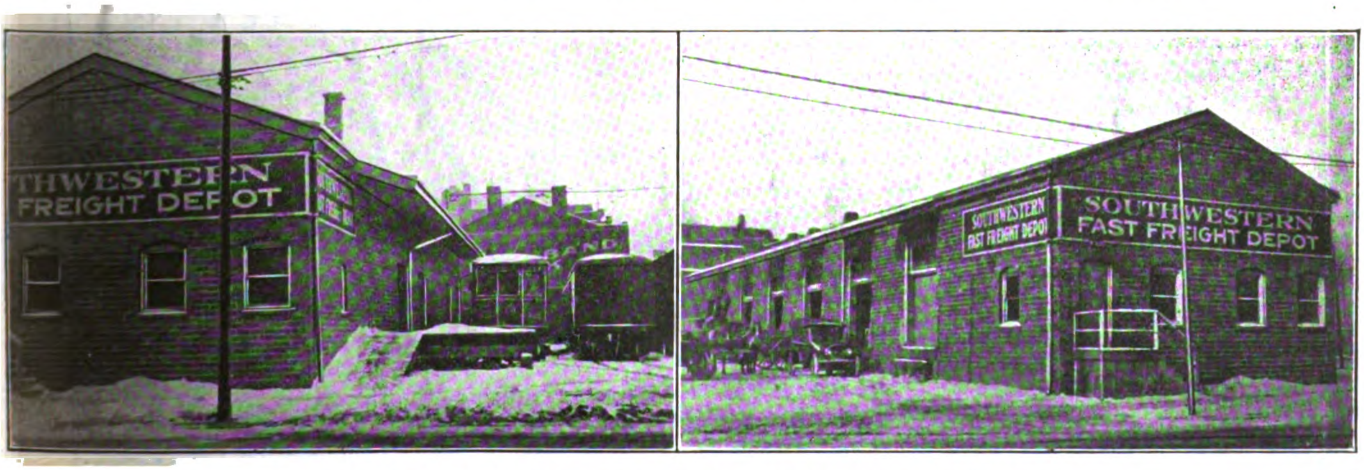
....

Kindly ship all goods consigned to us, BY FREIGHT, via
The Cleveland, Southwestern & Columbus Railway.

Yours very truly,

....

DEVELOPING FREIGHT—ROUTING ORDER USED FOR ENCOURAGING BUSINESS



DEVELOPING FREIGHT—TWO SIDES OF CLEVELAND FREIGHT HOUSE

The Cleveland Southwestern & Columbus Ry. Co.

SOLICITOR'S DAILY REPORT

Bucyrus, O., Station, *Dec. 8th*, 1916.

Chas. J. Laney, Traffic Manager,
Cleveland, Ohio.

Dear Sir:—

The following is a report of soliciting for above date:—

Firm Called On	Person Interviewed	Remarks
Smith's Pharmacy	Mr. Smith	Explained in detail below.
Brown Bros.	Mr. Brown	Everything satisfactory.
Reed's Groc.	Mr. Reed	Explained in detail below.
Callahan Bros.	Mr. Callahan	Everything satisfactory.
C. E. Glass Groc.	Mr. Glass	Likes service, but had two fine bunches of bananas smashed and ruined.
Home Groc. Co.	Mr. Smith.	Geo. John advised these people to use our service and he is using it exclusively.

Mr. Smith has been buying goods in New York and Columbus for thirty years and does not feel that he wants to change now.

The same reason as above applies to Reed's Groc.

D. S. Johnston.

DEVELOPING FREIGHT—TYPICAL SOLICITOR'S REPORT SHEET REPRODUCED IN TYPE

Some thirteen freight depots were built at Cleveland, Medinah, Seville, Wooster, Lodi, West Salem, Ashland, Mansfield, Crestline, Bucyrus, Gallion, Beroy, Berea, etc. Except for the more important ones, these freight houses are of frame construction and range in size from 18 ft. x 36 ft. at Lodi to 20 ft. x 110 ft. at Mansfield and 36 ft. x 140 ft. at Cleveland. They are all located close to the heart of the city they serve and are placed on a siding just off the main line. They all have a 6-ft. loading platform, an incline for loading stock, 5-ton Fairbanks automatic scales and standard four-wheel and two-wheel platform trucks.

The Cleveland station is located at the corner of Eagle and Ninth Streets, which is only three blocks from the corner of Euclid Avenue and Ninth Street, one of the most congested corners in Cleveland. This station, like the freight house at Mansfield, is constructed of hollow tile and brick, with an office at the front. The team way is on one side and the car tracks on the other. A single-track siding off the Ninth Street car line branches into two tracks beside the freight house and gives space for setting five cars for loading.

The Cleveland Southwestern & Columbus Railway Company
Traffic Department
525 Garfield Bldg.
Cleveland, Ohio.

Gentlemen:—

Since starting the Freight Business on the Southern Division of our road, we have maintained the Fast Schedule placed in operation October 1st, 1916, in fact not in one single instance have we failed to make delivery as advertised.

Realizing that this one feature of our new departure has appealed to your needs, we wish to take this opportunity in thanking you for your patronage.

While it is our intention to keep right on giving you the benefit of our excellent service, it is also our desire to increase our shipments, and this can only be done by asking for more of your business.

We think this is the opportune time to advise you that our capacity is unlimited and that we can accept all Classes of Freight the same as any steam road. We are governed by the same Official Classification, our cars are all 50 feet in length and equipped with end doors for the loading of long articles.

We are prepared to handle all of your shipments in an efficient manner.

Remember the QUALITY of our SERVICE demands the QUANTITY of your business.

Very respectfully yours,
Traffic Manager.

CJL-GT

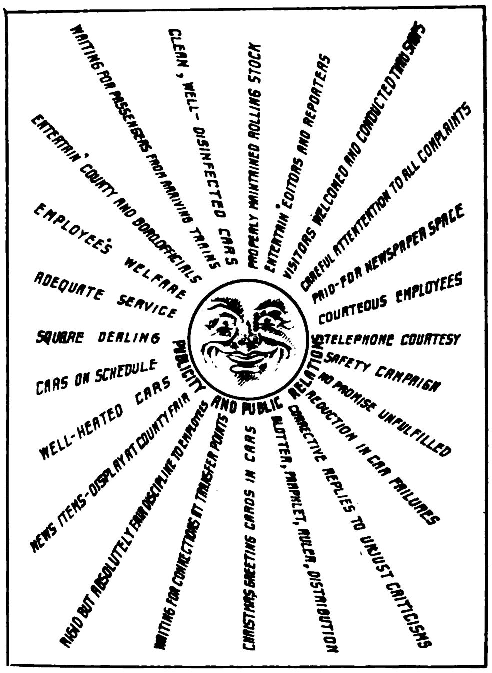
DEVELOPING FREIGHT—SAMPLE LETTER SENT OUT SOLICITING PATRONAGE

The principal effort devoted to increasing the freight traffic of the Southwestern line has been exerted through personal solicitation. Calls are made on present and prospective customers by a solicitor giving all his time to this work. A daily report sheet sent in to the traffic manager gives the names of the firms called on and just a brief remark as to the result of the inquiry and solicitation. Any complaint of the service is noted and steps are taken to correct this as soon as the notice reaches the traffic manager. A typical report sheet is reproduced herewith. By giving close personal attention to any dissatisfaction in the early days of the service, it was possible to eliminate promptly some of the deficiencies of the service and thus hold every customer once gained.

In addition to this personal solicitation, a series of letters was sent to prospective customers and present customers calling attention to the success the company has met with in maintaining its over-night service as advertised and asking for more business. Routing order blanks and stickers for pasting on packages to direct their shipment over the Southwestern line are supplied to all the shippers and consignees. A small amount of advertising was also carried in the newspapers during the early period of the service. But the principal aid in securing for the electric line a goodly share of the freight traffic in the territory served was the interest of the Cleveland wholesalers and manufacturers and the service rendered.

How to Secure Better Public Relations

An enterprising electric railway—whose intelligence in fostering better public relations is inversely proportional to its smallness in size—has devised the accompanying diagram to present its ideas of the best means of promoting better relations between railways and the public. Some of the rays, it is said, may be more effulgent than others, but all of them give some light. The diagram as a whole may well be the subject of study on the part of many an electric railway official.


WAITING FOR PASSENGERS FROM ARRIVING TRAINS
CLEAN, WELL-DISINFECTED CARS
PROPERLY MAINTAINED ROLLING STOCK
ENTERTAIN EDITORS AND REPORTERS
VISITORS WELCOMED AND CONDUCTED THRO SHOPS
CAREFUL ATTENTION TO ALL COMPLAINTS
PAID-FOR NEWSPAPER SPACE
COURTEOUS EMPLOYEES
TELEPHONE COURTESY
SAFETY CAMPAIGN
NO PROMISE UNFULFILLED
REDUCTION IN CAR FAILURES
CORRECTIVE REPLIES TO UNJUST CRITICISMS
BLOTTER, PAMPHLET, RULER, DISTRIBUTION
CHRISTMAS GREETING CARDS IN CARS
WAITING FOR CONNECTIONS AT TRANSFER POINTS
RIGID BUT ABSOLUTELY FAIR DISCIPLINE TO EMPLOYEES
NEWS ITEMS-DISPLAY AT COUNTY FAIR
WELL-HEATED CARS
CARS ON SCHEDULE
SQUARE DEALING
ADEQUATE SERVICE
EMPLOYEES' WELFARE
ENTERTAIN COUNTY AND BORO OFFICIALS
PUBLICITY AND PUBLIC RELATIONS

A GRAPHIC PROGRAM FOR BETTER PUBLIC RELATIONS

The Problem of Vehicular Interference

The Author Points Out the Loss to the General Public Through Avoidable Delays Caused by Vehicular Interference and Advocates an Effort by Electric Railways to Bring About a Better Understanding of the Principle Underlying the Public Utilities' Superior Rights

By FREDERICK W. JOHNSON

THE day would seem not far distant when an energetic effort will have to be put forth to disentangle the surface railway systems of our larger cities from the throttling effects of slow-going vehicular travel. It is perhaps no exaggeration to say that, unless a practicable solution is found for certain of the more pressing phases of the evil, some of the functions of the surface railway may pass, in part at least, to other mediums of travel more responsive to the requirements of our admittedly intensive mode of living.

One of the most pronounced characteristics of our national temperament is to be observed in a seemingly insatiable demand for speed in almost everything which enters into the conduct of our daily life. The remarkable popularity of the recent jitney invasion is a good example of the case in point. For a time many professed to believe that the strength of this movement rested upon the novelty of riding about town in an automobile. Nothing else could have been further from the fact. Approximately 50 per cent of the charm of the jitney lay in the fact that one was generally available for immediate use. About 40 per cent lay in the fact that few stops were made en route, while not to exceed 10 per cent found its root in the novelty of the situation. All of the great disadvantages of the service were lost to the popular mind in its unyielding quest for rapid transportation. One were worse than blind to shut his eyes upon so illuminating an insight into the transportation horizon of the future.

HANDICAPS IN PROVIDING SERVICE

Of several serious handicaps with which surface railways have had to contend in their effort to meet the popular demand for rapid and uninterrupted service, none has proved so difficult of solution or so demoralizing in its influences as has the wide latitude allowed the individuals in the use of public highways. Municipal authorities have been slow to recognize the almost intolerable consequences of a too lax regulation of vehicular street traffic, and where independence of action by individuals is carried to its logical conclusion the public is placed in the position of standing in its own light. Sooner or later the privileges and conveniences of the individual must be subordinated, in some measure at least, to the rights and conveniences of the great number. Certain it is that the great army of trolley patrons will not always be content to abide the pleasure of the individual who chooses to conduct himself in his own peculiar ways, even if this does happen to obstruct the flow of the public travel. Herein, it is to be observed, lies the key to the situation, because in the final analysis it is to the people themselves that appeal must be made for the originating power and authority which they alone possess.

Under the broad hypothesis that the popular demand is for rapid and dependable transportation, that it is both the duty and the desire of the utility to comply with this obligation, and that the chief obstacle to its fulfillment centers in the perpetual encroachment of vehicular travel upon the common right of way, it may be well to examine in some detail the various elements which enter into the problem. In addressing the subject it will here be treated purely as an operating proposition, disregarding for the moment any serious consideration of the safety factor, although the cause of he latter must appreciably be advanced by any resulting good that may accrue to the former. Many of the points cited, perhaps most of them, will instinctively suggest their own remedies without extended comment, and while not all will be found to apply to any given situation, some at least may prove helpful or suggestive. Turning first to the more common types of avoidable traffic delays, there are encountered such old stand-bys as (a) the practice of dragging cars, (b) obstructive curb deliveries, (c) horse watering troughs, (d) vehicles parked too close to the track, (e) collisions caused by drivers cutting across the path of moving cars, (f) holding the rail at intersections, (g) moving excessively heavy objects during the daytime, (h) overloading of vehicles by truckmen during bad weather, (i) pushcarts so located as to divert vehicular traffic to the car tracks, and (j) bucking directional traffic.

In the aggregate these causes of delay offer sufficient material for the most energetic kind of missionary work. Many lesser evils will automatically be eliminated once encouraging progress is achieved in the solution of those of a more acute nature. Banish the long-cherished theory that the individual traveler on the highways is a law unto himself and substitute in its stead the more equitable axiom of "the greatest good to the greatest number," and much that now seems difficult of accomplishment will speedily be accepted by the public mind as being both reasonable and just.

RESULTS OF TRAFFIC INTERRUPTIONS

The immediate results of serious traffic interruptions may be summarized briefly as public dissatisfaction with the service and press criticism, which arise from disturbed schedules, irregular spacing of cars, missed connections and congestion at transfer points and terminals. In addition, there is an effect upon receipts and an increased accident hazard due to fast operation, while not infrequently there are power overloads.

It is one of the peculiarities of the business that, following a blockade, the very cars which should be turned short of their customary destination at the earliest possible moment invariably are so well filled that it is impossible to do so without still further incurring the displeasure of patrons. Again, unless strategically located line cuts are available, it may even happen that a goodly portion of the service of the line affected may be proceeding in the reverse direction to the demands of travel, particularly if the delay has occurred during or immediately preceding the rush-hour period. Instances are of record in almost every city where the most elaborate preparation for the handling of special events have been hopelessly disorganized because of untimely intervention of some occurrence of this nature.

There are yet other forms of avoidable traffic delays which would appear to be susceptible of successful attack. The present situation in the business world has resulted in the requisitioning of almost everything at all available in the shape of rolling stock and horseflesh. Quite naturally this has returned to active duty much that had once been relegated to the scrap heap as being unserviceable. Such a condition must inevitably bring about an abnormally high percentage of failures and breakdowns upon the public highways. Long-neglected paving defects, also, often intensify a situation already sufficiently troublesome. In particular, steam shovels and concrete mixers are a problem, instances having occurred where an entire section of a city has been deprived of transportation because of the maneuvering of such equipment into excavations that abut the rails or because it has been jammed beneath bridges with insufficient clearance or has been brought in contact with the overhead construction. Rigid regulation of the routes to be followed and of the hours during which cumbersome objects may be moved, preferably late at night, would seem to be the only practical solution of this menace to public travel.

The pernicious custom of using the car tracks as a driveway reaches its greatest height in cities where the track gage conforms to the wagon gage and where the rail is of a type that lends itself readily to the practice. Thus, the plan of using asphalt or wooden blocks for the shoulders and Belgian blocks for the space between the rails dovetails nicely with the average driver's conception of the real purposes for which car tracks were originally designed. Wooden block is the most treacherous and the most dangerous pavement that a city can lay, and for this reason it is the least to be desired upon car-tracked streets, because of the frequent blocking of the cars by fallen horses, stalled loads and skidding automobiles. On bridges, approaches and grades, where difficulty is encountered incident to drivers that follow the rails, gratifying results have attended the scheme of sanding the cartway as a means to attract vehicles from the track when there is snow or ice upon the ground.

Street excavations that abut on car tracks have long been a thorn in the side of the transportation man. At best such excavations necessarily divert all traffic to the car tracks. Therefore, wherever feasible, it would seem the thought of wisdom for city authorities to detour vehicular traffic over paralleling thoroughfare, provided such detouring will not produce undue congestion upon other car-tracked streets.

The adequate safeguarding of highway excavations at night is of sufficient importance to railway companies to warrant their checking up at close intervals upon the methods pursued by contractors. Blind approaches formed by huge piles of building material upon the highway are yet another menace that requires close scrutiny because of the danger of vehicular collisions and consequent interruption of service. Not only should the railway itself avoid opening intersections in congested areas at times inconsistent with the best interests of the transportation department, but it should as well so place its equipment and materials as to offer the least possible obstruction to the normal flow of vehicular and pedestrian travel.

RIGHTS OF THE PUBLIC UTILITY ARE SUPERIOR

In general, the conflicting rights of all may be better served if a clearer and more thorough understanding be established in regard to rights of each. There is a middle ground upon which all may meet, and it would seem distinctly within the province of the railway to take the initiative in bringing about an understanding of this fact.

Without seeking to involve the chief controlling issue in an entangling maze of legal decisions, it may be permissible to quote the following excerpt from the opinion rendered from the Pennsylvania Supreme Court in 1892, not only because of its vision and clarity of thought, but also because of its peculiarly fitting application to precisely the same state of affairs a quarter of a century later. The italics are the author's:

"There is this distinction to be observed between steam railroads and street railways. In the case of the former, they have exclusive right to the use of their tracks at all times and for all purposes, except at road crossings. Street railways have not this exclusive right. Their tracks are used in common by the street cars and the traveling public. While this common use is conceded, and is unavoidable in towns and cities, the railway companies and the public have not equal rights. *Those of railway companies are superior.* Their cars have the right of way, and it is the duty of the citizens, where on foot or in vehicles, to give unobstructed passage to the cars. This results from two reasons: First, the fact that the car cannot turn out, or leave its track, and secondly, for the *convenience and accommodation of the public.* These companies have been chartered for the reasons in part, at least, that they are a public accommodation. The convenience of an individual who seeks to cross one of their tracks must give way to the convenience of the public. It would be unreasonable that a carload of passengers should be delayed by the unnecessary obstruction of the track by a passing vehicle."

A powerful incentive to action is bound up in these few lines, because through them we glimpse conditions as they should be and as they ultimately must be if the future of the street railway is to rest secure. It is idle for any community to permit a small minority of its residents thus to frustrate the demands of the whole by denying to its servant the opportunity of complying with them. But to this end there must be a real demand from the public itself for the enactment of wise legislation governing street traffic and an insistence for its rigid and impartial enforcement.

In the recent Liberty Loan campaign the Doherty organization purchased $1,250,000 of the bonds and aided the campaign still further by financing Ruth Law's airplane trip in the Middle West to stimulate the bond sales. In addition to the above the directors of the Cities Service Company, at a meeting held in the office of Henry L. Doherty & Company on June 20, voted to create a fund of $250,000 for the American Red Cross.

New York Line Secures Increase

Desired Relief Granted by New York Second District Commission to Nassau County Lines of New York & North Shore Traction Company

WITH commendable promptness the Public Service Commission for the Second District of New York has granted in full the various increases in fare which the New York & North Shore Traction Company petitioned for its lines in Nassau County. The last hearing on the matter was held on June 15, and the decision was rendered on June 26. The company has applied also for a 7-cent fare in Queens Borough, New York City, under the jurisdiction of the First District Commission, and its application for relief is scheduled to be taken up by this commission on July 16.

In 1915 the company applied for permission to increase its fare from 10 cents to 15 cents between Port Washington and Mineola, but in view of certain franchise restrictions the commission decided that it did not have authority to fix a higher rate. After some time this determination was reversed (175 App. Div. 869) by the Appellate Division, Third Department, as noted in the ELECTRIC RAILWAY JOURNAL of Feb. 3, 1917, page 210. Accordingly, on May 23, 1917, the company applied for the authorization of a fare of 20 cents for a continuous ride between the city line (Little Neck) and Mineola, and also between Port Washington and Mineola, and 12 cents for a continuous ride between Mineola and Hicksville.

The company contended that while it was giving more service than was required by its franchise, this was necessary for the convenience of the public, and it would be a hardship if the service were decreased. The territory in Nassau County is very sparsely settled, and there has been little or no development there since the railway was built. The increased use of the automobile has caused a very substantial decrease in the earnings of the company in the last two years. Because of the small earnings, the company has not been able to keep the roadbed and equipment up to the proper standard. Moreover, it has not earned enough to enable it to set aside a proper amount for depreciation. For the years ended June 30, 1915 and 1916, the company earned $2,111 and $2,032 over fixed charges. No dividends were paid to stockholders during these years. For the ten months ended April 30, 1917, the deficit after paying fixed charges was $7,093. For the eleven months ended May 31, 1917, the deficit was more than $8,900, as compared to a net income of about $1,500 the year before.

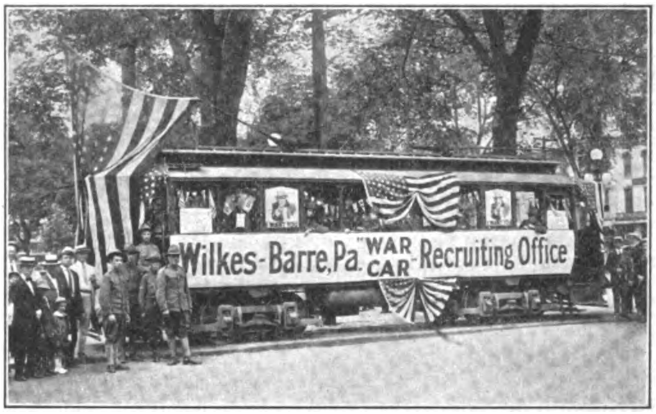
In its opinion the commission states that it is very apparent from the evidence that the company is failing to earn its bond interest, and from the commission's knowledge of conditions this state of affairs may continue for a considerable period. Particularly is this true if the company makes any effort to keep the property in reasonably good operating condition, and also endeavors to provide any depreciation reserve. On the assumption that the company has invested in the public service at least $1,599,350, which is the amount represented by $770,000 of bonds and $829,350 of stock authorized by the First District Commission (which has jurisdiction in the matter), it will be seen that the company would have to earn at least $79,967 to give a return of only 5 per cent on this valuation. This makes no provision for depreciation reserve and allows nothing for surplus and a reserve for contingencies. The commission states, however, that the company never earned even such an amount during the last five years, the maximum being approximately $49,500 in the year ended June 30, 1915.

The commission concludes, therefore, that the proposed increases, which are estimated to bring in approximately $8,850 of additional revenue per annum, are not unreasonable or unjust. The commission has approved certain revised fare zones, four in number, at 5 cents each, between Mineola and Port Washington and likewise between Mineola and the city line (Little Neck). The distances will be in the first place 2.32 miles, 2.38 miles, 2.54 miles and 3.25 miles, or a total without overlaps of 9.69 miles for a continuous 20-cent ride; and in the second place 2.60 miles, 3.27 miles, 2.54 miles and 3.25 miles, or a total without overlaps of 10.16 miles for a continuous 20-cent ride. Between Mineola and Hicksville there will be two zones of 3.74 miles and 4.09 miles at 6 cents each, or a total without overlaps of 6.77 miles for a continuous 12-cent ride.

Recruiting Car in the Wyoming Valley

The Wilkes-Barre (Pa.) Railway Recently Aided in a Successful Campaign for Army Recruits

WHEN President Wilson made his recent appeal for 70,000 recruits for the United States army, the Wilkes-Barre Railway Company immediately undertook to equip and furnish to the recruiting officers a portable recruiting station that could be used at any point on the 135 miles of railway comprising the company's system in the Wyoming Valley of eastern Pennsylvania. The equipment consists of a standard trolley car fitted up inside to serve as an office and provided with exterior decorations as shown in the accompanying cut. This car was widely advertised and was regularly scheduled to reach the various towns touched by the company's lines at specified dates. Frequently music was furnished by volunteer bands, and at each point prominent representatives of the locality made patriotic speeches, the car then being thrown open to receive applications from recruits. The car was accompanied by regular army recruiting officers, who occupied it at all times and made verbal appeals for enlistments, and as a result a large number of young men have signed for the various services.



RECRUITING CAR FURNISHED BY WILKES-BARRE RAILWAY TO STIMULATE ENLISTMENTS

Better Public Relations for London

Reorganization of Municipal Tramway System Provides for New Development and Publicity Section—British Technical Press Lauds "Great and Intelligent" Public Relations Work of American Companies

THE London (England) County Council, in adopting the proposal of its highways committee to include a development and publicity section in the reorganized London tramway system, has made an enlightened departure in British municipal tramway management. As stated in a preliminary notice in the "London Letter" in the ELECTRIC RAILWAY JOURNAL of April 7, it is planned that the existing ten sections of the London County Council Tramways shall be merged in five departments—traffic, electrical, rolling stock, permanent way and general. The traffic branch is to have a development and publicity section, the highways committee being of the opinion that more newspaper advertising and publicity work generally would be advantageous.

WHY THE TRAFFIC BRANCH SHOULD BE REORGANIZED

From the full report of the highways committee now available, it can be seen what an important part development and publicity work is to play under the new plan of organization for the great municipal tramway system in London. In the opinion of this committee, it is vitally necessary for a most efficient staff to be furnished to deal with all traffic matters. It is felt that the organization should be sensitive to every change, actual or prospective, whether in relation to the requirements of the traveling public or to traffic conditions generally.

Under the old organization, the traffic assistant and the two district superintendents, while rendering most zealous service, were compelled under pressure of circumstances to devote too much time and attention to matters of daily routine. Through want of a staff capable of relieving them of such work, they were unable to spend sufficient time on the road or to compile and study returns of traffic with a view to its improvement. The highways committee, therefore, arrived at the conclusion that the work of the traffic branch should be reorganized in two sections: (1) A development and publicity section, to deal with matters which have not hitherto received adequate attention, and (2) an operation section.

PROPOSED DEVELOPMENT WORK

According to the highways committee, the requirements of the public and the possibilities of the tramways undergo constant change, owing to growth and migration of population, growth and decadence of shopping and industrial centers, and other causes of alteration in the flow of passenger traffic. All such changes must be catered to and, if possible, anticipated, and it will be a primary duty of the development and publicity section to obtain the necessary data on which action should be based. Moreover, it is realized, the London tramways have to compete for traffic with other means of transit, and the development of the undertaking on successful lines must to a considerable extent depend on constant and well-directed effort to adjust the services to public needs. Such matters as through-running, through-booking, interconnection with other undertakings, nature and adequacy of services, fares and fare zones should be dealt with in this section as matters of development.

PUBLICITY WORK IS DEEMED IMPORTANT

The highways committee attaches equal importance to the publicity work to be undertaken in the development and publicity section. In 1913 a firm of advertising contractors offered to advertise the Council's tramways at a cost, roughly calculated, of $115,000 a year. In the following year an advertising scheme involving the expenditure of about $30,000 a year was submitted by another firm. These offers were not accepted. The chief officer of the tramways is now of the opinion that to advertise the service adequately would involve the expenditure of from $75,000 to $100,000 a year. While not wishing to prejudge the question of the amount which should properly be appropriated for publicity service, the highways committee is satisfied that, apart from other forms of publicity, greater use should be made of the press as a means of conveying to the public the advantages peculiar to the tramways service. Newspaper articles should be encouraged and suitable matter prepared; new and altered services should be advertised in the press, and attractive tramway maps and guides should be distributed.

It is felt that the preparation of time tables should also be undertaken in the development and publicity section. To enable this work to be done scientifically and with the fullest regard for the requirements of the public and the possibilities of the service, the head of this section should be furnished by the head of the operation section with all traffic data and statistical information required.

The adopted plan provides for a principal officer (directly responsible to the traffic manager) to be designated as the "development superintendent," at a salary from $2,500 to $4,000 a year. He should have under him at least three responsible heads of subsections: (1) a publicity assistant (from $1,500 to $2,000 a year); (2) an officer in charge of matters relating to fares and independent traffic checks (from $1,500 to $2,000 a year), and (3) a time table assistant (from $1,250 to $1,500 a year).

OPERATION SECTION IS EXPECTED TO CO-OPERATE

The other or operation section of the traffic branch, under the immediate and close supervision of the traffic manager, would be in effect the present traffic section, with its work of giving service, inquiring into complaints, etc., making special traffic checks, and preparing statistical and other information likely to assist in securing the most satisfactory results in connection with traffic operation. There should be, it is said, a smooth channel of communication of statistics and information from this section to the development and publicity section.

HOW THE BRITISH TECHNICAL PRESS VIEWS THE CHANGE

In commenting upon the foregoing features of the reorganization, the *Electric Railway and Tramway Journal* states that hitherto British tramways have been too self-contained and too reticent as regards both their merits and their faults. Continuing, this paper says:

"In this respect we have lagged far behind the street railways of the United States of America, where the companies which control those undertakings have for some time past paid great and intelligent attention to their relations with the public. It may be that in this country, where the majority of the tramways are owned and operated by the municipalities themselves, there has grown up a feeling that if the tramways committee and the manager satisfy the Town Council and make the undertaking pay, they have done all that can be expected from them. But we venture to think that this idea is not well-founded, and that the tramway undertaking should make the public its partner by taking it into its confidence at all times, in the same way the successful store does.

"A clever publicity man would always find ways and means of keeping his undertaking in pleasing evidence. He would talk to the people through the local newspapers, point out the pretty spots reached by the cars, apologize for any delays which might arise through storms, snow or breakdowns, let parties now and then see the power station and its wonders, invite the press to witness the night work at the sheds, and in a hundred other ways make the public feel that they are 'in it' and not headed off as nuisances and foolish grumblers.

"In London much of this sort of thing has been done and is being done by the Underground Electric Railways and the London General Omnibus Company, with excellent results for those concerns. As the London County Council Tramways are 'up against' these ably-managed undertakings, they must adopt a similar policy and try to do it better than their rivals."

Progress of New York Fare Hearings

In Whole State the Week Has Been Generally One of Adjournment for Hearings on Increased Fares

As stated in last week's issue the chief topic of discussion at the first hearing on July 6 before the Public Service Commission for the Second District of New York on the application of twenty-eight electric railways for a 6-cent fare was the procedure to be followed in presenting the cases. The question was also raised, however, as to whether the commission has power to increase fares in spite of old maximum rate statutes and provisions in certain local franchises. This question was taken under consideration by the commission, and the hearing was adjourned until July 13 at Albany.

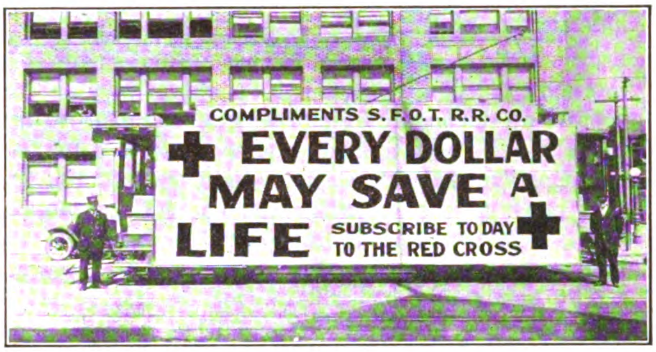
In the First District, New York City, the hearing scheduled for July 9 on the application of the Third Avenue Railway for a 2-cent transfer charge was adjourned until July 23 in order to allow the company to finish the preparation of certain operating and valuation data desired by the commission and the city. The commission announced that it hopes to take a recess during August, and the beginning of the New York Railways and Brooklyn Rapid Transit Company hearings in regard to a transfer charge was postponed until Sept. 10.

The beginning of the hearings on the applications of the Staten Island Midland Railway and the Richmond Light & Railroad Company has been adjourned until July 16. These companies, which control the surface lines on Staten Island, have asked for a 6-cent fare.

Red Cross Cars on the Pacific Coast

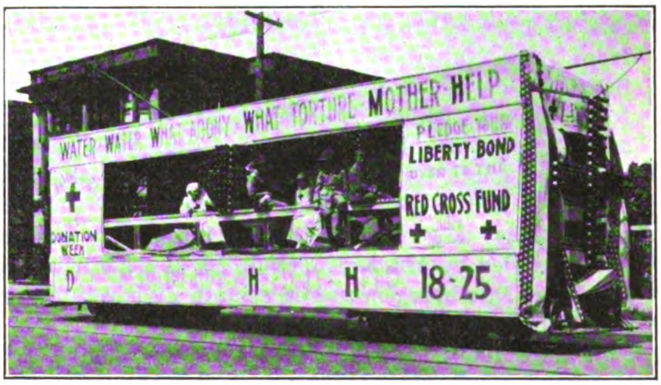
Contributions to Red Cross Fund Stimulated by San Francisco-Oakland Terminal Railroad and Puget Sound Company

DURING the recent campaign for contributions to the national fund of the American Red Cross the San Francisco-Oakland Terminal Railroad operated in the city of Oakland a car that was especially fitted up to aid the movement. The car, which was provided with huge signs as shown in the accompanying illustration, was operated daily over the company's tracks in the downtown district of Oakland, and, as was to be expected from the publicity thus given to the campaign, the results were immediate. One of Oakland's business men, after seeing the car pass his office, telephoned to Red Cross headquarters to ask how large a subscription would be accepted and, when told that there was no limit, sent in $300. He said that he had never given serious thought to the matter of the activities of the Red Cross organization until this car attracted his attention.


COMPLIMENTS S.F.O.T. R.R. CO.
EVERY DOLLAR MAY SAVE A LIFE
SUBSCRIBE TODAY TO THE RED CROSS

RED CROSS CAR OPERATED BY SAN FRANCISCO-OAKLAND TERMINAL RAILROAD

In the lower of the illustrations there is reproduced a Red Cross car that was operated by the Puget Sound Traction, Light & Power Company, Seattle, Wash., over its lines in that city during the week of June 18-25, in the interest of the campaign to obtain $300,000 in Seattle for the Red Cross. It may be interesting to note that Seattle exceeded its apportionment of $300,000 by more than $200,000. The car is a work car with open sides and a cab at each end. It is 34 ft. long and 8 ft. 8 in. wide. The signs on the car were devised by the Red Cross organization without regard for the feelings of those subject to the forthcoming draft.



RED CROSS CAR DONATED BY PUGET SOUND TRACTION, LIGHT & POWER COMPANY

COMMUNICATIONS

Determining "Slack" in a Schedule

STONE & WEBSTER

BOSTON, MASS., July 3, 1917.

To the Editors:

The paper by C. H. Koehler on "Determining the 'Slack' in a Schedule," appearing in the ELECTRIC RAILWAY JOURNAL of June 16, 1917, suggests very interesting possibilities of further refinements in the making and adjusting of electric railway schedules. Far too little attention has heretofore been given to the determination of efficient speeds to fit widely varying traffic conditions during different hours of the day, resulting often in adherence to fixed schedules, too fast for heavy traffic and inefficiently slow for light traffic. Mr. Koehler's paper points out with commendable clearness and conciseness the applicability of car recording watt-hour meter records to such schedule studies.

The application is not, however, so simple as it at first appears. The paper prescribes a certain field within which efficient operations, expressed in co-ordinates of schedule speed and power consumption, should lie. If without this field, it is either inefficient or else physically impossible. This field is shown in Fig. 2 of the paper, being the area inclosed within so-called "performance" curves and extreme "equivalent-service" curves.

It should be pointed out that the curves shown apply only to a particular type of equipment with a constant loaded car weight and assume for all traffic conditions a high rate of acceleration and braking. The last assumption implies effective training of motormen in car operation, and is, even then, difficult of realization under ordinary conditions. The car meters referred to have been quite extensively used to effect economy in power consumption, and this economy is very largely brought about by increasing the prevailing rates of acceleration and braking. With meter records of motormen's performance showing frequent variations of 25 per cent or more in kilowatt-hours per car-mile for similar service conditions, aside from the differences necessarily arising from traffic fluctuations, it would seem desirable to study the possible effect of individual efficiencies upon the performance area which Mr. Koehler has developed before applying it to definite traffic and schedule problems.

It is a simple matter to produce other curves, similar to Fig. 2 in the paper, for other rates of acceleration and braking, ranging from 1.25 m.p.h.p.s. (the minimum rate specified by Mr. Koehler) up to, say, 2.5 m.p.h.p.s., the latter rate being in use on certain light-weight, one-man cars with perfect comfort and safety.

It is not likely that there should be any change in the maximum performance curve with varying rates of acceleration and braking, the limit being set by the characteristics of the particular equipment, which are, of course, independent of the efficiency of power application. On the other hand, it would seem that the curve of most efficient performance would be affected by varying rates of acceleration and braking to an extent that is worth consideration. This curve is derived from Fig. 3, which shows combined power and platform labor costs for different schedule speeds. If acceleration is greatly increased the result is either slightly less power consumption for the same schedule speed or a slightly higher speed for the same consumption. Assuming the latter, we have the same efficiency curves in Fig. 3 as before, but they apply to slightly altered "equivalent service" curves—higher for increased acceleration. The effect would be to shift the curve of most economical performance in Fig. 2 to the right for higher rates of acceleration and to the left for lower rates, giving respectively a narrower and wider performance area. No calculations have been made to show the extent of the effect of varying acceleration rates upon the width of the performance area.

As Mr. Koehler states, the effect is small within the ranges in acceleration encountered in actual practice. But, unfortunately, it is this side of the performance area which needs most careful designation. The opposite side automatically discloses itself in practice by disorganized schedules. The side indicating maximum economy does not reveal itself in any such way, and it would be interesting to see the results of a further study of the effect (if this is real rather than only apparent) of great differences in the rate of acceleration and braking upon the location of the curve of maximum economy.

Apparently the performance area is also subject to upward and downward extension, due to variation in the factors discussed, and also to a wider range of traffic conditions, all subject of course to the capacity limitations of the equipment. The so-called area then becomes, in reality, a performance zone. It is within this zone, determined with all practical accuracy, that efficient operation, expressed in terms of speed and power consumption, must lie. As the point indicating actual operation moves from the side of the zone indicating maximum efficiency toward the opposite side, the "slack" in the schedule diminishes and economy and regularity of service decrease.

As Mr. Koehler states, the preparation of diagrams showing these zones for different types of equipment is not a very serious matter for a railway with a reasonable variety of equipment. Where car meters are in use the additional labor necessary to prepare data for the proposed schedule studies is small and the study itself should be well worth while. There should be no difficulty in determining whether or not the schedules in question show approximate approach to most economical speed under different traffic conditions even if the curve of maximum economy is not exactly located. Greater refinement of study, if justified by the volume of traffic involved, may require additional data as to number and length of stops and rates of acceleration and braking, and through these data the meter records may acquire more definite value.

Where car meters are lacking it may still be possible to make approximate schedule checks if feeders supplying equipment of uniform type and service can be suitably isolated and metered, but no such refinement of schedule adjustment can be expected in this way as from the use of individual car meters.

It is probable that the useful application of the proposed method of analysis will be limited to fairly large systems with frequent headway or high ratio of rush hour to base service. Under other circumstances the convenience to patrons of a fixed, regular headway may be of greater advantage than the power saving from periodical, confusing schedule adjustments. Terminal layovers may, however, sometimes be employed to raise schedule speeds to the most economical point during periods of light traffic. L. R. NASH.

The Association's Bureau of Information

AMERICAN ELECTRIC RAILWAY ASSOCIATION.
NEW YORK, July 12, 1917.

To the Editors:

I have read with much interest the letter of Leake Carraway, director of publicity of the Southern Public Utilities Company, which appeared in your issue of July 7 and dealt with the organization, within the American Electric Railway Association, of a bureau of publicity designed to be of use to the entire industry. I agree most heartily with Mr. Carraway's ideas, although the exact form which such an organization should take should be carefully considered. For the mere purpose of disseminating information concerning company publications, it is, of course, unnecessary.

The association has always maintained a bureau of information which is constantly being improved. Most of the member companies are making extensive use of its facilities. Occasionally, however, instances come to the attention of association officers where railway officials are apparently unaware of the facilities which the association possesses for collecting and collating information, and in consequence attempt on their own behalf the gathering of information which is at the time in possession of the association and which may be secured in a much shorter time and with less trouble both to the officers desiring it and those to whom the queries are addressed.

Among these gentlemen are undoubtedly some of those who communicated with Mr. Carraway concerning the cost of and details of publication of his company magazine. At the instance of the executive committee of the Transportation and Traffic Association a questionnaire was sent to all of the member companies some time ago covering the matter in question, and the association has on file full information. This could and would be brought up to date at the instance of any member making inquiries and would have saved both Mr. Carraway and his correspondents much trouble and time.

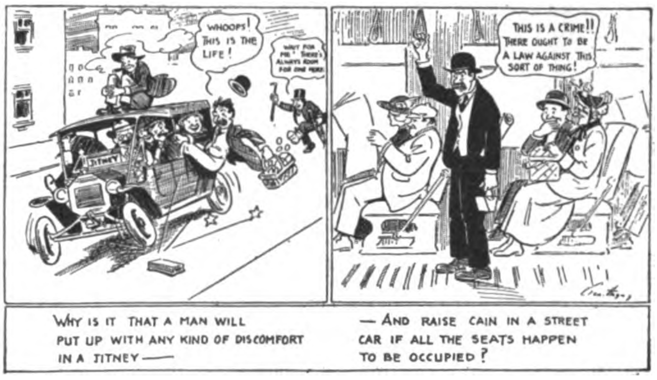
The same thing is true along almost every line of electric railway work, and a good rule for all association members in quest of information would be to write first to the association before attempting the collecting of information independently. It might also be worth while for those receiving requests for information along general lines to refer the inquiry to the association directly. E. B. BURRITT, Secretary.

The Pacific Electric Railway, Los Angeles, Cal., is at the present time operating with 1200-volt trolley approximately 80 miles of equivalent single track, which extends from Covina Junction to San Bernardino and includes the line from San Antonio Heights to Ontario, also the Pomona Line from Lordsburg to Ganesha Junction and the San Dimas Line from Lone Hill to Quarry Canyon.

Cartooning the Jitney

To the railways that are still confronted with jitney competition, the accompanying cartoon from *The Electrogram* of the Puget Sound Traction, Light & Power Company, Seattle, Wash., may prove suggestive.

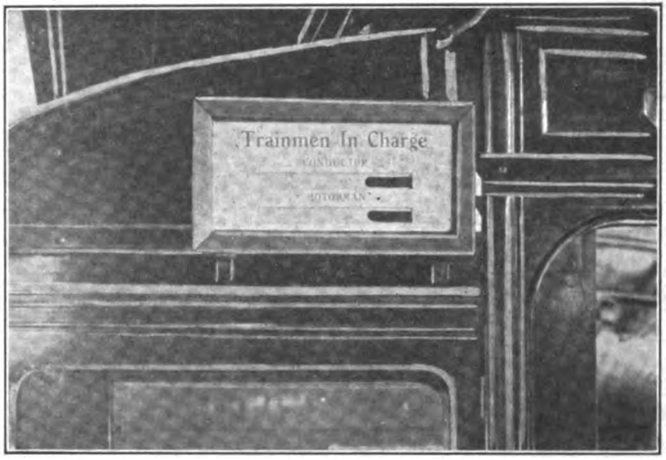
The man who has ridden in the jitneys is doubly attracted by such an illustration, for it agrees with his knowledge of the facts and it appeals to his sense of humor. It may set him to thinking about some unfair criticism that he has made about the street car service.


WHOOPS! THIS IS THE LIFE!
WAIT FOR ME! THERE'S ALWAYS ROOM FOR ONE MORE
JITNEY
THIS IS A CRIME!! THERE OUGHT TO BE A LAW AGAINST THIS SORT OF THING!
WHY IS IT THAT A MAN WILL PUT UP WITH ANY KIND OF DISCOMFORT IN A JITNEY——
— AND RAISE CAIN IN A STREET CAR IF ALL THE SEATS HAPPEN TO BE OCCUPIED?

THE PSYCHOLOGICAL EFFECT OF PARALLEL CONDITIONS IN JITNEY AND STREET CAR ACCOMMODATIONS

Name Cards in Frame to Identify Trainmen

The illustration below shows a name card holder recently installed on the cars of the Seattle & Rainier Valley Railway, operating between Seattle and Renton, Wash. The names of the trainmen are printed on heavy card slips which are placed in the frame as shown. None of the trainmen is known by number, as no numbers appear on their uniforms or caps. The single word "motorman" or "conductor" is worn on the front of the cap.



FRAME MOUNTED NEAR CAR ROOF CONTAINS NAMES OF TRAINMEN IN CHARGE

The public is, therefore, required to deal with the men as individuals rather than as units of a machine, and this reacts favorably both ways, as the men feel more individual responsibility and the public feels that the one individual with whom all dealings are made is a real human being and not an automaton. It is hoped that this practice will tend to promote more favorable relations between the company and the traveling public.

EQUIPMENT and MAINTENANCE

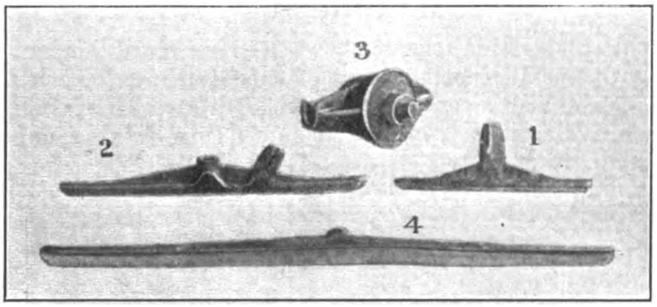
HAVE YOU A GOOD WAY OF DOING A JOB?
—Pass It Along

Read in This Issue: **How James Scott Has Eliminated the Need of Screwdrivers and Wrenches in Overhead Maintenance Work**

Overhead Kinks from Cleveland

James Scott, Superintendent of Overhead Cleveland Railway, Has Devised Numerous Ingenious Means of Overcoming Trouble and Cutting Down Overhead Maintenance Costs

Ingenuity applied in the overhead department finds many improvements possible. The following kinks from Cleveland indicate what may be accomplished in the way of economies both in material and labor as the result of long experience and close observation. James Scott, superintendent of overhead Cleveland Railway, has developed new fittings which make possible the elimination of screwdrivers, wrenches, etc., and reduce the number of tools necessary for the linemen to carry and keep in repair. Another of the ideas which has been embodied in the fittings which he has developed is that overhead fittings should be cast so as to do away with machining and thereby reduce the cost.



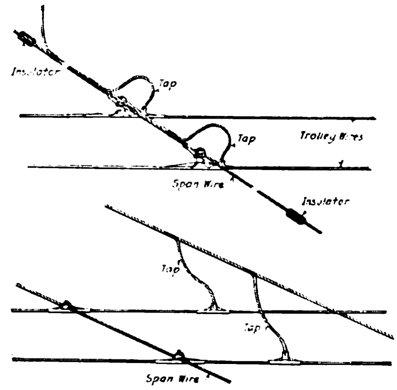
FIGS. 1 TO 4—SPECIAL HANGER AND EARS DESIGNED AND USED BY CLEVELAND RY.

SPECIAL FEED-IN EARS

A special feed-in ear (Figs. 1 and 2) was designed to simplify some constructional details and to eliminate the defects of the ordinary yoke type of feed-in hanger. This feed ear is designed in two types, to be used one for a straight feed-in ear and the other for a combination feed-in and hanger ear. The experience of Mr. Scott has been that the ordinary yoke-type feed-in ear is gradually eaten away by the sparking which takes place between the bolt and the shell, due to a slight loosening of the screw connection after being in service for some time. In the new ear designed to take its place the feeder connection is securely and permanently made without the use of set screws or other devices by wedging the cable into a split shank, which is bored out and then divided into four sections by sawing. These four sections are then hammered together and the cable is held securely without soldering or other fastening, although solder may be used if desired. The straight feed-in ear is used at street intersections, in carhouses or at any place where it is desirable to tap the feeder cables into the trolley wire without following the span wire. This is particularly useful at street intersections where it would be impossible to follow the span wires and where the feeder can be spanned straight across the street and tapped into the trolley wire. This type of construction is illustrated in Fig. 6 and Fig. 5 shows the installation of the special combination feed-in and hanger ears.

RECLAIMING BROKEN HANGERS

It frequently happens that a short-circuit will melt the compound out of the shell of an ordinary yoke hanger, or that the bolt will break off and render the hanger useless. Instead of throwing away the complete shell, which is usually undamaged, it is the practice in Cleveland to save the shell by putting in a new bolt fitted with a porcelain tube and holding this in place by filling the shell with ordinary cement, which makes a good insulation. One of these reclaimed hangers is shown in Fig. 3.



FIGS. 5 AND 6—ILLUSTRATING THE INSULATION OF THE TWO TYPES OF FEED-IN EARS

EXTRA LONG EAR FOR RECLAIMING WORN TROLLEY WIRE

A special ear, which has been much used in Cleveland to prolong the life of grooved trolley wire which has become burned and weakened at the ends of the original ear, is shown in Fig. 4, and the details are given in Fig. 7. It is 24 in. long, so that it will completely span the location of the original ear. A section 6 in. long at each end of the ear is grooved in the usual way, while the central portion of the ear is cast with a groove in the side of the ear with the bottom forming the trolley wheel contact instead of the wire. Between the end and center sections there is a cut in the side to allow the trolley wire to be placed in the side groove of the center section and at the same time to be fastened into the central groove at the end section by clinching in the usual way. The grooves are cast with a ½-in. radius to take a wire 0.48 in. in diameter, or whatever size trolley wire the ear is to be used with. By this means the worn portion of the trolley wire is protected in the side groove of the ear and does not receive any further wear. The clinching of the ear at each side of this worn portion gives mechanical and electrical fastening on the unworn trolley wire at either side of the old ear location, and thus greatly strengthens and prolongs the life of the trolley wire at a point which would otherwise soon break.

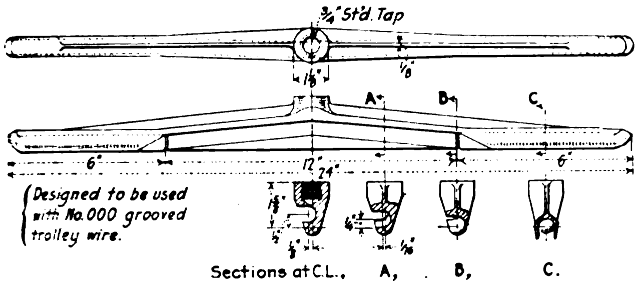

¾" Std. Tap
1⅛"
⅛"
A
B
C
6"
12"
24"
6"
Designed to be used with No. 000 grooved trolley wire.
Sections at C.L., A, B, C.

FIG. 7.—DETAILS OF EXTRA LONG EAR FOR RECLAIMING WORN TROLLEY WIRE

SPECIAL STRAIGHT-LINE HANGER

A special straight-line hanger which is designed to be secured to the span wire by means of a steel wedge is shown in Fig. 8. This is made of malleable iron with the steel stud surrounded by insulating material in the usual manner. The yoke is designed so that the span wire slides into the grooves on opposite sides at the two ends. A steel wedge, 9 in. long and tapered ½ in. in 12 in., is driven in the slot provided for the purpose on top of the span wire. The bottom edge of this wedge is unfinished and as it is driven in it grips the span wire firmly. A single wedge serves for both ends of each yoke.

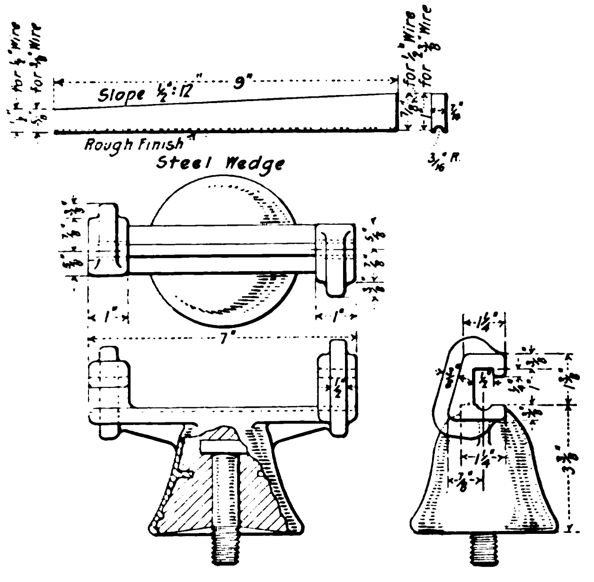


FIG. 8—HANGER SECURED TO SPAN WIRE BY MEANS OF STEEL WEDGE

Other kinks from the line department of the Cleveland Railway will be given in a later issue. These include a spring for installing hangers in trolley troughs, a glass-insert section insulator, a threadless pull-over yoke and hanger, an ear designed for accurate alignment and other practical devices.

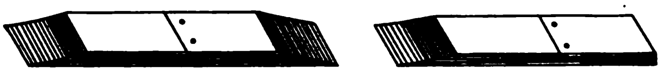
Using Up Short Lengths of Copper-Leaf Brushes

BY H. E. DAVIS

Electrical Engineer New York State Railways, Syracuse, N. Y.

While the use of copper-leaf brushes is being rapidly superseded by the more modern metal-graphite brush for use on slip rings of rotary converters, there are a large number of the old-style brushes still in use. When the leaves become short, considerable saving can be made by using up the short sections in the following manner:

Two short brushes are beveled on the soldered ends, riveted, and then soldered together. The composite brush may be used from both ends as shown in the left-hand illustration or it may be trimmed and soldered as shown in the right-hand one. The latter method makes a neater job, and the brush may be used after being worn by removing the damaged end at the joint and splicing on another short brush.

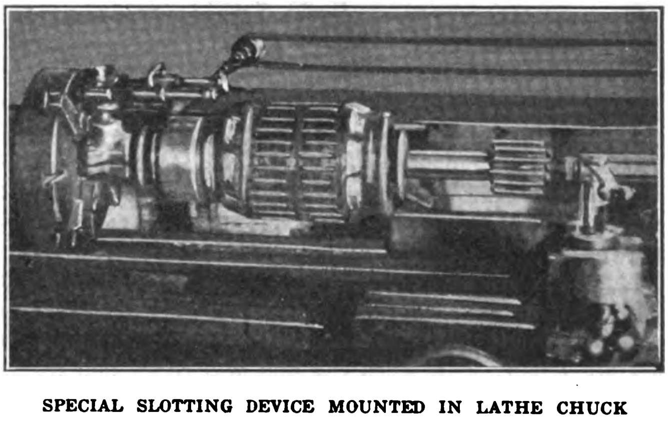


RECLAIMING SHORT LENGTHS OF COPPER-LEAF BRUSHES

Commutator Slotter Mounted on Lathe Spindle

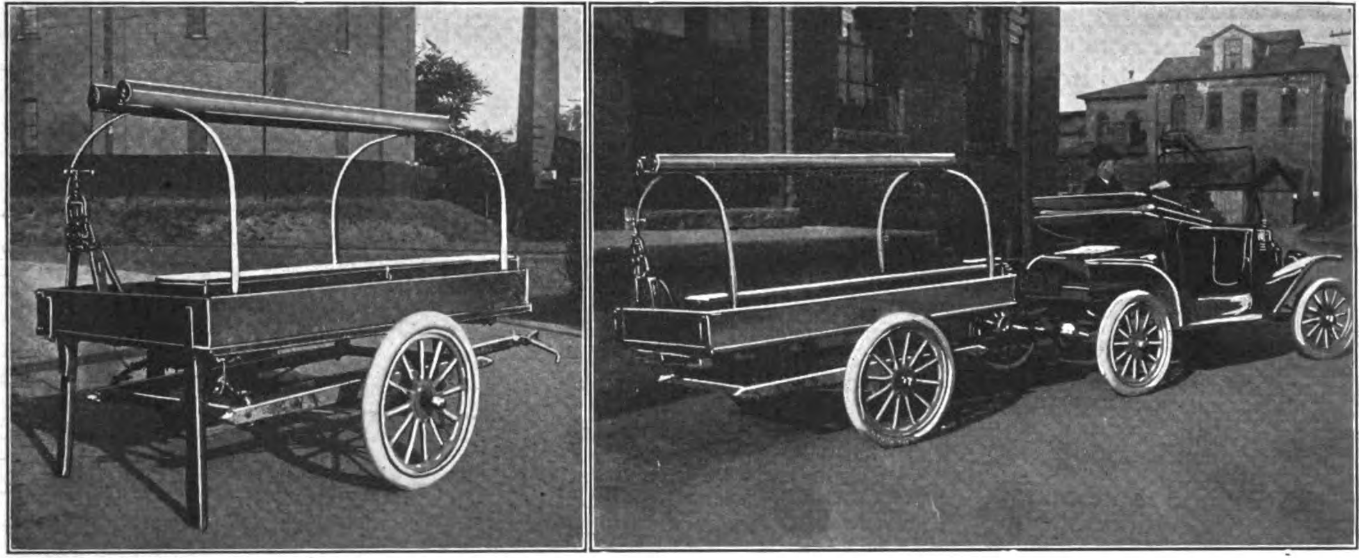
Undercutting commutators of motor armatures without removing them from the lathe after turning, is accomplished by the Wisconsin Railway, Light & Power Company, LaCrosse, Wis., by means of a special device mounted on the lathe. Any type of motor armature used by this company can be slotted with this device in a time not exceeding twenty minutes.

The device is shown in the illustration. It consists of a framework mounted on a special spindle placed in the chuck of the lathe in such a way as to bring the slotting saw always parallel with the armature axis, the armature being centered in this special spindle also. The saw-spindle bearing is cast integral with the sliding handle of the device, and as this is pushed back and forth on the two shafts supporting it, the saw travels in the slot being cut. The commutator, of course, can be rotated without rotating the framework.



SPECIAL SLOTTING DEVICE MOUNTED IN LATHE CHUCK

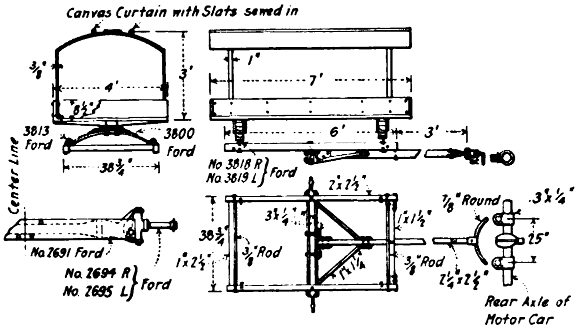
Two universal joints in the saw shaft make it possible to slide the saw back and forth without changing the position of the driving pulley, except for a slight motion parallel to the pulley axis. A ¼-hp., 110-volt, 1700 r.p.m. a.c. motor supplies the necessary power.



TRAILER STANDING ALONE AND ATTACHED TO RUNABOUT

Trailer Increases Efficiency of Company's Runabout

By an investment of about $50 in the two-wheeled trailer shown in the accompanying illustration, the Elmira Water, Light & Railroad Company has greatly increased the service that can be rendered by its Ford runabout. In using this outfit the desired equipment is piled into the trailer and the runabout hauls it to the scene of action, where the trailer is left and the Ford is free for other purposes. Several jobs may have to be done in the same locality, in which case the workmen can readily push the trailer from one point to another. When the work is completed the runabout comes around and hauls the trailer back again.


Canvas Curtain with Slats sewed in
3/8"
4'
3'
8½"
3813 Ford
3800 Ford
38¾"
Center Line
1"
7'
6'
3'
No 3818 R
No 3819 L
Ford
2"x2½"
3"x¼"
1"x1½"
38¾"
3/8"Rod
1"x2½"
1"x1¼
3/8"Rod
7/8"Round
3"x¼"
25"
2¼"x2½"
Rear Axle of Motor Car
No 2691 Ford
No 2694 R
No 2695 L
Ford

DETAILS OF TRAILER

The construction details of the trailer are shown in the drawing herewith. It was built of the front axle and front spring of a Ford car and will carry 900 lb. on pavement. To hold the car rigid when standing two hinged props are provided on the rear of the body. A similar prop is provided in front to hold up the tongue.

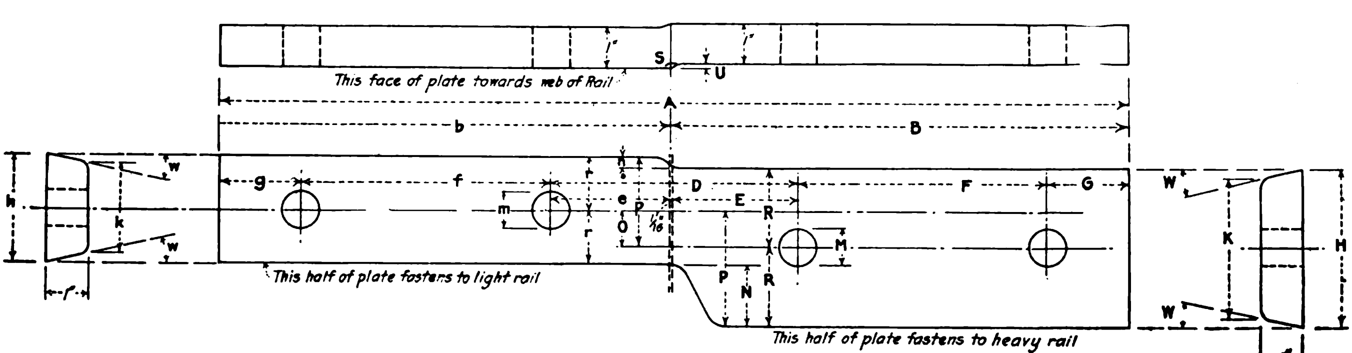
Standard Drawing Facilitates Ordering Compromise Joint Plates

BY W. L. WHITLOCK

Office Engineer Denver Tramway Company

As the Denver Tramway is a consolidation of several smaller properties, and as these companies, in constructing their respective systems, used rails of different weights and dimensions, it follows that numerous special compromise joint plates are required to join the rails of different sections at various points on the system.

To eliminate the necessity of making up a special drawing for each combination of rails, a standard compromise joint plate drawing was made, with the various dimensions indicated by letter, as shown in the accompanying illustration. At the same time a table of dimensions to correspond with these letters was made up for all the rail-joint combinations occurring on the property. Now, when a set of plates is ordered for any location, the field man specifies the rail sections to be joined and the engineering department fills in the proper dimensions on a blue print struck off from the master tracing, on which the dimensions are left blank. This greatly simplifies the work of providing compromise joint plates, and minimizes the time required of the engineering department forces.


This face of plate towards web of Rail
S
U
1"
1"
A
b
B
h
w
w
k
r
g
f
m
e
P
O
r
1/16"
D
E
F
G
R
M
P
N
R
W
W
K
H
r
This half of plate fastens to light rail
This half of plate fastens to heavy rail

MASTER DRAWING FOR COMPROMISE JOINT PLATES

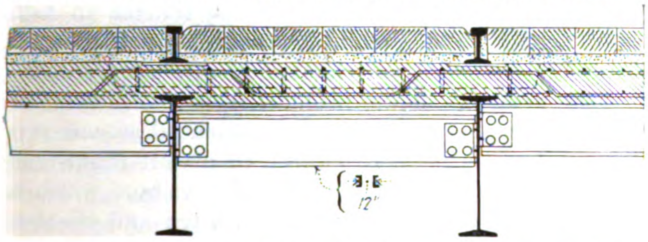
As an example of how the drawing and the table of dimensions are used, the following dimensions are for use on joints between 65-lb. and 80-lb. rails:

$A = 20$ in.
$D = 5\ 5/16$ in.
$O = 11/32$ in.
$U^2 = 1/32$ in.
$U^1 = 1/16$ in.
$b = 9\frac{7}{8}$ in.
$e = 2\frac{1}{2}$ in.
$f = 5$ in.
$g = 2\ 11/32$ in.
$h = 3$ in.
$k = 2\ 17/32$ in.
$m = 1$ in.
$n = 7/32$ in.
$p = 1\ 27/32$ in.
$r = 1\frac{1}{2}$ in.
$w = 13$ deg.
$B = 10\frac{1}{8}$ in.
$E = 2\frac{3}{4}$ in.
$F = 5$ in.
$G = 2\ 11/32$ in.
$H = 3\frac{1}{4}$ in.
$K = 2\ 13/16$ in.
$M = 1$ in.
$N = 15/32$ in.
$P = 1\ 31/32$ in.
$R = 1\frac{5}{8}$ in.
$W = 13$ deg.

Building Track on a Concrete Bridge Floor

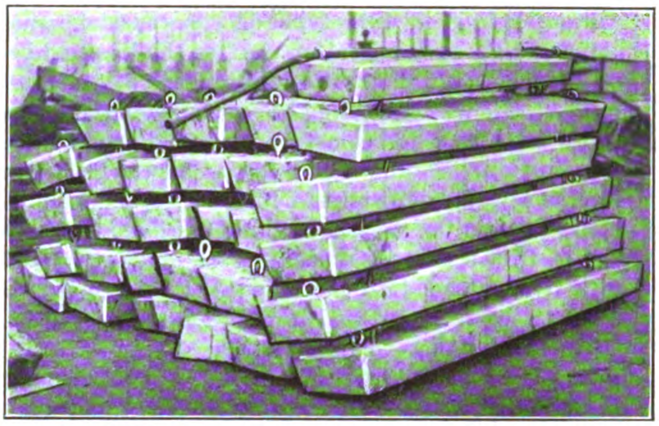
Cleveland Railway Uses Steel Ties Embedded in Concrete on Clark Avenue Viaduct, with Provision for Removal

Track built with steel ties incased in concrete has been quite generally adopted for permanent highway bridge floors. This combination of all permanent materials insures long life, especially if the precaution is taken to provide a large bearing area to transmit the track loads to the concrete and to support the joints. International steel twin ties were adopted by The Cleveland (Ohio) Railway as best suited to accomplish the desired result for the Clark Avenue viaduct in Cleveland. This structure is about 1 mile in length and a double track of the Cleveland Railway passes over it. The twin ties used were of a special design consisting of two 3-in., 4-lb. channels 6 ft., 2 in. long, which serve as anchorages and tie rods for two bearing plates 5/16 in. x 13 in. x 4 ft. 3 in. in size. These ties were spaced at 8 ft. centers and they weighed 166 lb. each.

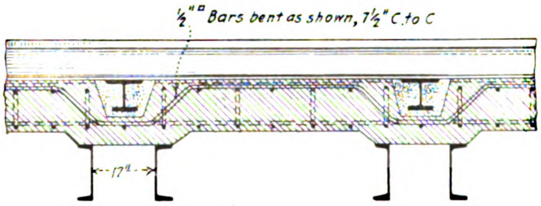


SECTION THROUGH BRIDGE FLOOR, SHOWING CONCRETE STRINGERS

The bridge floor was especially designed and built to provide for this type of track construction. As shown in the accompanying cross-sections of the bridge floor, two 9-in., 15-lb. channels placed 12 in. back to back were provided at 4 ft. ½-in. intervals as transverse stringers to carry the track loads. Over these and the bridge stringers a heavily reinforced 7½-in. concrete slab floor was laid. In order to provide an anchorage for the channels, pockets were cast in the concrete. These pockets were 6 in. wide on the bottom, 10 in. wide at the top and 6 ft. 10 in. long. The forms used for this purpose are shown in the photograph reproduced above. The entire pocket was faced with a heavy coating of asphaltum to serve as a parting in case it became necessary to remove the track and ties at any future time. Recesses ½ in. deep and 15 in. wide were also made in the bridge floor under both rails. These were provided so that the track could be raised to grade and about 1 in. of grout floated beneath the tie plates to furnish the permanent bearing. The recesses with the track in place are shown in the illustrations at the bottom of this page.



SHEET METAL ENCASED FORMS FOR TIE POCKETS



SECTION THROUGH SLAB, SHOWING TIE TROUGH

CLEVELAND BRIDGE TRACK CONSTRUCTION—RAIL ON TIE BEFORE APPLICATION OF FASTENING; FORCING RAIL UNDER ONE SET OF CLIPS; FORCING SECOND CLIP AGAINST RAIL BASE BEFORE DRIVING WEDGE

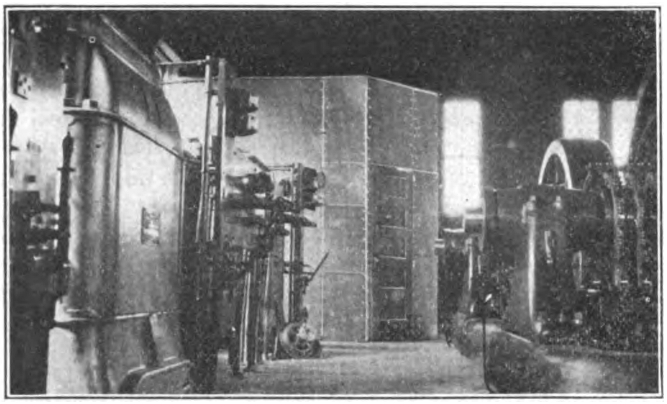
Track laying in this type of construction was a comparatively easy operation. After the ties had been laid in place and one set of clips inserted, the 100-lb. A. R. A. rail was laid and the joints secured in place by two drift pins. In this position the other set of rail clips was applied and the wedges driven into place. Four men were required to apply the clips, two to nip up the tie and two to put in the clips. After the rail base had been forced under one set of clips by driving a track chisel into the hole for the opposite clip, the latter was inserted and forced against the rail base with a hand spike. This operation was quickly done, and the track was then ready for lining and raising to the permanent surface. The method of applying the rail fastenings is shown in the accompanying illustrations. Grouting in the tie plates and riveting the Clark joints followed. The bridge wearing surface, consisting of a 2-in. sand cushion and 5-in. brick, was then laid by the paving contractor. The bridge construction, including the tie pockets was done by a contractor, and the track was laid by the railway company's track forces.

Improving Transformer Cooling in Old Substation

BY E. H. HAGENSICK

Superintendent of Electric Lines Omaha & Council Bluffs Street Railway, Omaha, Neb.

The intake of the fans on the transformer air-blast cooling system in one of the substations of the Omaha & Council Bluffs Street Railway formerly had no outside connection. The fans were installed on the ground floor of the substation without inclosure, so that the hot air and dust in the interior of the building was circulated round and round and the cooling was naturally poor. To improve this condition without changing the setting of the fans and without any construction work on the building, a transite board partition was built in the corner of the room inclosing the fans and including two outside windows. A weatherproof housing was built outside over the windows. This housing made it possible to take in fresh air from outside and force it through the transformers, and eliminated using the same air over and over again. The expense involved was small, and while it detracts from the appearance of the substation interior, yet the cooling of the transformers and the air conditions in the substation are so much better that the scheme was worth trying.



HOUSING FOR TRANSFORMER COOLING

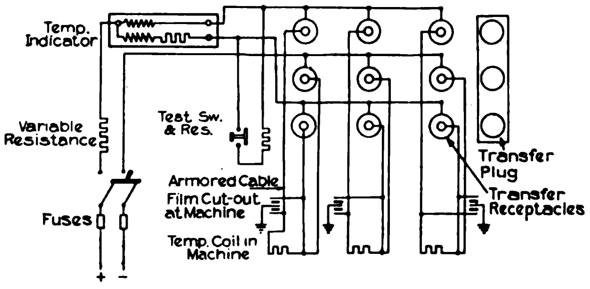
Indicator for Internal Temperatures of A.C. Machines

The use of temperature coils in the windings of electrical machines is now general for indicating the internal temperatures of alternators and other a.c. machines of large size. The General Electric Company has developed a temperature indicator for use in connection with such coils by means of which internal temperatures can be read directly in degrees. This indicator contains two windings, one of which is connected in series with the temperature coil and the other is in series with a coil of manganin the resistance of which is constant at all temperatures and equal in value to that of the temperature coil at a given temperature. The position of the pointer in the indicator is determined by the relation of the currents in the two windings, that through the manganin coil being constant, while that through the temperature coil varies inversely with the resistance, which in turn is determined by the temperature. The accompanying electric circuit diagram shows the scheme in outline, and a photograph of the indicator switchboard is also reproduced.

TEMPERATURE INDICATOR SWITCHBOARD

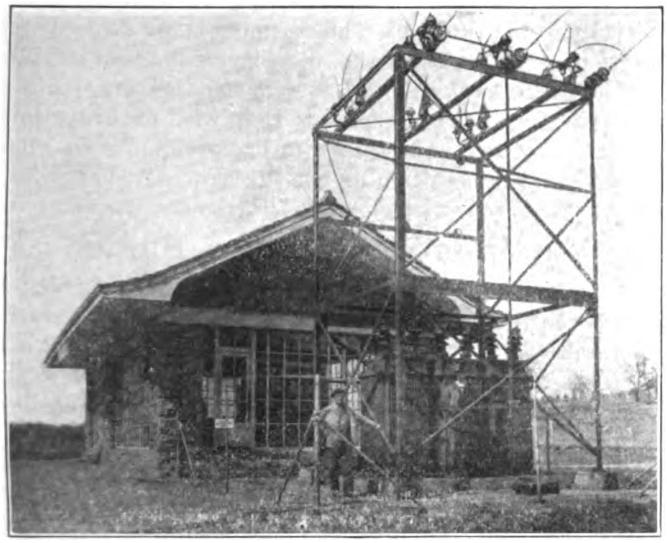
The diagram shows, in addition to the indicator and connection plugs, the following essential accessories: A rheostat of variable resistance to permit compensation for variation in the test-circuit d.c. voltage which may normally be 125 or 250; a test switch and resistor to show whether the instrument is working or not; film cutouts at the machine to protect the operator by grounding the line in case the voltage rises above 400; a transfer plug and receptacles for use in shifting the indicator to one temperature coil or another.

The temperature coils are made of copper wire wound in a thin form and pressed flat so as to be non-inductive. In the machine winding they are connected by a three-conductor armored cable to a combination terminal and cutout box mounted on the machine. This box carries the terminals for attaching the leads from the coils and for the extension leads to the instrument.

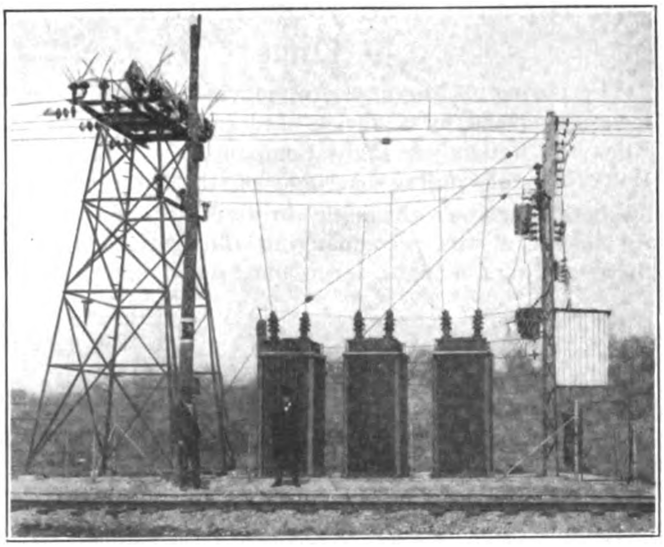


CIRCUIT DIAGRAM, SHOWING CONNECTIONS OF TEMPERATURE INDICATOR AND ACCESSORIES

The Denver Tramway has replaced its five-light, 600-volt clusters in the downtown district by 110-volt, 100-watt and 200-watt nitrogen filled lamps. The economy effected by these lamps warranted the installation of a motor-generator set so individual lamps could be used.



SUBSTATION OF THE KANSAS CITY, KAW VALLEY & WESTERN RAILWAY AT MAHON, KAN.



TRANSFORMER AND SWITCHING EQUIPMENT AT MUNCIE SUBSTATION, K. C., K. V. & W. RY.

Daylight-Type Substations Installed on Kansas Interurban

Outdoor High-Tension and Switching Installation Makes Simple Substation Layout Possible

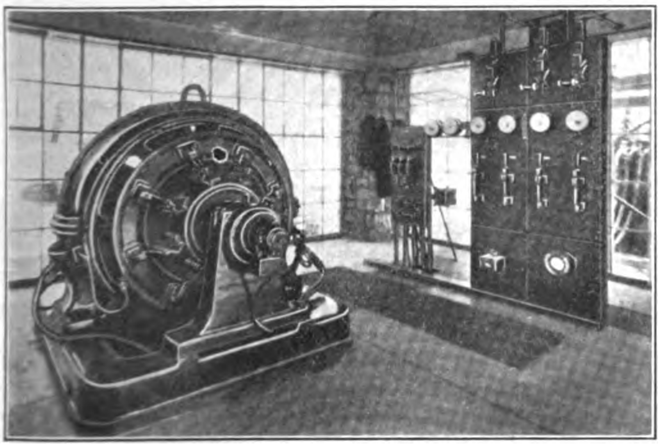
A type of substation buildings which is inexpensive, insures a maximum amount of light, and presents an attractive appearance from the architectural point of view has been utilized at three points by the Kansas City, Kaw Valley & Western Railway. These three substations, located at Mahon, Muncie and Leroy, Kan., are known as daylight substations from the utilization of glass for the entire exterior walls. They are characterized by their simplicity. This feature is due in large part to the installation of the transformers and high-tension apparatus and switching equipment outside of the substation building. In this outdoor equipment are included the Westinghouse single-phase, oil-insulated, self-cooled outdoor-type transformers with the various high and low-tension protective devices. The transformers are protected on the low tension side with automatic oil switches, and on the high-tension side by Burke combination horn-gap lightning arresters, choke coils and fuses. All of the switching protective apparatus is mounted on steel towers furnished by the Railway & Industrial Engineering Company.

The heavy corner posts and columns of these substation buildings are built of rock quarried from the company's right-of-way. They are covered over with a low, sloping, wide-overhanging roof, producing a colonial style of building of very attractive appearance. The interior is equally attractive, due largely to the simplicity of the layout, which includes simply the machine and switchboard for machine and outgoing feeders.

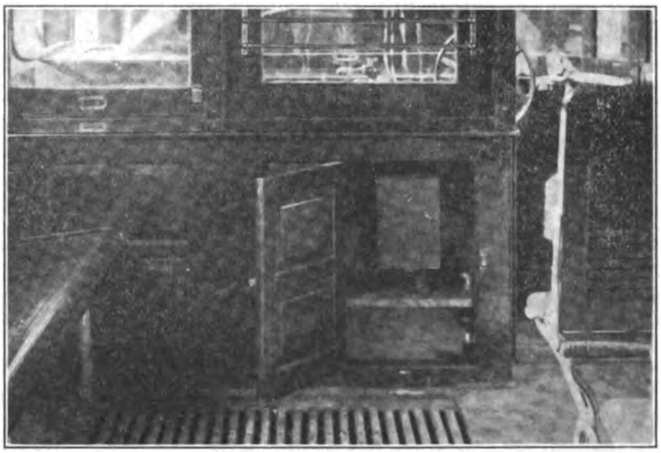
The substations at Mahon and Leroy each contain one 500-kw., six-phase, 60-cycle rotary converter. The substation located at Muncie, about 4 miles west of Kansas City, Kan., is also of the daylight type, but in this instance the three 185-kw., single-phase, air-blast transformers are installed inside the station. This substation is equipped with a 500-kw., six-phase, 60-cycle Westinghouse rotary converter.

Air Compressor Governor Located in Front Bulkhead of Car

The accompanying illustration shows an air compressor governor located in a cabinet in the front bulkhead of a car. This is the practice on the Des Moines (Iowa) City Railway, where it was desired to remove the governor from the floor in order to facilitate the washing of the car. The cabinet is provided with a swinging door which makes the governor readily accessible for the purposes of inspection and adjustment.



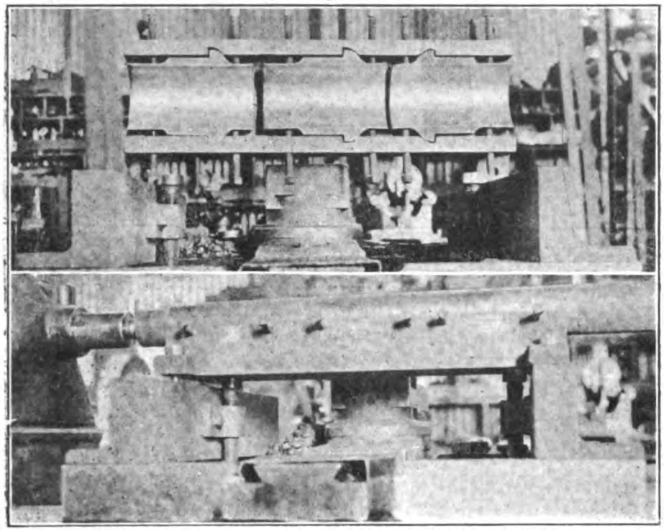
INTERIOR VIEW OF THE DAYLIGHT SUBSTATION AT MAHON, KAN.



FRONT BULKHEAD OF CAR USED FOR HOUSING AIR COMPRESSOR GOVERNOR

Bores Three Journal Brasses at Once

The boring of three 4¼-in. journal brasses at once is accomplished by a device used in the shops of the Knoxville Railway & Light Company, Knoxville, Tenn. Bolted to the sliding carriage of the lathe are two heavy castings at right angles to the length of the lathe. As shown in the accompanying illustration, each of these castings holds a large flat-headed screw placed directly beneath the center line of the lathe. The brasses are held by a block which rests on these screws, which in turn are raised and lowered to adjust for different sizes of brasses. When the proper adjustment has been attained the block is bolted to the heavy castings as shown. The brasses themselves are held in the block by screws pointing slightly downward. With this device twenty-five 4¼-in. brasses are bored in an hour.



TWO VIEWS OF BLOCK HOLDING THREE BEARING BRASSES WHICH ARE BORED SIMULTANEOUSLY

More About Burning Anthracite

Apropos of the article printed in the issue of the Electric Railway Journal for June 23, page 1454, are the following notes based on an article on the same subject printed in the *Electrical Review*, London, of June 15.

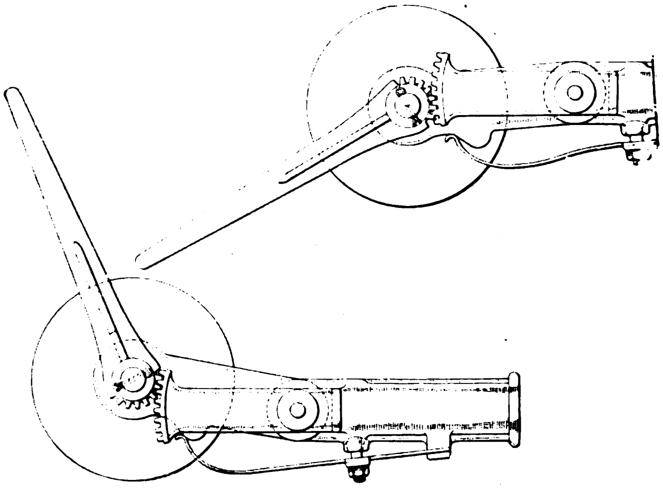
Almost all anthracite coal is solid carbon, which, when it passes through the grate, burns to carbon dioxide, CO_2. If the fire is thick the gas in passing through unites with more carbon, thus forming carbon monoxide, CO, which must be burned again to CO_2 by the addition of air above the fire. If the fire is thin enough air gets through the bars to burn all to CO_2. Any hydrogen present combines with the carbon in such a manner that the flame is practically within the fuel bed. As all of the heat of combustion is generated near the grate surface, it is desirable to use a better grate than with bituminous coals, and especially must the grate bars not present parts of their sides to the fire. Various methods have been adopted to prolong the life of the bars, protection by means of water and ashes being common.

Steam is now quite generally used with anthracite to sharpen the draft. By the use of steam-blow inductors air is forced into the ashpit and passes with the steam directly to the furnace. The steam on being decomposed therein helps to modify the intensity of the temperature of the grate surface. By these means anthracite coal may be burned at a higher rate than with natural draft, but greater care is necessary to preserve an even grate surface and to maintain an even thickness of fire.

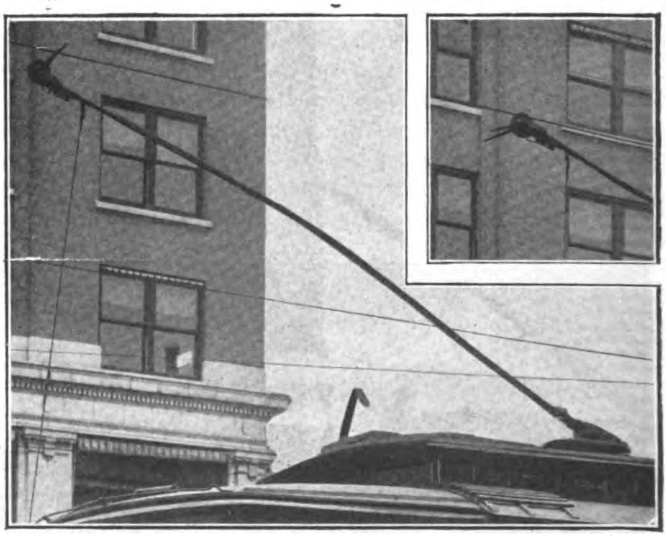
An Improved Trolley Finder

A trolley finder, which has been tried out with good results on the Ogden, Logan & Idaho Railway, is shown in the accompanying illustrations. The object of this finder is to guide the wheel back to the wire after it has jumped off on account of having struck a hard spot or similar defect.

The finder has two horns which stand in a vertical position when the trolley wheel is off. As soon as the wheel is pressed against the wire by the spring in the trolley base the horns are forced into an approximately horizontal position. A patent on this device has been obtained by Perry B. Sawyer of the B. & S. Universal Trolley Company, Ogden, Utah.



DETAILS OF TROLLEY FINDER



VIEWS OF TROLLEY FINDER IN OFF AND RUNNING POSITIONS

It is claimed that the small movement between the trolley wheel and the harp helps to take up any irregularities in the trolley wire without causing the excessive sparking which sometimes occurs with the rigid type of harp.

News of Electric Railways

Traffic and Transportation

Financial and Corporate **Personal Mention** **Construction News**

Agreement in St. Louis

Settlement of Differences Between United Railways and City Proposed on Valuation of $60,000,000 for Railway and Division of Net Earnings on 50-50 Per Cent Basis

At the meeting of the representatives of the city of St. Louis, Mo., and of the United Railways on July 6 an ordinance drafted by City Counselor Daues was submitted. The measure contains sixty-four sections and embodies the principles of the so-called skeleton plan for the settlement of the differences referred to previously in the ELECTRIC RAILWAY JOURNAL.

TERMS OF DRAFT PRESENTED JULY 6

According to the draft presented by Mr. Daues on July 6, the value placed by the city on the property of the company was $60,000,000. On this the company was to be permitted to earn 6 per cent. The city was to be taken in as a partner in the profits and was to share in the net earnings on the basis of 60 per cent to the city and 40 per cent to the company after 6 per cent on the valuation of $60,000,000 had been set aside. The representatives of the company were willing to proceed at once with the negotiations of the minor details, but wanted the questions of valuation, earnings return and the division of profits to be considered later. The Mayor contended that unless the company and the city could agree on the valuation and the division of profits it would be useless to continue the negotiations. The matter was then put over until the night of July 9. The $60,000,000 fixed by the city as the value for the property would mean a reduction of $40,000,000 in the total capital liabilities of the company. It was said unofficially that the representatives of the company were willing to consider $70,000,000 as the proposed valuation with an allowance of 6 per cent on this amount and then a division of the net profits on the basis of 50 per cent to the city and 50 per cent to the company.

TERMS AGREED UPON ON JULY 9

With matters standing as just related there were misgivings about the final outcome. At the meeting on July 9, however, agreement was reached on the questions at issue by concessions on the part of both parties to the negotiations, and as a result Counselor Daues was instructed to complete the draft of the ordinance with the revisions and submit it to the Board of Public Service so that it could go to the Aldermen on July 13. The essential points in the agreement as it stood after the conference on July 9 were:

Capital stock fixed at $60,000,000, with interest at 6 per cent, with new capital, if there should be any authorized, at 1 per cent over the rate of interest of the new issue.

Division of surplus, after the interest has been paid, on the basis of 50 per cent to the city and 50 per cent to company.

The city to have four of the board of directors of thirteen members, with the Mayor, comptroller, president of the Board of Aldermen and director of public welfare as the four.

One member of the board of control, the operating board of the system, to be selected by the company, one by the city, the third by these two; in event of failure to agree the third to be selected by the St. Louis Court of Appeals.

Payment of the accumulated mill tax, including the portion accruing while operation of the system was under the St. Louis Transit Company, estimated at $2,300,000, to the city upon acceptance of the new franchise, the mill and all occupational tax ordinances to be thereupon repealed.

Franchise for all lines to be uniform and for fifty years from the date of the signing of the ordinance by the Mayor.

Purchase option on the system to the city after the first ten years, or at the expiration of any five-year period thereafter.

Fares to stand at not to exceed 5 cents for adults, 2½ cents for children from five to twelve years of age and transfers for a trip in any one general direction.

The company has nine months after the Mayor signs the bill to accept the measure.

It is expected that active work will be begun at once to bring the various classes of securities holders together with the end in view of having them agree among themselves as to the terms of the financial readjustment necessary to scale down the capitalization to the $60,000,000 agreed upon.

The organization of two committees to represent the holders of the general mortgage 4 per cent bonds of the company is referred to elsewhere in this issue.

Hearing on Cleveland Terminal

Underground Terminal Suggested for the Public Square—Cost, with Approaches, Placed at $15,000,000 to $20,000,000

A hearing on the plan of Mayor Harry L. Davis for an underground street railway terminal at the Public Square, Cleveland, Ohio, took place before the street railway committee of the Cleveland City Council on June 28. During the discussion J. J. Stanley, president of the Cleveland Railway, told the committee that under a new franchise, other than the Tayler plan, which would produce earnings of 6 per cent or more, the company would undertake the construction of a terminal to cost $15,000,000 or $20,000,000, but if the city built the terminal and the company continued to operate under its present franchise, he felt that no rental should be charged for its use. He said that any rental paid would come out of the pockets of company's patrons and would not affect the stockholders in any way. He further suggested that the first subway should be in Ontario Street, instead of Superior Avenue, as suggested by the Mayor. F. F. Prentiss, chairman of the city planning commission, argued that a street railway commission should be appointed at once, as suggested by the Mayor, and that the start on improvements should be made now, since the city already has a population of almost 1,000,000.

The street railway committee of the City Council of Cleveland did not report on the ordinance of Mayor Davis establishing a street railway commission at the regular meeting on July 9. A motion to take the ordinance from the committee failed. In order to satisfy certain members of Council, Mayor Davis had already announced the names of the men he would appoint as members of the commission if the ordinance was passed. His selections were as follows: Charles A. Otis, Charles E. Adams, O. P. Van Sweringen, M. A. Bradley and Street Railway Commissioner Fielder Sanders, all men of affairs.

The public utilities committee of the Chamber of Commerce reported on July 6, in favor of the subway.

The Builders' Exchange had also approved the ordinance. Councilman Dittrick was one of the open opponents of the appointment of a commission to superintend the construction of a subway terminal. He argued that it would be preferable to have the construction work done under the management of city officials. Councilman A. J. Damm has prepared a resolution providing for the purchase of the street railway property, which he will submit to Council at a future meeting. This would provide that the question be placed before the voters at the fall election, together with the question of a bond issue for the payment of the municipal debt thus incurred.

City Official on Transit Contracts

Comptroller Prendergast of New York City Reviews Conditions of Contract with Brooklyn Rapid Transit Company

William A. Prendergast, comptroller of the city of New York, has contributed the leading article to the July issue of the *B. R. T. Monthly*, published by the Brooklyn Rapid Transit Company. He deals with the city's interest in the contract with the New York Municipal Railway Corporation, under which corporation the rapid-transit lines of the Brooklyn Rapid Transit Company will be operated. Mr. Prendergast says in part:

"The absolute necessity of dividing the financial burden of the extension of our transit facilities between the city and the railroad was a compelling motive in the execution of the existing contract, but it was not the only reason. Both the city and the railroad possessed certain properties susceptible of transit use, but entirely disconnected. To tie these properties together and to extend them so as to increase the opportunities for quick and convenient travel was the second and equally important reason for the making of the contract.

"For these financial and physical reasons the city and the Brooklyn Rapid Transit Company became partners. This partnership was a matter of gradual development. Men in private business come to quick decisions on important suggestions, but municipalities move slowly, especially when the question is one of relationship with a railroad corporation. There are public officials who have a cowardly reluctance to making agreements between the city and a railroad company because they prefer to pander to that element of the community which believes a railroad is always wrong. This characteristic hinders progress and comfort in travel and the handling and exchange of commodities.

"There is an utterly foolish theory that it does not matter what burden you impose upon a railroad corporation. No institution of whatever character can be burdened to excess without this burden reflecting itself in impaired service. When the city itself is forced to take on new financial obligations, it invariably finds it has to restrict itself in other directions. So with the railroad, whether it be the one we are discussing or any other—it will be forced to curtail its service in proportion to the excessive obligations it has to meet.

"This contract suggests the following relationship: The city as financial partner and supervisor, the company as financial partner and operator. The relationship is founded upon absolutely sound principles, illustrating the wisdom of municipal ownership unhampered by the futility of municipal operation. When we speak of the city investing its money, it is the collective funds of its citizenry that are meant. Consequently every citizen has an interest in this contract. It is his business to use his efforts and influence to make it a success. The failure of the enterprise would mean a greater tax rate. Its success means a lightening of the tax burden."

Court Asked to Sustain Car Order

A writ of certiorari has been obtained from the Supreme Court for a review of an order made by the Public Service Commission of the First District of New York on Feb. 8, directing the Brooklyn (N. Y.) Rapid Transit Company to add 250 new cars to its surface railway equipment. An affidavit made by Commissioner Whitney said that in numerous hearings the fact was disclosed that on the principal lines there was excessive loading during the rush hours, and in some cases the seating capacity was exceeded by more than 100 per cent. Mr. Whitney told of a conference in his office on Dec. 18, 1916, when President Williams of the Brooklyn Rapid Transit Company admitted that more surface cars were necessary, that the company had been considering buying more, and had been deterred from doing so by the high prices due to the war. Mr. Whitney said that counsel for the company asked for more time, "so that they would have latitude to take advantage of any favorable fluctuation in market prices." In his affidavit Mr. Whitney said:

"I respectfully submit that the writ of certiorari sued out was not obtained in good faith to review the commission's determination, but solely for the purpose of delaying compliance with the order and of making improvements in the service which, in the commission's opinion, should have been accomplished long ago. The delay incident to a hearing upon the writ will, in my opinion, seriously affect the public interest, because the determination upon the hearing can hardly be made before the period fixed for providing the first installment of additional cars."

Mr. Whitney asks the Court to quash the writ. Argument was heard in the Supreme Court on July 12.

Vancouver Strike Aftermath

Professor Shortt to Investigate Transportation Problem of Greater Vancouver

As a result of the strike of some 1260 of the employees of the British Columbia Electric Railway, Vancouver, B. C., the whole transportation problem of Greater Vancouver is about to be investigated by Prof. Adam Shortt, one of the leading authorities on political economy in Canada.

The company has granted the men their demands for increased wages, amounting to approximately 5 cents an hour after the first six months, and has resumed operation of its city and interurban systems provisional on the whole question being investigated by a commissioner and the adoption of his recommendation by the Council of Vancouver.

The employees ceased work in Vancouver on June 13 and in Victoria on June 14 and resumed operation on the afternoon of June 21. The strike was characterized by a total absence of violence and it took the form of a three-cornered fight, in which the jitney and other factors in the transportation problem played a part.

The company offered its men a series of war bonuses amounting to $100,000 a year and stated that it was impossible to pay any further increases, especially in view of the curtailment of its revenue by jitney competition.

The first efforts of the company took the form of educating public opinion through the newspapers toward the realization that it had made the men the largest offer circumstances would allow and that while confronted with jitney competition it would be impossible to grant the men any increases above the war bonuses that were proposed.

MERCHANTS MAKE SUGGESTIONS

The City Council of Vancouver, which in times past had declined to accede to the company's request for adequate regulation of the jitney traffic and showed its antagonism to the company recently in a fight for charter amendments giving itself power to enter into competition with the company in the light and power business, took no action for the first few days of the strike. The Mayor said, when the strike began, that the time was not ripe for civic intervention. The merchants of the city took action on the third day of the strike and appointed a committee to draw up a resolution, which was afterward presented to the City Council, recommending the placing of jitneys on the non-car line streets and the cancellation of all jitney licenses at the end of the year.

The company impressed upon the members of the City Council and upon the Provincial Minister of Labor, who took a part in the efforts toward a settlement, the impossibility of granting the men's demands and resuming car service while the jitney took revenue from the company. The City Council asked that proof be furnished of this statement and the company agreed to submit the whole transportation problem to an impartial expert with a view of placing it on a sound financial basis. The City Council agreed, by a resolution, to stand by whatever recommendations the commission should make.

Owing to the necessity of a quick settlement imposed upon the company by its arrangement with the City Council, it was impossible to arrive at any better settlement with the men than the basis of their revised demands to the company, and thirty-six hours after the passing of the resolution by the City Council the men resumed work on this basis.

Professor Shortt was expected to arrive in Vancouver about July 10.

Riots in Bloomington

Recent Injunction Ignored by Sympathizers with Strikers—Compromise Agreement Reached

Incited to riot by "Mother Jones," who had been imported to make an address in connection with the recent strike of a few employees of the Bloomington & Normal Railway & Light Company, Bloomington, Ill., sympathizers of the strikers, in violation of the court injunction referred to in the ELECTRIC RAILWAY JOURNAL of June 23, attacked the cars, power house and offices of the company on the evening of July 5. Rioting continued throughout the night. The police were powerless to such an extent that Mayor Jones appealed for aid and state troops were sent into the city from Chicago and Peoria early the next day.

On the afternoon of July 6, 1000 employees of the shops of the Chicago & Alton Railway, in sympathy with the strikers, marched the streets of the city to the City Hall and demanded of the city officials that the company be obliged to recognize the union and establish the closed shop. The men who participated in this demonstration threatened repeated riots if their demands were refused. Upon request of the Mayor by telephone H. E. Chubbuck, vice-president executive of the Illinois Traction System, Peoria, by which the Bloomington property is controlled, agreed to reinstate the striking carmen pending a conference on July 9.

At this conference concessions were made by both sides and a compromise agreement was reached as follows: Company recognizes union. City lines to operate on open shop. Employees free to join the union if they desire, but are not to be intimidated. Faithful employees continued in positions. Striking carmen to be reinstated. Rate of pay to be: Less than one year, $2.35 a day; after one year, $2.55 a day; after three years, $2.65 a day; after five years, $2.75 a day. These rates are to continue in effect until July 1, 1918.

The troops were released on the morning following the final agreement.

Mr. Chubbuck in a statement said:

"Our general superintendent at Bloomington, D. W. Snyder, took a stand in no way opposed to organized labor as such. The majority of his men from the beginning were opposed to being forced into the union and his position was that of supporting employees whose subsequent loyalty under adverse conditions proved the genuineness of their convictions. The entire question passed from the stage of being a matter of company policy to one of public policy. When the Mayor showed me the liability of serious disturbance to the business and civic life of the community I was glad to place myself in the hands of the business interests of Bloomington and without relinquishing the principle upon which Mr. Snyder stood, do everything possible to bring about a settlement to the best interest of the city as a whole. Another question. The country is at war and in times like these it is one's duty to do all in his power to avoid a disturbance that in any way might add to the spirit of unrest which unfortunately seems to be cropping out in various places in the country."

Change in Seattle Elevated Plans

Oliver T. Erickson, councilman of Seattle, Wash.. has abandoned his idea of a steel elevated on Washington Street from Fourth Avenue south to Railroad Avenue, and a wooden elevated railway on Railroad Avenue, Watcom Avenue and Spokane Street to the West Waterway. His new plan calls for the construction of an elevated line on Washington Street, from First Avenue south to Railroad Avenue, and on Railroad Avenue and Whatcom Avenue and Spokane Street, of wood, and the utilization of common-user rights on the surface track on Washington Street, between Fourth and First Avenues South. A. H. Dimock, city engineer, estimated the cost of the initial plan at $862.000, aside from the damages awarded to property owners on both sides of the street named. Unofficially, it is reported, the second plan will cost much less. The building code requires steel construction on that portion of Washington Street and Railroad Avenue north of Railroad Way. Whether the plan is to use steel for this portion or wood in violation of the building code has not been announced.

The Seattle & Rainier Valley Railway Company has a franchise on Washington Street, Seattle, from Fourth Avenue south to Railroad Avenue, over which cars have not been operated by the company for a number of years. Mr. Erickson's plan is to acquire common-user rights on this particular track, so that the city will be required to pay rental to that company for the use of tracks on Stewart Street, from Third to Fourth Avenue, on Fourth Avenue, from Stewart to Washington Street, and on Washington Street, from Fourth Avenue to Railroad Avenue. Under the terms of an agreement between the city of Seattle and the Seattle & Rainier Valley Railway, entered into a few months ago. the rental for these tracks would amount to between $1,500 and $2,000 a month.

Universal Transfer Offer in Frisco

Municipal and Private Systems Would Be, in Effect, Consolidated—Further Four-Tracking of Market Street Avoided—Private Company Cars Through Tunnel

Jesse W. Lilienthal, president of the United Railroads, San Francisco, Cal., on July 2 submitted to the Board of Supervisors of San Francisco a proposition stated as follows:

"In view of the early completion of the Twin Peaks Tunnel and the necessity of providing for immediate use of the improved facilities thus made available and realizing the great importance and benefit to the citizens of San Francisco of a unified system of transportation, we submit for your consideration a plan of operation which will obviate the necessity of duplicating transportation facilities on Market Street. We propose that the city and the company agree as follows:

"1. That the company rearrange such part of the present Parkside lines as may be necessary to furnish the best service to the Sunset district, and make connections from these lines to the tunnel tracks.

"2. That the company pay the city on a mileage basis for the use of the city's tracks through the tunnel.

"3. That there be established between the city and the company a universal exchange of transfers at all connecting points, so that a unified system of transportation may be furnished.

"4. That the city agree that no further tracks be built on Market Street and that the city will operate its cars over Market Street as at present, except for that portion of Market Street from Church Street to Van Ness Avenue forming part of the Church Street line.

"5. That should an agreement be entered into on the above basis, such agreement to be subject to cancellation by either party upon six months' notice; with the further proviso that, should the agreement be canceled by the city, then the city to reimburse the company for the cost of the reconstruction of its Parkside lines that may be agreed upon, as well as for the cost of making connections of the tunnel tracks with the existing tracks of the company."

MERCHANTS OPPOSE FOUR TRACKS IN MARKET STREET

Great interest has been shown in this matter by the downtown merchants of the city, most of whom are opposed to the four-tracking of Market Street on the ground that such action would make that thoroughfare unsafe and unpopular. Residents of the Parkside district beyond the tunnel are also taking an active interest in improving transportation facilities there. The United Railroads' plan is received with favor by both these factions because it involves the construction of a line connecting the Parkside district with lower Market Street by through cars operating over the tracks which have already been laid on Market Street.

No final action on this proposition has as yet been taken by the city, but city officials state that the universal transfer proposal is considered as an important concession and that it is receiving careful consideration.

Labor Editorial in Cars

The Third Avenue Railway, New York, N. Y., has reprinted and posted in its cars the editorial "Can't Keep Away," from the New York *Herald* of July 3. The *Herald* said:

"New York City, a Klondike for labor agitators, again is favored by the presence of William D. Fitzgerald, who achieved notable distinction as the organizer of the worst strike fizzle in local annals. It was last year that Mr. Fitzgerald and his attendants came to this city, bringing suffering to the men employed by the local transit companies and inconvenience to the traveling public. This declaration, emanating from the legal adviser of Mr. Fitzgerald, is interesting:

"'The action of the Third Avenue Company in posting an increase in wages is a contemptible effort to influence the men against joining the organization.'

"In other words, favorable treatment of its employees by a corporation which is not brought about through the blackjack methods of a strike is distinctly painful to the labor agitators, who see their vocation imperiled. There is a reasonable amount of belief that the transit employees of New York are quite satisfied with the conditions obtaining between themselves and their employers."

$1,500,000 Work on City Railway

Seattle Utilities Committee Prepares Three Bills for Improvements to Municipal Railway

At the instigation of Oliver T. Erickson, chairman of the utilities committee of the Council of Seattle, Wash., three bills have been prepared by the Corporation Counsel providing for the improvement of the Seattle Municipal Railway as follows: The extension of the system at a cost in excess of $1,500,000; the starting of proceedings to acquire the right to establish and maintain an elevated railway on Washington Street, Railroad and Whatcom Avenues, and Spokane Street; the building of a four-block line from the north end of the Ballard Bridge to the intersection of Market Street and Twentieth Avenue N. W.; the purchase of sixteen one-truck or one-man cars and four double-truck cars similar to the ones now in use on Division A. The bill for the new cars has already been introduced in the Council. The others will come before the Council at an early date.

The ordinance providing for the extension of Division A of the municipal line into Ballard proposes, at the option of the city, to pay for this extension "solely out of the earnings of the municipal street railway of the city of Seattle," although the municipal line is losing money at the rate of more than $3,000 a month. Another ordinance would authorize and direct the Board of Public Works to prepare plans and specifications for the construction of a double-track municipal railway beginning at the north end of the bridge, across Salmon Bay Waterway at Fifteenth Avenue N. W., along Fifteenth Avenue N. W. to the intersection with Leary Avenue, on Leary Avenue to the intersection with Market Street. The Board of Works is further directed to call for bids and let a contract for the construction of this extension. A third ordinance declares the intention of the city to extend Division A over Fourth Avenue, by virtue of common user agreement with the Seattle & Rainier Valley Railway, and sets forth that this will require the purchase of additional cars. The ordinance then recites that the $800,000 street railway bond issue has not all been spent, and that what remains of the bond issue is "more than sufficient to pay for additional equipment." A. H. Dimock, city engineer, estimates the cost of the proposed extensions at $920,000, to which must be added such an amount as will represent court awards to property owners. These extensions will place the city in a position to compete with the Puget Sound Traction, Light & Power Company for the 24,000 persons employed in the various industrial plants in the Harbor Island District.

Councilman R. H. Thomson, not satisfied with the report of Superintendent Valentine on possible earnings of the car lines if extended into Ballard and to West Waterway, for the reason that it did not show the increased cost of operation, advised the city utilities committee that he would ask Superintendent Valentine for a supplemental report, if Chairman Erickson did not do so. The question of whether the two disconnected city car lines could be made to pay by extensions was raised over Councilman's Erickson's bill authorizing the Board of Public Works to buy four two-truck cars similar to those now used on the city lines, and sixteen cars of the one-man type, in anticipation of these extensions. Councilman Thompson pointed out that the city has seven large cars that have never been out of the carhouse, out of a total of twelve cars bought about four years ago. Councilman Thompson questioned the advisability of building car lines until a report was submitted that would show some chance of the lines paying operating expenses.

Strike in Toronto

The employees of the Toronto (Ont.) Railway went on strike at midnight on Tuesday, July 10. As a result there was a complete stoppage of all cars in the city on July 11, with the exception of those on the municipal lines on St. Clair, Danforth and Gerrard Streets. The civic lines could not begin to handle the crowds, however, and automobiles, vans, trucks and other vehicles choked the streets in the business district. More than 1600 trainmen are said to be involved in the strike.

Negotiations between the employees and management of the company over an increase in wages and other conditions have been in progress since April. The situation reached an acute stage during the week ended July 7, on which day at a midnight mass meeting of the men it was decided to carry an ultimatum to the company giving the management until midnight of Tuesday, June 10, to agree to the demands of the men as presented by the committee, or submit to a general strike.

Two years before the war began motormen and conductors were paid 23½, 25½, 27½ cents an hour—the first figure for the first six months, the second for the second six months, and the third for the second year and after.

In January, 1917, an advance on these figures to 26, 28 and 30 cents an hour was put in force.

The motormen and conductors now demand that they be paid 36, 38 and 40 cents an hour. The company offered 28, 30 and 32 cents an hour and a proportionate increase of 2 cents an hour over the old scale for all other employees.

R. J. Fleming, general manager of the company, states that the demands of the men would mean an increased cost of $600,000. The proposed voluntary increase offered by the company would increase the charge for wages more than $200,000.

City Commission Rights Defined

The Court of Appeals at Cincinnati, Ohio, handed down a decision on July 9 to the effect that the Cincinnati Rapid Transit Commission has no authority to employ special counsel, as this would be in the nature of usurpation of the powers and functions of the City Solicitor. The office of counsel, occupied by former Mayor Speigel, is thus nullified. The same court held that the commission may employ City Engineer Frank S. Krug as engineer of the commission, but that he can receive no salary for his work other than that paid him by the city as one of its officials. Clerks, engineers and other employees may be employed by the commission without the necessity of seeking the consent of the City Council, it is held.

Judge Francis M. Hamilton dissented from the opinion, which, he said, seemed to be based on the assumption that the Rapid Transit Commission had abused its discretion and misappropriated funds under its contract. He said he did not believe it within the power of the court to substitute its judgment for that of the Rapid Transit Commission. If the court was to pass upon everything the commission did it would seem that the court itself would become largely the Rapid Transit Commission. Aside from these things he expressed the opinion that under the law the employment of counsel and engineer was clearly within the rights of the commission.

The decision was rendered in a suit brought against the commission by John C. Rogers, a taxpayer.

Wages Advanced in Philadelphia

The co-operative committee of the Philadelphia (Pa.) Rapid Transit Company, at a meeting held on July 9, determined in company with the management that the condition of the 22 per cent fund was now such as to make possible from July 8 an advance of 2 cents an hour to all conductors and motormen so that the pay in cents per hour will then be based upon the following scale:

New Men	After One Year's Service	After Two Years' Service	After Three Years' Service	After Four Years' Service	After Five Years' Service
Surface Motormen and Conductors					
30	31	32	33	34	35
Elevated—Subway					
Conductors					
30	31	32	33	34	35
Elevated Guards					
30	31	32	33	33	33
Motormen					
33	34	35	36	37	38

Power Men Out Two Hours

Several of the employees of the power house of the Kansas City (Mo.) Railways quit work Saturday evening, July 7, causing suspension of electric railway service on most lines, and interrupting illumination served from this power station. The "strike" was a result of misunderstanding. The men declared to officials that they had assumed that certain comparatively trivial matters of controversy were being disregarded. They returned to work later in the evening, and on Monday, July 9, entered a conference at the company's headquarters, with President P. J. Kealy and other officials of the company. The men requested Colonel Kealy to "come down yourself and look into our complaints," and promised to abide by his decision. Colonel Kealy promised to do so, and the men expressed themselves as satisfied.

The cessation of service on the several lines, at a busy evening hour, caused a rushing business for jitneys and taxicabs. Apparently all but the dozen jitney owners raised their prices suddenly in the emergency, some charging as much as 50 cents for service for which they formerly got only 5 cents.

Increase in Wages in New York

Conductors and motormen in the employ of the New York (N. Y.) Railways were advised on July 3 that as a result of a conference between representatives of the brotherhood of New York Railways employees and the management of the company on June 21, and on several previous dates, the following increases in the schedule of wages to be paid platform men would be effective from July 1:

ELECTRIC LINES

Conductors and Motormen	Old Rate 10-Hour Day	New Rate 10-Hour Day	Conductors and Motormen	Old Rate 10-Hour Day	New Rate 10-Hour Day
First year	$2.60	$2.70	Ninth year	$3.20	$3.20
Second year	2.90	3.00	Tenth year	3.20	3.20
Third year	2.90	3.10	Eleventh year	3.30	3.30
Fourth year	2.90	3.10	Twelfth year	3.30	3.30
Fifth year	3.10	3.10	Thirteenth year	3.30	3.30
Sixth year	3.10	3.20	Fourteenth year	3.30	3.30
Seventh year	3.20	3.20	Fifteenth year	3.30	3.30
Eighth year	3.20	3.20	Sixteenth year and thereafter	3.40	3.40

STORAGE-BATTERY LINES

Conductors and Motormen	Old Rate 10-Hour Day	New Rate 10-Hour Day
First year	$2.60	$2.70
Second year	2.70	2.90
Third year to fifteenth year inclusive	2.80	3.00
Sixteenth year and thereafter	2.80	3.20

All conductors and motormen who were in the service of the company on Sept. 6, 1916, and have remained continuously in the employ of the company since that date, have been credited with two years' service so far as their rates of pay are concerned, commencing July 1.

It was further announced that all conductors and motormen who on June 30 were in the employ of the company and were in the employ of the company on Sept. 6, 1916, but who temporarily left the service would, commencing July 1, be entitled to their seniority in so far as their rate of pay is concerned, without regard to their temporary absence from the service.

Toledo Conferences Resumed

Henry L. Doherty, chairman of the board of the Toledo Railways & Light Company, Toledo, Ohio, held a three-hour conference with the street railway commission in that city on July 2. Discussion of the forfeiture clause in the proposed community plan was the main feature of the conference. It was urged in its present form by Johnson Thurston, president of the commission, but Mr. Doherty declined to accept it on the ground that it would give the city the right to confiscate the property. Ralph Emery, attorney for the commission, stated that the clause could be improved in form.

Mr. Doherty was compelled to return to New York, and it was arranged for Frank R. Coates, president of the company, to present data relative to fares, paving and track building at a meeting on July 3. Mr. Thurston had insisted that the company should pave a certain distance on the outside of the tracks, but Mr. Doherty expressed a willingness to pave between the tracks only. The point was left undecided to be taken up again after data have been furnished.

At a meeting held on July 3 the Street Railway Commission of Toledo, Ohio, decided to remodel several clauses of the community plan franchise to which Henry L. Doherty objected. If Mr. Doherty approves the franchise as changed it will be printed and copies distributed among the civic organizations and the people. If it does not meet with his approval, then Mr. Doherty will be asked to return to Toledo for further conferences. In the meantime Frank R. Coates, president of the company, will meet with the commission to discuss clauses relating to rates of fares, transfers, contracts for power and other matters. Mr. Doherty informed the committee that he would accept anything that President Coates approved. When an agreement is finally reached, the franchise will be submitted to the voters.

Increase in Wages in Allentown.—An increase of 2 cents an hour in the wages of its motormen and conductors has been announced by the Lehigh Valley Transit Company. This is the second raise granted the men within a year.

Engineers to Report to Special Rhode Island Commission.—The special commission which is investigating the affairs of the Rhode Island Company, Providence, R. I., has engaged the engineering firm of Sloan, Huddle, Feustel & Freeman to report upon the various matters recently outlined by Chairman Zenas W. Bliss, as the commission's preliminary program.

Suit Against Transit Construction in Philadelphia Dismissed.—The taxpayers' suit instituted by Frank W. Fluck to restrain the city of Philadelphia, Pa., from proceeding with construction of the new transit high-speed lines has been dismissed by Common Pleas Court No. 4. Mr. Fluck instituted his proceedings on the ground that the $67,100,000 transit loan election in May, 1916, was illegal.

More Indiana Companies Surrender Franchises.—The Fort Wayne & Northern Indiana Traction Company, the Wabash Valley Utility Company and the Decatur & Fort Wayne Railroad have filed with all municipalities affected and with the Public Service Commission of Indiana formal notice of the surrender of their franchises and of their intention to operate under indeterminate permits through the utility commission.

Employees Granted Increase in Wages.—Arbitrators who have had the matter under consideration for about three weeks recently granted employees of the Cleveland, Painesville & Eastern Railway, Willoughby, Ohio, an increase in wages, covering a period of three years. They will receive 31 cents an hour for the first year, 33 cents for the second year, and 35 cents for the third year. The increase amounts to about 15 per cent and the contract dates from May 1.

Pittsfield Labor Agreement Reached.—At a conference in Pittsfield, Mass., on July 10, C. Q. Richmond, general manager of the Berkshire Street Railway, agreed with representatives of the employees' union to sign a new wage scale. The agreement is to have a term of one year. Under its provisions platform men will receive a wage increase of about 7 per cent. Other union employees in general will receive a 7.5 per cent increase, with the exception of twenty linemen now on strike.

Electric Railway Responsible for Portion of Cost of Grade Crossing Elimination.—On July 3 the Ohio Supreme Court dismissed the petition of the Cincinnati Traction Company against the city of Cincinnati, involving the payment of $61,220 alleged to be due as the company's share of the cost of eliminating the grade crossing at Ludlow Avenue and the Baltimore & Ohio Southwestern Railroad tracks in Cincinnati, on the ground that the Hamilton County Court of Appeals had no right to entertain the appeal case and that no other constitutional question is involved. If the case is carried no further the company must pay the amount claimed.

Belt Line to Be Abandoned.—The City Council of Dunkirk, N. Y., has voted to permit the Buffalo & Lake Erie Traction Company, Buffalo, N. Y., to abandon its belt line service in Dunkirk. This action is contingent upon the company surrendering its franchise covering all streets not used and assuming full responsibility for transporting cars of coal and other supplies over its line to the municipal electric light and water plant. The Point Gratiot line will be continued. Officials of the company say that the belt line was operated at a loss of about $17,000 a year. The company will construct a passenger and freight terminal in Dunkirk to cost about $20,000.

Mayor Urges Suit to Revoke Franchises.—Charging that the Tulsa Street Railway and the Oklahoma Traction Company, Tulsa, Okla., have failed to comply with the terms of their franchises as granted by the city of Tulsa, Mayor John H. Simmons has instructed City Attorney Meserve to bring suit for revocation of their franchises. The allegations on which the suit is to be based are that the companies have failed to provide ample equipment to care for the amount of traffic; that the companies have not maintained their roadbeds properly and that they have been negligent in caring for crossings. The Oklahoma Traction Company is building an interurban line from Tulsa to Sapulpa. It is rumored in Tulsa that a new company is being organized to consolidate and rehabilitate the properties.

Taxes in Present Federal Bill.—The Senate committee of finance, which has been considering the federal war revenue bill, reported its recommendations to the Senate on July 3. As reported, the bill now provides for a tax of 3 per cent on freight rates, 1 cent for each 25 cents or fraction on express rates, 5 per cent on passenger tickets except for commutation tickets for trips less than 40 miles or where the fare does not exceed 35 cents; and 5 per cent on parlor car and sleeping tickets. The bill also provides a tax of 15 per cent on the undistributed net income of corporations received during the year, subject to certain exceptions. One of these is that the company may deduct undistributed profits used for the establishment or maintenance of reserves required by law. Railway companies may also deduct expenditures for extensions, renewals or betterments, made with the approval of the Interstate Commerce Commission or of a state commission.

Many Seattle Men Eligible for the Military.—According to statistics compiled by the Puget Sound Traction, Light & Power Company, Seattle, Wash., 650 out of the 2300 employees in the Seattle division have registered as eligible for war service. Of the number found between the ages of twenty-one and thirty, inclusive, 338 are married and 312 single; 537 are Americans, fifty-six have taken out first papers and fifty-seven are aliens. The largest number of eligibles was found to be in the transportation department, which has 311 American citizens, twenty-five who have taken out first papers and fifteen aliens; of this number, 199 are married. Fifty-four per cent of the men are of conscription age. Company officials are completing a full census of all employees to find those who are especially fitted for other service, in the event vacancies occur, and also to ascertain whether any of the employees desire to be transferred to other departments. A similar census of company employees has been taken by the company on its Tacoma, Everett and Bellingham divisions and in the headquarters force. There are approximately 3600 employees of the Stone & Webster interest in the Puget Sound territory.

Financial and Corporate

Annual Reports

Middle West Utilities Company

The comparative combined earnings statement of the various subsidiaries of the Middle West Utilities Company, Chicago, Ill., for the fiscal years ended April 30, 1916 and 1917, follows:

	1917	1916
Gross earnings	$9,620,216	$8,091,148
Operating expenses and taxes	6,117,460	5,013,388
Net earnings from operation	$3,502,756	$3,077,760
Rentals on leased properties	205,940	191,645
	$3,296,816	$2,886,115
Interest paid on accruing to outside holders	1,485,756	1,485,775
Dividends and proportion of undistributed earnings to outside holders	294,829	206,093
Amortization of discount	36,557	24,641
Total earnings accruing to Middle West Utilities Company	$1,479,674	$1,315,968

The gross earnings of the subsidiary companies in the last fiscal year showed a gain of $1,529,068 or 18.9 per cent. Of this only $388,960 came from newly acquired properties. Owing to the increase in the cost of operation, the operating ratio was 1.63 per cent higher in the last year. Yet the net earnings from operation increased $424,995 or 13.8 per cent. The street and interurban railways of the Middle West Utilities Company operate over 193 miles of track and provide 13.5 per cent of the aggregate gross earnings of all subsidiaries.

The total income of the Middle West Utilities Company for the year just closed was $1,824,069 as compared with $1,642,686 for the previous year. The balance for dividends was $1,026,585 as compared with $1,001,285. The various surplus accounts belonging to the company now aggregate $3,456,976. Of this $1,433,908 represents the holding company's portion of the surplus shown on the books of subsidiary companies.

Pittsburgh Railways

The consolidated income statement of the Pittsburgh (Pa.) Railways and its affiliated companies for the year ended March 31, 1917, follows:

Gross revenue from railway operation	$13,648,579
Operating expenses and taxes:	
Maintenance of way and structures	$1,141,119
Maintenance of equipment	826,687
Traffic	31,656
Power	1,552,410
Transportation	3,681,353
General and miscellaneous	1,524,523
Total	$8,757,748
Taxes	524,484
Total	$9,282,233
Income from railway operation	$4,366,346
Income from auxiliary operations	74,268
Total operating income	$4,440,614
Other income	172,326
Gross income	$4,612,940
Deductions	4,250,494
Net income	$362,446

According to the annual report of the Philadelphia Company, from which the foregoing statement is taken, there has been a gradual improvement in business conditions throughout the Pittsburgh district during the past year, resulting in an increased traffic on all transportation lines. The gross earnings showed an increase of $1,081,595 or 8.8 per cent over the gross earnings reported for the preceding year of operation.

Owing to the unprecedented demands of manufacturers for all classes of labor, the company was obliged to increase the compensation paid to employees in all departments. This, with the increased cost of power and the higher prices for materials and supplies, resulted in an increase of $1,-

201,934 or 16.4 per cent in operating expenses. The actual increase for the year on account of higher wages amounted to $409,729.

There was expended during the year $1,505,537 for improvements, betterments and extensions, of which $1,233,373.32 was charged to capital account, and $272,164 against the income account on account of extraordinary expenditures for improvements, replacements and realignments. There was also charged to the income account $91,277 as amortization of the deferred account for the same class of work, and $2,230 for financing expenses. The surplus as of March 31, 1917, totaled $501,561 as compared to $508,064 the year before.

In regard to the need of increased revenues for electric railways, the annual report of the holding company contains the following statement for the Pittsburgh Railway:

"The street railway transportation industry in almost all of the large cities of the United States has been facing for many years a gradual increase in labor and material cost without any compensating increase in the fare charged to the public, with the result that there has been no safe margin above operating expenses and interest on the cost of properties. The situation is now becoming acute on account of the recent phenomenal advance in wages and material, especially coal. Owing to these conditions, there is now a general movement on foot to obtain an increase in fares. It will be the policy of this company to make every effort to secure remuneration for the additional cost of service it renders. Unless there is an increase in fares, the company will not be able to maintain its present high standard of service."

Republic Railway & Light Company

The combined comparative income statement of the Republic Railway & Light Company, Youngstown, Ohio, and its subsidiaries for the calendar years 1915 and 1916 follows:

	1916		1915	
	Amount	Per cent	Amount	Per cent
Gross earnings	$3,987,616	100.0	$3,121,296	100.0
Operating expenses, depreciation and taxes*	2,327,406	58.3	1,874,082	60.0
Net earnings	$1,660,210	41.7	$1,247,214	40.0
Other income	20,965	0.5	1,753	0.0
Gross income	$1,681,175	42.2	$1,248,967	40.0
Interest and subsidiary company dividends	827,569	20.8	688,952	22.1
Net income	$ 853,606	21.4	$560,015	17.9
Dividends on preferred stock	311,484	7.8	311,484	10.0
Balance	$ 542,122	13.6	$ 248,531	7.9

*Depreciation for 1915 was not carried in operating expenses; in 1916 an amount of $46,562 for depreciation of equipment is included.

The gross earnings of the companies during 1916 increased $866,319 or 27.75 per cent as compared to those in 1915, while the operating expenses, depreciation and taxes increased $453,323 or 24.19 per cent. As a result the net earnings showed a gain of $412,995 or 33.11 per cent. The gross revenue from the electric light and power business increased 37.5 per cent, and the gross revenue from railways 22.8 per cent. The gross earnings of the company during 1917 up to the middle of March have showed a satisfactory increase, but there has been a substantial increase in the cost of materials, particularly coal, which will result in an increase of operating expenses for 1917.

As a result of a jump in other income from $1,753 to $20.965 during 1916, the gross income in the last year showed a gain of $432,208 or 34.60 per cent. Interest on subsidiary company dividends increased only $138,616 or 20 12 per cent, so that the net income represented a gain of $293,591 or 52.42 per cent. After paying the same preferred dividend as in 1915, the balance at $542,122 represented an increase of $293,591.

During 1916 the sum of $1,922,837 was expended upon improvements and betterments to the properties of the subsidiaries, including $1.264,037 on extensions and improvements to power house and electrical equipment and $658,800 upon extensions and improvements to the electric railway lines of the companies.

Deposit of St. Louis Bonds Urged

Holders of United Railways 4's of 1934 Requested to Deposit on Account of Negotiations with City

The holders of the general mortgage 4 per cent bonds of the United Railways, St. Louis, Mo., due July 1, 1934, are being asked to deposit their bonds. The chairman of the committee which is seeking the deposits is Breckenridge Jones, president of the Mississippi Valley Trust Company, St. Louis, Mo. The other members of the committee are David R. Francis, Jr., of Francis Brothers & Company, St. Louis; Allen G. Hoyt, vice-president of the National City Company, New York, and A. H. S. Post, president of the Mercantile Trust & Deposit Company, Baltimore. The formation of the committee grew indirectly out of the negotiations between a committee representing the United Railways and the officers of the city of St. Louis looking toward a settlement of the differences between them. The progress made with these negotiations has been noted previously in the ELECTRIC RAILWAY JOURNAL. The appeal of the committee to the holders of the 4 per cent bonds is as follows:

"Committees representing the city of St. Louis and United Railways are conferring and have partially agreed upon a plan of adjustment of the difficulties between the city and company.

"The proposed ordinance provides for a fixed valuation and a reduction in capitalization.

"Upon request, the undersigned owning and representing a large amount of the above bonds, believing it imperative that the holders of the general mortgage 4 per cent bonds should be in position to take prompt and concerted action for the protection of their interests, have consented to act as a committee to protect the holders of these bonds

"It is to the advantage of the bondholders to deposit their bonds promptly with the committee, in order to participate in benefits to be gained by concerted action on the part of the large majority of the bonds.

"We urgently request holders to deposit their bonds immediately, with Jan. 1, 1918, and subsequent coupons attached, with the Mississippi Valley Trust Company, St. Louis; the Farmers' Loan & Trust Company, New York, or the Mercantile Trust & Deposit Company, Baltimore, depositaries, under an agreement dated July 9, 1917, providing for such deposits.

"The committee will promptly pay any interest which may be received by it on the deposited bonds to the holders of the certificates of deposit representing the bonds, in respect whereof such payments of interest shall be made, deducting any income tax required to be withheld.

"Copies of the deposit agreement may be obtained by application to any of the depositaries."

ANOTHER COMMITTEE SEEKS DEPOSITS

Another committee which has been organized in the interest of the holders of the 4 per cent bonds of the company is composed of N. A. McMillan, president of the St. Louis Clearing House; Edward Mallinckrodt, M. Kotany and J. Herndon Smith. Mr. McMillan is chairman of this committee. He is reported to have said that the members of the committee of which he is chairman were surprised to learn of the committee headed by Mr. Jones and that they had not determined what steps they will take.

Mr. Jones on July 9 announced his resignation from the board of directors of the North American Company, which controls the United Railways. In announcing his resignation, Mr. Jones stated that he had served as a director of the North American Company and for a time with the United Railways, believing that thereby he could best serve the interests of the holders of all classes of securities of the United Railways. Now that the settlement of differences between the city and the railway seemed likely he had, at the request of holders of a large amount of the company's 4 per cent bonds, decided to devote his energies to the protection of those bonds. In order that he might be relieved of any possible embarrassment arising from any conflict of interests, he had resigned as a director of the North American Company. Mr. Jones has not been a director of the United Railways since last winter.

Rhode Island Assessments Certified

The Tax Commission of Rhode Island has certified to the treasurer for collection the following assessments upon Rhode Island's Street railways:

Rhode Island Company: Gross earnings, this year, $5,780,786 as against $5,025,150 last year, a gain of $755,635; amount of tax this year, $57,807 against $50,251 a year ago, an increase of $7,556.

Bay State Street Railway: Gross earnings this year, $185,771 against $183,398 last year, a gain of $2,372; amount of tax this year, $1,857 against $1,833 a year ago, an increase of $23.

Newport & Providence Railway: Gross earnings this year, $89,920 against $83,762 last year, a gain of $6,157; amount of tax this year, $899 against $837 a year ago, an increase of $61.

Norwich & Westerly Traction Company: Gross earnings this year, $34,942 against $72,608 a year ago; amount of tax this year $349 against $726 a year ago, a reduction of $376.

Shore Line Electric Railway: Gross earnings this year, $50,455; amount of tax this year, $504. New company.

The Shore Line Electric Railway is operating a line formerly run by the Norwich & Westerly Traction Company. The total for both companies for this year shows a gain of $12,788 in gross earnings over the figures of the Norwich & Westerly Traction Company of a year ago.

Returns for Iowa Interurbans

From the thirty-eighth report of the Iowa Board of Railroad Commissioners, just now available, it appears that the 1915 gross operating earnings of interurban electric railways in the State were $2,923,033 as compared to $2,682,102 in 1914. The operating expenses, however, increased from $1,722,072 to $1,895,925, so that the net from operation in 1915 was $1,027,107 as compared to $960,030 the year before. The single-track mileage increased 44.75 miles to 472.48 miles—23.02 miles for electrified track of the Centerville, Albia & Southern Railway and 17.39 miles for new track of the Waterloo, Cedar Falls & Northern Railway being the largest items. The net earnings per mile of single track dropped from $2,244 in 1914 to $2,173 in 1915.

American Light & Traction Company, New York, N. Y.—The American Light & Traction Company has declared the regular quarterly dividend of 1½ per cent on its preferred stock. On the junior issue the regular quarterly dividend of 2½ per cent in cash and a dividend at the rate of 2½ shares of common stock on every 100 shares of common outstanding also has been declared. All the dividends will be paid on Aug. 1.

American Water Works & Electric Company, New York, N. Y.—H. Hobart Porter, president of the American Water Works & Electric Company, has issued a statement to stockholders announcing that the plan for funding the dividends accrued to April 27, 1917, upon the first preferred stock is to become operative. Signed consents and approvals have been received from most of the stockholders and the directors have voted to go ahead with the plan. The distribution of warrants for cash and new securities provided in the plan will be made to first preferred voting trust certificate holders of record at the close of business July 20 next. The first preferred stock to be issued under the plan will be entitled to cumulative dividends from April 27, 1917.

Brooklyn (N. Y.) City Railroad.—A quarterly dividend of 2½ per cent has been declared by the directors of the Brooklyn City Railroad, payable on July 16 to holders of record of July 5. This compares with 2 per cent quarterly since July, 1910.

Minneapolis, St. Paul, Rochester & Dubuque Electric Traction Company, Minneapolis, Minn. — Howard S. Abbott, master in chancery, on June 28 offered the property of the Minneapolis, St. Paul, Rochester & Dubuque Electric Traction Company for sale, but received no bids.

Pacific Gas & Electric Company, San Francisco, Cal.—According to the annual report of the Pacific Gas & Electric Company for the calendar year 1916, the operations of the Sacramento Street Railway, its railway subsidiary, showed a distinct improvement in the last year. Both the passengers carried and the revenue increased approximately 10.5 per cent over 1914, as compared to a 22 per cent decrease in 1915 and 1914. This is said to indicate a waning activity on the part of the jitneys. The gross revenue in 1916 was $442,303, while the passengers totaled 10,044,428, car miles 2,919,041 and car hours 299,873.

Syracuse (N. Y.) Northern Electric Railway, Inc.—Holders of certificates of deposit issued by the Central City Trust Company, Syracuse, N. Y., have been notified that inasmuch as the properties of the Syracuse & South Bay Electric Railroad and the Syracuse, Watertown & St. Lawrence River Railroad have been acquired by the Syracuse Northern Electric Railway, Inc., the securities of the new company have been issued and are now ready for distribution. Holders of certificates of deposit may on and after July 16 receive the new securities.

Dividends Declared

Brooklyn (N. Y.) City Railroad, quarterly, 2½ per cent.

Chicago (Ill.) Railways, 8 per cent, participating certificates, Series 1.

Connecticut Railway & Lighting Company, Bridgeport, Conn., quarterly, 1 per cent, common and preferred.

Kentucky Securities Corporation, Philadelphia, Pa., quarterly, 1½ per cent, preferred.

New Orleans (La.) City Railroad, 2½ per cent, preferred; 1 per cent, common.

Ottumwa Railway & Light Company, Ottumwa, Iowa, quarterly, 1¾ per cent, preferred.

Pacific Gas & Electric Company, San Francisco, Cal., quarterly, 1¼ per cent, common.

Puget Sound Traction, Light & Power Company, Seattle, Wash., quarterly, 75 cents, preferred.

Railway & Light Securities Company, Boston, Mass., 3 per cent, common and preferred.

Electric Railway Monthly Earnings

BERKSHIRE STREET RAILWAY, PITTSFIELD, MASS.

Period		Operating Revenues	Operating Expenses	Operating Income	Fixed Charges	Net Income
1m., May,	'17	$87,824	*$75,825	$11,999	$27,557	†‡$15.443
1 " "	'16	84,466	*68,658	15,808	27,850	†‡11,809
5 " "	'17	418,803	*363,378	55,425	137,925	†‡82.025
5 " "	'16	375,308	*336,170	39,138	122,810	†‡82,664

COMMONWEALTH POWER, RAILWAY & LIGHT COMPANY, GRAND RAPIDS, MICH.

Period		Operating Revenues	Operating Expenses	Operating Income	Fixed Charges	Net Income
1m., May,	'17	$1,512,014	$844,989	$667.025	$524,189	$142,836
1 " "	'16	1,328.075	631,766	696,309	496.250	200.059
12 " "	'17	17,919,035	9,381,593	8,537,442	6,088,988	2,448,454
12 " "	'16	15,630,700	7,455,760	8,174,940	5,655,231	2,419,709

CONNECTICUT COMPANY, NEW HAVEN, CONN.

Period		Operating Revenues	Operating Expenses	Operating Income	Fixed Charges	Net Income
1m., May,	'17	$811,350	*$662,323	$149.027	$95,726	‡$75.442
1 " "	'16	800,058	*528,341	271,717	98.009	‡196.284
5 " "	'17	3,902,262	*3,132,485	769,777	479,538	‡371,930
5 " "	'16	3,678,610	*2,578,535	1,100,075	489,921	‡723,574

NEW YORK & STAMFORD RAILWAY, PORT CHESTER, N. Y.

Period		Operating Revenues	Operating Expenses	Operating Income	Fixed Charges	Net Income
1m., May,	'17	$31,020	*$26,516	$4,504	$7,982	†‡$3.432
1 " "	'16	33,099	*25,542	7,557	7.979	†‡376
5 " "	'17	135.778	*137,725	†1,947	3,925	†‡41.647
5 " "	'16	131,654	*117,839	13,815	39,920	†‡25,905

NEW YORK, WESTCHESTER & BOSTON RAILWAY, NEW YORK, N. Y.

Period		Operating Revenues	Operating Expenses	Operating Income	Fixed Charges	Net Income
1m., May,	'17	$49,535	*$47.077	$2,548	§$6,346	†‡$3.088
1 " "	'16	48,450	*43,845	4,605	§5,589	‡348
5 " "	'17	228.164	*232.312	†4,148	§35,349	†‡33.894
5 " "	'16	211,302	*258,931	†47,629	§32,520	†‡72,330

RHODE ISLAND COMPANY, PROVIDENCE, R. I.

Period		Operating Revenues	Operating Expenses	Operating Income	Fixed Charges	Net Income
1m., May,	'17	$489,768	*$400,457	$89,311	$119,911	†‡$30.037
1 " "	'16	493,296	*354,687	138,609	118,579	‡21.120
5 " "	'17	2,137,706	*1,952,314	365.392	597,031	†‡174,733
5 " "	'16	2,228,505	*1,708,459	520,046	557,623	‡19,847

WESTCHESTER STREET RAILROAD, WHITE PLAINS, N. Y.

Period		Operating Revenues	Operating Expenses	Operating Income	Fixed Charges	Net Income
1m., May,	'17	$21,862	*$23,687	†$1,825	$2,168	†‡$3,965
1 " "	'16	22,964	*22,413	551	1,798	†‡1.219
5 " "	'17	92,529	*112,117	†19,588	10,257	†‡29,709
5 " "	'16	95,654	*104,781	†9,127	8,750	†‡17,751

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*Includes taxes. †Deficit. ‡Includes non-operating income. §Excludes interest on bonds, charged income and paid by the New York, New Haven & Hartford Railroad under guarantee; also interest on notes held by the New York, New Haven & Hartford Railroad, not credited to the income of that company.

Traffic and Transportation

Skip Stop in Buffalo

Thirty-Day Trial Proposed on Two of the Busiest Lines of the International Railway

Beginning on July 15 and continuing for thirty days, the International Railway, Buffalo, N. Y., will operate cars over two of its busiest lines on the skip-stop plan. All cars operating over Main Street, between Chippewa Street and the city line, will stop at every second corner, except at transfer points, and the same rule will be made effective over Elmwood Avenue, between Chippewa Street and Hertel Avenue. The skip-stop plan will not be made effective in the congested downtown business district. The company's decision to try out the skip-stop plan on its two busiest lines is the result of one of the recommendations made by the municipal traffic commission appointed by Mayor Louis P. Fuhrmann.

TRIAL TO BE MADE ON TWO LINES

The plan to eliminate about 50 per cent of the car stops on these two lines outside of the business district was announced in a news article in the daily papers, and was followed up by display announcements in all of the company's cars. The announcements in the cars were signed by the Buffalo Traffic Commission, and urged the co-operation of the public and trainmen to make the skip-stop plan a success.

Peter Witt, former street railway commissioner of Cleveland, Ohio, conferred in Buffalo with officials of the International Railway and members of the municipal traffic commission at the time the committee decided to recommend the trial of the skip-stop plan on two Buffalo lines. John O. Weigel, general superintendent of traffic of the International Railway; Thomas Penney, vice-president and general counsel of the company, and a member of the traffic commission, and also E. J. Dickson, vice-president of the company, attended the conference.

White bands 3 ft. wide will be painted on trolley poles at corners where the cars will stop. The cars will skip every other block, making the stops at one lot of corners on the outbound trip, and at another lot on the inbound trip.

During the first week of the trial, uniformed supervisors will be stationed at numerous corners along the line to inform the public where cars will stop, and designate what corners will be skipped.

Five other lines which operate in Main Street, between Florence Avenue and Perry Street, will also operate on the skip-stop plan while the cars are in Main Street, except that south of Chippewa Street, in the congested retail shopping district, all stops will be made.

Service Talks for Employees

President Coates Sends Out Talks to Emphasize the Need of Courtesy, Common Sense, Kindness and Team Work

The problem of getting the best service from employees has been undertaken by Frank R. Coates, president of the Toledo Railways & Light Company and other properties in Toledo, Ohio, all operated by H. L. Doherty & Company. Mr. Coates has sent four talks to his men, each dealing with a different phase of the problems which present themselves daily. In the first talk, which was entitled "Courtesy," Mr. Coates said, in part:

"Be courteous. Courtesy consists of those kindly, helpful acts we render others that we like to receive ourselves. A friendly 'good morning,' a cordial 'thanks,' a cheery word or a pleasant smile from the man who comes directly in contact with the public—will do more to gain good-will and friendship than anything else."

The following is an extract from the talk on "Common Sense": "Situations often arise when a man must exercise his own common sense and let his reason tell him the right thing to do—the safe thing to do. 'The best safety device is a careful person.' Without thought and care on the part of the man behind the device, it will avail little."

The third of the series was on the subject of "Kindness." The following quotation is taken from this talk: "Kindness is an attribute that all may cultivate—it is a mark that always distinguishes the big man—no matter what his work may be. Kindly deeds to others will pay large dividends to ourselves in human happiness that no amount of money can buy. Be kind."

In the last talk Mr. Coates emphasized the necessity of team work. He said that neither absolute safety in car operation nor the good-will of patrons could be obtained without co-operation between the members of the car crew. Each of the talks was signed by Mr. Coates, to give the personal touch so essential in impressing the employee.

Inquiry Into Gorge Wreck

Officials of the Railroad Testify Before the Coroner—Inquiry to Continue

Officials of the Niagara Gorge Railroad, Niagara Falls, N. Y., who were called to testify at the coroner's inquest into the fatal accident near the Whirlpool Rapids in the lower Niagara Gorge on the afternoon of July 1 placed a large part of the responsibility for the wreck upon the National Guardsmen who saw the foundations of the track slide into the river and did not flag the approaching car. Among the witnesses called were E. E. Nicklis, superintendent of the Gorge Route; William Piper, assistant superintendent; Joseph Mondia, track foreman; Louis C. Crandall, motorman of the wrecked car, passengers, and several alleged eye-witnesses.

HOW THE LINE WAS PROTECTED

Company officials testified that the retaining wall supporting the tracks at the brink of the lower gorge at the point which gave way was a dry wall of stones piled up with no cement binder; that the power was not shut off when the company received warning because of the fear that if this were done it might endanger other cars on the steep grades; that there is no telephone signal dispatching system along the lower gorge between Lewiston and Niagara Falls, because the roar of the rapids is too great to permit anyone to hear over a telephone, and that an inspector rushed to the scene of the wash-out on a special car, but reached the point a few minutes after the car had toppled into the river.

A track inspector testified that the line between Lewiston and Niagara Falls is inspected every morning before traffic is started over the route. Loose boulders on the cliffs above are blasted out and a careful watch is always kept on the entire route.

The motorman of the wrecked car said he received the first warning of the undermined roadbed when the track began to sag under the car. Before he realized what was happening, the car toppled over the embankment into the river.

The inquest was adjourned until July 12 when additional witnesses were called.

There is still some doubt as to the total number of passengers on board the wrecked car. Estimates vary, but municipal authorities of Niagara Falls believe there are about fifteen passengers still missing in addition to the ten who were killed and one who died later in a hospital. At least three persons are known to be missing.

At a special meeting of the board of directors of the company on July 3, Burt L. Jones, vice-president and general manager, reviewed the wreck and in a lengthy prepared statement given to the daily newspapers said that the National Guardsmen who saw the roadbed slip into the gorge "should certainly have flagged the car in order to avoid the catastrophe." Mr. Jones also denied the statement of four witnesses, who said they warned the company twenty minutes in advance of the wreck that the track had given away.

Pension System for Duluth

The Duluth (Minn.) Street Railway recently established a pension system for its employees. The management of the plan is placed in the hands of a pension board composed of one official and two employees who will be appointed by the president of the company. No part of the pension payments is to be contributed by the employees. Whenever it shall be found that the basis of pension payment creates demands in excess of the company's revenue available for pensions a new basis ratably reducing existing and future payments shall be established by the pension board, with the approval of the president.

Any employee of the company, male or female, may be declared eligible for a pension. Granting of pensions is based upon the number of years of continuous service in the company's employ, the average amount of salary or wages received during the last ten years of service and the character and quality of service rendered. Sixty-five and seventy years are the ages specified at which employees may be pensioned, providing their annual income has not averaged more than $2,500 during the preceding ten years. Any employee receiving that amount or less who has become permanently disabled or disqualified for service by accident or sickness may at the discretion of the pension board be retired from service for a given period of time and granted a monthly pension. The amount of such pensions shall be determined by the pension board. It shall be in lieu of the regular pension and will not be granted if the employee is receiving compensation under the State law. All payments will be made monthly. A retired employee receiving a pension is permitted also to engage in certain other occupations.

In addition to the pension system the company recently secured group insurance for its entire force. All employees who have been in the service of the company for a year or longer are insured in the sum equal to their annual wage or an amount not less than $1,000. The company is also paying a war bonus of 5 per cent of the monthly wage during the period of the war to men who have been employed for one year and 10 per cent of their wage to men in the service less than one year. The "war bonus" will not be considered in determining the average salary to fix the amount of pensions.

Near-Side Stop Adopted in Rochester.—The Rochester lines of the New York State Railways have just put the near-side stop into operation on the entire system. Barring a few complaints, the plan has met general approval.

Accident on Brooklyn Elevated.—Several persons were injured on July 7 when one car of a three-car train on the Broadway line of the Brooklyn (N. Y.) Rapid Transit Company leaped the rails and plunged off the elevated railroad into the street at Broadway and Myrtle Avenue.

Briefs Filed in Kansas City Fare Case.—Briefs have been filed in the "Maywood" case of the Kansas City (Mo.) Railways, involving suburban fares. The case will be argued in Jefferson City on July 12. No further testimony will be received. The issues involved were stated briefly in the ELECTRIC RAILWAY JOURNAL for June 23, page 1163.

Souvenir Swatter in Beaver Valley.—The Beaver Valley Traction Company, New Brighton, Pa., is issuing a fly swatter as a "Safety Always" souvenir to the householders along its lines. The message carried on one side is "Beaver Valley Traction Company, Do as We Do—Think of Safety Always." On the other side the legend reads "Safety Always, Save Lives, Swat Flies."

Fare Zone Added to Bangor Suburban Zone.—The Bangor Railway & Electric Company, Bangor, Maine, has increased the fare on its Old Town division. This branch is 14.73 miles in length. Previous to the increase the company received a 15-cent fare. It has now added another fare limit, making the fare 20 cents instead of 15 cents for the entire distance. The increase became effective on June 19.

State License for Jitneys in Texas.—Jitneys operating in cities of Texas will be required to pay the State license fee of $20 a year, as provided for commercial vehicles under the new State highway law, according to a ruling of the State attorney general's department. Notice has been given by city authorities in most cities to the effect that jitneys must cease operation after July 15 unless the State license is secured.

Six-for-a-Quarter Fares Withdrawn.—On July 1 the Kentucky Traction & Terminal Company, Lexington, Ky., discontinued the sale of six metal checks, good for city fares, at 25 cents. The announcement was made on the day before the new rule went into effect. Checks sold before the new rule went into effect will be honored until they are exhausted. In connection with the announcement the company explained that costs of every character have increased to the point where it is no longer possible to operate at the reduced fare.

Pacific Electric Adopts Courtesy Code.—The Pacific Electric Railway, Los Angeles, Cal., has perceived the value of a standard courtesy code for trainmen such as has been in use for some time on the Brooklyn (N. Y.) Rapid Transit System and which was described in the ELECTRIC RAILWAY JOURNAL for March 24, page 544. Lessons in courtesy, based on the B. R. T. code, are being published in the *Pacific Electric Magazine* and every effort is being made to impress upon the employees of the company the need of politeness in their dealings with patrons.

Springfield Jitneys Take 20 Per Cent of Business.—The Springfield (Mass.) Street Railway recently made a study of the extent of jitney competition in that city. It reported that the jitneys carried on one day 25,379 passengers and took in $1,271.95 in revenue. The railway company on that day carried 110,711 passengers. Nearly 40,000 of this number included patrons who offered transfers in payment of fares and children who rode on half-fare tickets. It is said that jitney earnings in that city average about 25 per cent of the revenue realized by the electric railway.

Two Ohio Towns Seek Reduction in Fare.—The villages of Lockland and Wyoming have filed suits in the Common Pleas Court at Cincinnati against the Ohio Traction Company to secure a reduction in fare. The franchises granted the company contain the stipulation that in the event the fare between Cincinnati and Carthage is ever reduced, the villages are to have the same rate. Through the "loop" lease, the company has agreed to grant a 5-cent fare to the city limits which gives the people of Carthage the lower fare. The suits are based on this condition.

Car Men Submit Jitney Ordinance.—The employees of the Bay State Street Railway in Brockton, Mass., recently submitted to the Board of Aldermen an ordinance drawn up to effect more stringent regulation of jitney buses in that city. Among the requirements set forth in the ordinance was a $500 bond per passenger up to the number the vehicle is authorized to carry, and business is to be conducted along fixed routes and at regular rates. No action was taken by the board. A hearing will be held on July 16 which the public and the Common Council are invited to attend.

One-Man Cars Successful in Everett.—The Everett Railway, Light & Water Company, Everett, Wash., has found the automatic one-man cars which it has operated for several months on the Riverside-Bayside line in Everett so satisfactory that orders have been placed for twelve more cars of the same type to be delivered next fall. When these cars are received the company will increase its service, tentative plans for which provide for the rerouting of the lines. Application has been made to the City Council for permission to make necessary track changes for the new service.

Boston "L" Issues Safety Bulletin.—A small folder containing short talks on safety is being issued by the Boston (Mass.) Elevated Railway for the use of all employees in the train service. The first two issues deal with the subjects "Carelessness" and "Courtesy" respectively. The company is anxious to make the accident record for 1917 the best in its history, and no doubt these bulletins, furnishing regular reminders to the train men, will be very helpful. The safety messages are prepared by H. A. Pasho, superintendent of rapid transit lines, and Edward Dana, manager of surface transportation.

Atlantic City Suburban Fare Reduced.—The Atlantic City & Shore Railway, Atlantic City, N. J., has announced that for the benefit of those who commute daily from mainland towns to the shore sixty-trip tickets will hereafter be sold for $3 for the 5-mile ride. The company's concession is contrary to the decision rendered by the New Jersey Public Utility Commission two years ago at the close of a fight for a 10-cent fare. In this decision the commission held that the company could not afford to carry passengers across 5 miles of no-stop territory for a nickel. The new rule applies also to the Atlantic & Suburban Railway, which is under control of the Shore Line management.

Skip-Stop and Fare Problems in Richmond.—*Public Service News*, published by the Virginia Railway & Power Company, Richmond, Va., in its issue for July 5 has answered eighteen questions about the skip stop drawn from the experience of the United Railways & Electric Company, Baltimore, in operating under that plan. The company also makes an appeal to its readers for their support, using as its text that part of the President's proclamation of April 15 which dealt with the railroads. The company says that its patrons can help it to perform its functions properly, and render a more adequate service by (1) urging the Council to give the skip-stop plan a ninety days' trial, and (2) by supporting the company's plea for a straight 5-cent fare.

More Skip Stops in Detroit.—The Detroit (Mich.) United Railway placed the skip-stop plan in service on its Hamilton line on July 8. The City Council of Detroit and the Village Council of Highland Park united in giving permission for the operation of skip stops on the Hamilton line. The Detroit resolution provided for skip stops in both directions between Grand River Avenue and the northerly city limits. The Highland Park resolution authorized skip-stop operation through the village. This applies to the line operating over Oakman Boulevard. When the Hamilton service is extended to the Six Mile Road, it will also be under the skip-stop plan. On July 1 the skip stop was installed by the company on its Fort line. This method of operation has been in use on the company's Woodward and Jefferson lines for several months.

Election Results on Jitney Ordinances.—On June 4 the city of Portland, Ore., held its municipal election, an important feature of the election program being the matter of jitney regulation. The results of that election were reviewed on page 1070 of the ELECTRIC RAILWAY JOURNAL for June 9. It was stated that the ordinance requiring a $2,500 jitney bond was carried by 32,000 to 16,000; that the franchises calling for satisfactory regulation were also carried by heavy vote and that the commissioner who has stood for unregulated jitney service for the last two years was defeated in his run for mayor. The official count on all of these initiative ordinances and charter amendments have been completed by the city auditor, A. L. Barbur. The results are as follows: Jitney bonds—yes, 31,545; no, 15,518; jitney-free streets—yes, 15,466; no, 30,787; Carver electric railway franchise—yes, 26,438; no, 18,585; jitney franchise No. 1—yes, 26,438; no, 18,585; jitney franchise No. 2—yes, 26,223; no 18,445; jitney franchise No. 3—yes, 25.939; no, 18,335; jitney franchise to Linnton—yes, 28,864; no, 15,502.

168,202,150 Revenue Passengers in New York City in April.—Electric railways operated in New York City during the month of April carried a total of 168,202,150 revenue passengers. This, according to a report issued by the Public Service Commission for the First District of New York, was an increase of 4,460,997 over the figures for April, 1916. The total revenue from passenger transportation for the month was $8,333,081, against $8,082,199 for April, 1916, showing an increase of $250,882. The total operating revenue amounted to $8,769,919, against $8,479,693 in the corresponding period of 1916. Of the total number of passengers carried in April the Hudson & Manhattan Railroad shows 6,016,343; the Interborough Rapid Transit Company, subway division, 37,826,100, and the elevated division, 29,734,529. The Brooklyn Rapid Transit Company in all its connections carried 48,800,019 passengers, and the Manhattan surface roads 32,122,337, of which the New York Railways carried 20,576,771. The number of transfers collected by all companies in April was 28,437,926 which shows a decrease of 938 397 from the corresponding month in 1916. The total of taxes paid by the electric railways for the month amounted to $609,610, against $545.894 for April, 1916. The foregoing figures are exclusive of four small companies, the combined passenger fare collections of which average about $5.000 a month.

Personal Mention

C. N. Hebner has been appointed secretary and treasurer of the Alton & Jacksonville Railway, Alton, Ill., to succeed C. A. Caldwell.

H. J. Millett has been appointed roadmaster for the United Traction Company at Troy, N. Y., succeeding C. A. Smith, resigned.

D. Hudson has been elected vice-president of the Fort Scott Gas & Electric Company, Fort Scott, Kan., to succeed E. C. Gates.

Van Horn Ely, Philadelphia, has been elected president of the Jersey Central Traction Company, Keyport, N. J., to succeed W. W. Laird.

J. J. Schweitzer has been appointed superintendent of shops of the Cincinnati (Ohio) Traction Company to succeed J. H. Elliott.

W. W. Prater has been appointed roadmaster of the Clinton, Davenport & Muscatine Railway, Davenport, Iowa, to succeed J. Wideman.

A. Coffman has been appointed claim agent of the Roanoke Railway & Electric Company, Roanoke, Va., succeeding C. B. Short.

F. A. Hurlbut has been appointed chief engineer of the East St. Louis & Suburban Railway, East St. Louis, Ill., to succeed P. S. Tuncil.

C. F. Conn has been appointed secretary of the J. G. White Engineering Corporation, New York, N. Y., to succeed A. N. Connett, Jr.

H. F. Barraclough has been appointed purchasing agent of the Salt Lake & Ogden Railway, Salt Lake City, Utah, to succeed F. D. Brown.

A. O. S. Havens has been appointed secretary of the Trenton, Lakewood & Seacoast Railway, Lakewood, N. J., to succeed Archibald D. Davis.

Benjamin R. Duff has been appointed claim agent of the New York & North Shore Traction Company, Roslyn, N. Y., to succeed George F. Orthel.

H. A. Laxon has been elected president and general manager of the Uncanoonuc Incline Railway & Development Company, Manchester, N. H.

W. H. Whatley has accepted the position of master mechanic for the Macon Railway & Light Company, Macon, Ga., succeeding E. G. Daniels.

W. J. Musser has been appointed secretary of the Southern Illinois Light & Power Company, with office at St. Louis, Mo., succeeding Mary McCord.

Gus A. Kohler has been appointed secretary of the Springfield Terminal Railway & Power Company, Springfield, Ohio, to succeed J. F. McGrew.

M. Kerwin has been appointed manager of Kent House Park at Montmorency Falls for the Quebec Railway, Light & Power Company, Quebec, Que.

Elmer Schoggan has been appointed claim agent of the Little Rock Railway & Electric Company, Little Rock, Ark., to succeed the late A. B. Chichester.

John O. Motto has been appointed general freight and passenger agent of the Winona Interburban Railway, Warsaw, Ind., in place of W. D. Stansifer.

W. T. Stewart, heretofore vice-president of the Gulfport & Mississippi Coast Traction Company, Gulfport, Miss., has been elected president of the company.

H. H. Bechtel has been appointed secretary of the Twin State Gas & Electric Company, Brattleboro division, Brattleboro, Vt., to succeed G. L. Halstead.

J. S. Rice has been appointed chief dispatcher for the Salem & Penns Grove Traction Company, Penns Grove, N. J., to succeed Thomas B. Ackarman.

C. A. Forrest has been made treasurer for the Brattleboro division of the Twin State Gas & Electric Company, Brattleboro, Vt., to succeed A. D. Foster.

A. R. Evans has been elected president of the Fox & Illinois Union Railway, Aurora, Ill., to succeed H. H. Evans, who becomes vice-president of the company.

S. G. McMeen of Columbus, Ohio, has been elected vice-president of the Chattanooga Railway & Light Company, Chattanooga, Tenn., to succeed M. S. Hopkins.

George McIntosh has been appointed chief engineer of power stations for the Ohio Electric Railway & Power Company, Pomeroy, Ohio, to succeed Daniel Rizer.

J. B. Harnish, heretofore vice-president of the Lancaster & York Furnace Street Railway with office in New Danville, Pa., has been elected president to succeed Paul Heine.

J. W. Brannon, heretofore chief engineer of power stations for the St. Francois County Railroad, Farmington, Mo., has been made superintendent to succeed Richard Doyle.

T. H. Purdom has been elected vice-president of the London & Lake Erie Railway & Transportation Company, London, Ont., to succeed George B. Woods, who became president of the company.

R. J. Pike, formerly secretary to R. P. Stevens, president of the Mahoning & Shenango Railway & Light Company, Youngstown, Ohio, has been made purchasing agent of the company to succeed C. O. Bailey.

A. J. Boardman, division superintendent of the Terre Haute, Indianapolis & Eastern Traction Company, Indianapolis, Ind., has received a commission as captain in the Ordnance Officers' Reserve Corps.

F. W. Bacon, vice-president of the Kentucky Traction & Terminal Company, Lexington, Ky., has succeeded E. Mendenhall as vice-president of the Ohio River Electric Railway & Power Company, Pomeroy, Ohio.

W. E. Parker has been promoted to the position of master mechanic for the New Bedford & Onset Street Railway. Mr. Parker entered the company's service ten years ago as a mechanic, in which capacity he has served continuously since that time.

W. C. Callaghan, acting manager of the Shore Line Electric Railway, Norwich, Conn., for the last year, has returned to the staff of The J. G. White Management Corporation, New York, N. Y., as their contract in connection with the operation of the Shore Line property expired on June 30.

J. H. Brown, traffic manager of the San Francisco-Oakland Terminal Railways, Oakland, Cal., has resigned to assume charge of the Monta Vista Rancho, which consists of 2000 acres of olive orchard in Shasta County. Mr. Brown will be succeeded by G. E. Sheldon, his former chief clerk on the San Francisco-Oakland lines.

W. B. Miser, formerly with the Illinois Traction System at Jacksonville, Ill., has been appointed manager of the Drumright Light & Power Company, at Drumright. Okla., one of the new properties recently acquired by H. M. Byllesby & Company. The Drumright Light & Power Company will be included as part of the enlarged Oklahoma Gas & Electric Compay.

Homer Ruhl, heretofore general freight and passenger agent of the Fort Wayne & Decatur Traction Company, Fort Wayne, Ind., has been appointed auditor, effective July 1, to succeed P. C. Reinking, who resigned to accept a position with the Fort Wayne Corrugated Paper Company. Mr. Ruhl will be succeeded by Adrian Baker.

Walter A. Scott has been appointed superintendent of the Exeter, Hampton & Amesbury Street Railway, Exeter, N. H., with headquarters at Hampton. Mr. Scott has been employed by that company since 1903. He began as a conductor and later served as starter at Hampton Beach. He was promoted to the position of assistant treasurer of the company in 1914 to fill the vacancy caused by the death of Edward P. Weeks.

Warren I. Lee, Brooklyn, N. Y.. former first deputy comptroller of New York State. has been appointed by the Public Service Commission for the First District of New York as assistant counsel to the commission. Mr. Lee's assignment will be under Leroy T. Harkness, chief of rapid transit, in connection with claims of subway contractors against the city. Several such claims have recently been filed against the city for large amounts.

L. E. Myers, president of the L. E. Myers Company, Chicago, Ill., and president of several public service corporations including the Bessemer Railway & Light Company, Bessemer, Mich., will report at Washington, D. C., on July 15 to assist Herbert C. Hoover in the work of supervision of federal food control. The definite work which Mr. Myers will do has not been assigned, but it is reported that he will take charge of the bureau of special investigation.

W. C. Klein, who has recently been appointed master mechanic of the Easton (Pa.) Transit Company, entered electric railway work in the shops of the Metropolitan Street Railway, New York, N. Y., under Thomas Mellen in 1901. In 1903 he resigned from the Metropolitan Street Railway to become a general inspector with the Albany & Hudson Railroad. He continued with that company for several years and then engaged in shop work with the General Electric Company for two years. In 1908 he returned to New York with the New York Railways, the successor to the Metropolitan Street Railway, and served for four years as shop foreman and draughtsman under William McIver, H. H. Adams and J. S. Doyle. In 1912 and 1913 Mr. Klein was connected with the Federal Storage Battery Company. From 1913 to 1916 he was with the Brooklyn (N. Y.) Rapid Transit System as draughtsman and general inspector.

E. C. DEAL

E. C. Deal has resigned as vice-president and general manager of the public utility properties until recently controlled by W. N. Coler & Company, New York, N. Y., to become manager of the Trinidad Electric Transmission, Railway & Gas Company, Trinidad, Col. Mr. Deal gained his early experience with the Georgia Electric Light Company, which he served in various capacities from 1894 to 1898. He then entered the employ of Stone & Webster, Boston, Mass., but left them in 1904 to go with the Gas & Electric Company of Bergen County, New Jersey, as chief engineer in charge of the company's properties in more than forty municipalities in northern New Jersey. When that company was absorbed by the Public Service Corporation of New Jersey Mr. Deal became superintendent of the latter company's electric properties in central New Jersey. He severed his connection with the Public Service Corporation in 1908 to go with the firm of W. N. Coler & Company as manager and engineer of public service properties owned by them. Following the acquisition of the property of the Augusta Railway & Electric Company and the Augusta-Aiken Railway & Electric Company by a syndicate in which J. G. White & Company, Inc., New York, were interested, Mr. Deal resigned from Coler & Company to become general manager of the Augusta-Aiken Railway & Electric Corporation, the successor company in Augusta. This was in April, 1911. In April, 1913, he was elected vice-president of the company in addition to general manager, and was also made vice-president and general manager of the Georgia-Carolina Power Company, owned by the same interests. Mr. Deal resigned from these companies on March 1, 1914, to become connected again with W. N. Coler & Company as vice-president and general manager of the public utility properties owned and operated by them, and located in different sections of the country. Mr. Deal is past fourth vice-president of the National Electric Light Association, and past-president of the Southeastern section of the National Electric Light Association. The Trinidad Electric Transmission, Railway & Gas Company, with which Mr. Deal has now become connected, is the successor to the Southern Colorado Power Company. It controls the city railway system in Trinidad and a system of interurban electric railways extending from that city and operates about 200 miles of transmission lines in southern Colorado and northern New Mexico.

Construction News

Construction News Notes are classified under each heading alphabetically by States.

An asterisk (*) indicates a project not previously reported.

FRANCHISES

Santa Ana, Cal.—The Pacific Electric Railway has asked the Board of Supervisors for a fifty-year franchise to construct an electric railway from Santa Ana to Tustin. The line will leave the Santa Ana-Huntington Beach line at a point between Chestnut and McFadden Streets and will enter Tustin by way of Sixth Street.

Columbus, Ind.—The Indianapolis, Columbus & Southern Traction Company, as owner, and the Interstate Public Service Company, as lessee, have surrendered their interurban railway franchise to the city of Columbus and will apply to the Public Service Commission of Indiana for an indeterminate permit under which to operate.

Detroit, Mich.—The Detroit United Railway has received permission from the City Council to build two new street car lines in the west end of the city. One of the new routes will be a continuation of the Junction Avenue line and will run north on Epworth Boulevard to Dailey Avenue, Dailey and Highfield Avenues to Grand River Avenue, connecting with the line on that street. The other route is an extension out Linwood Avenue to the Joy Road. It is likely that this line will be connected with the Trumbull line. It is expected that work will be started on these extensions in a very short time. The extension of the Hamilton line to the Six Mile Road through Highland Park village is nearly completed, and it is expected that service over this extension will be begun within a month. The company is also extending the tracks on West Warren Avenue. Construction work to permit a general re-routing of cars in the center of the city is nearly completed.

Brooklyn, N. Y.—The Brooklyn Rapid Transit Company has asked the Board of Estimate and Public Service Commission for permission to abandon the Long Island Traction Company franchise for a line over the Springfield Road to Hollis Avenue, thence along that avenue into the old village of Jamaica, with a terminus at Twombley Place and Beaver Street.

Dayton, Ohio.—The Peoples Railway has asked the County Commissioners for permission to extend its tracks on North Main Street outside the city corporation line. The petition states that a loop will be built at the end of the extension.

Youngstown, Ohio.—The Mahoning & Shenango Railway & Light Company has notified the City Council of Youngstown that it will accept the franchise granting it the right to extend the Mahoning Avenue line to Perkins Corners. This franchise has twice been refused by the company within the past few months. If the franchise is granted, work on the extension will be begun immediately.

TRACK AND ROADWAY

Little Rock Railway & Electric Company, Little Rock, Ark.—The tentative plans of the Little Rock Railway & Electric Company to extend its lines to the cantonment site of the Twelfth National Army north of Fort Logan H. Roots have been abandoned, owing to the inability of the company to secure steel rails. The transportation of troops to and from the camp will be cared for by the Iron Mountain Railroad.

Darwin, Cal.—A communication from the Darwin Development Company states that construction on the proposed electric railway along the south shore of Owens Lake, to connect with the Southern Pacific Company at Olancha, has been postponed indefinitely, owing to the high cost of materials. [April 21, '17.]

Fresno (Cal.) Interurban Railway.—This company reports that within a few months it expects to construct a 6-mile line to Centerville and Kings River head gates.

Pacific Gas & Electric Company, Sacramento, Cal.—This company is double-tracking its line on H Street, from Nineteenth Street to McKinley Park.

Georgia Railway & Power Company, Atlanta, Ga.—This company will construct a 3-mile extension to the army cantonment at Silver Lake.

Alton & Eastern Electric Railway, Alton, Ill.—A contract has been awarded by the Alton & Eastern Electric Railway to Mulvill Brothers, Alton, for the construction of a line from Alton to the State Hospital. L. C. Haynes, East St. Louis, president. [April 10, '15.]

East St. Louis & Suburban Railroad, East St. Louis, Ill.—This company is reconstructing its tracks on Missouri Avenue between Collinsville Avenue and Third Street.

Galesburg Railway, Lighting & Power Company, Galesburg, Ill.—This company is securing the necessary right-of-way for an extension to Knoxville. The company is also ready to install rails on its North Seminary Avenue line.

Galesburg & Kewanee Electric Railway, Kewanee, Ill.—This company expects to lay new rails over that portion of its right-of-way which is to be paved this summer. New tracks are being laid by the company on Commercial Street from Park Street to the city limits.

Springfield (Ill.) Consolidated Railway.—This company has received permission from the Public Utilities Commission of Illinois to extend its transmission line over the tracks of the Chicago, Peoria & St. Louis Railroad in Sangamon Avenue to Eleventh Street.

Indianapolis Traction & Terminal Company, Indianapolis, Ind.—This company will construct an extension on Brookside Avenue from Eighteenth Street to Olney Avenue.

Muscatine, Burlington & Southern Railway, Muscatine, Iowa.—Tentative plans for the electrification of the Muscatine, Burlington & Southern Railway were outlined at a recent meeting of the officers and directors of the road. Plans were also made for the complete rehabilitation of the road at an expense of approximately $200,000, exclusive of the electrification. The road is more than 50 miles long.

Washington, Baltimore & Annapolis Electric Railway, Baltimore, Md.—This company has awarded a contract to H. S. Kerbaugh, Inc., Baltimore, for the construction of tracks in connection with the new army cantonment at Annapolis Junction.

Detroit (Mich.) United Railway.—This company has completed a new bridge over the Clinton River at Macomb Street, Mt. Clemens, and the Shore Line cars are now operating from Detroit to Mt. Clemens over the bridge.

Duluth (Minn.) Street Railway.—Work has been begun by the Duluth Street Railway double-tracking its East End car line from the Northern Pacific Railroad crossing to Robertson Avenue, Superior. Work will be begun about Aug. 1 on the construction of an extension from Duluth to New Duluth, and it is expected that the line will be built and in operation by Dec. 31.

Helena Light & Railway Company, Helena, Mont.—This company is working on a program of extensive improvements for its suburban lines, which it is hoped to complete before the State Fair opens on Sept. 24. The company is laying 110 lb. rails on Helena Avenue from North Main Street to the Northern Pacific Railroad station. New ties are to be placed under the 70 lb. rails on the Lower Broadwater line, North Park Avenue, between Lawrence and Placer. The upper Broadwater line is also to be overhauled by putting in new ties and 70 lb. rails on Harrison Avenue. Later the line from Harrison Avenue and Knight Street to Broadwater will be improved by removing the old ties and taking out some of the kinks in the tracks.

Claremont Railway & Lighting Company, Claremont, N. H.—This company reports that it will reconstruct its entire track in Claremont, material for which has been purchased.

City Electric Company, Albuquerque, N. Mex.—This company is installing a new electric feed system on its University line.

New York Municipal Railway, Brooklyn, N. Y.—Bids were opened by the Public Service Commission for the First District of New York on July 5 for the construction of Route No. 49, Section 3, the Culver Rapid Transit Railroad in Brooklyn, from a point near Avenue X to Sheepshead Bay Road. The lowest bidder was Oscar Daniels & Company, New York, at $84,600.

Long Island Railroad, New York, N. Y.—This company has ordered from the General Railway Signal Company an electro-mechanical interlocking machine with sixteen electrical levers and seven mechanical levers, to be installed at Manhattan Beach Junction.

Cincinnati (Ohio) Traction Company.—The street railway committee of the City Council has decided to recommend the extension of the Warsaw Avenue line of the Cincinnati Traction Company to Covedale; the Sixth Street line over the Hopple Street viaduct, and the McMickin-Main line to Dixmyth Avenue. Consideration of other extensions was postponed at a recent meeting because of the absence of representatives of the company.

Columbus, Delaware & Marion Electric Company, Columbus, Ohio.—Improvements to the amount of $500,000 will soon be made by the Columbus, Delaware & Marion Electric Company which recently took over the Columbus, Delaware & Marion Railway. The plan of capitalization of the new company was noted last week.

Springfield (Ohio) Railway.—Work has been begun by the Springfield Railway on the construction of an extension from the North Limestone Street lines over Chestnut Avenue, Mason Street, Sherman Avenue and Olive Street, and it is expected that the line will be completed in about two months.

Mahoning & Shenango Railway & Light Company, Youngstown, Ohio.—Work has been begun by the Mahoning & Shenango Railway & Light Company on its 3-mile line covering the eastern section of the city and to Buhl Farm.

Oklahoma Union Railway, Tulsa, Okla.—A contract has been awarded by the Oklahoma Union Railway to the Topeka Bridge & Iron Company, Topeka, Kan., for the construction of all bridges to be built on its line between Tulsa and Sapulpa. Four bridges and one viaduct were included in the contract. All bridges will be of the monolithic arch type and will be constructed of reinforced concrete.

London (Ont.) Street Railway.—It is reported that the London Street Railway has agreed to construct a second track on Richmond Street if the city would widen the street about 3 or 4 ft.

Bloomsburg, Millville & Northern Railway, Bloomsburg, Pa.—William P. Zehner, secretary of the Bloomsburg, Millville & Northern Railway, reports that the company has decided not to construct its proposed line at this time and will sell the right-of-way.

Philadelphia, Pa.—Sealed proposals will be received by the Department of City Transit, Philadelphia, William S. Twining, director, until July 24 for concrete track floor, cast iron floor drains and reinforced concrete slab footwalks from Callowhill Street to Indiana Street, about 15,630 linear feet, and from Indiana Street to Dyre Street, about 15,000 linear feet.

Rhode Island Company, Providence, R. I.—Plans have been completed by the Rhode Island Company for testing all rail bonds on the 400 miles of track in Providence. The work is to be done under the direction of Prof. Albert S. Richey of Worcester Polytechnic Institute, and will be begun at once.

Regina (Sask.) Municipal Railway.—The City Commissioners of Regina have under consideration the construction of an additional half mile of track on Pasqua Street, in order to convert the red and blue lines into a belt line. It is estimated that the cost of the line would be about $12,000. The construction of second track on Elphinstone Street to the exhibition grounds is also under consideration by the company.

Northern Texas Traction Company, Fort Worth, Tex.—The City Commission of Dallas has ordered the Northern Texas Traction Company to lay 103-lb. rails on wood or concrete ties with a solid concrete sub-base on Jefferson Street from Lancaster to Polk Avenues, 2 miles, preparatory to the repaving of this street.

***Freeport, Tex.**—It is reported that surveys are being made by the Freeport Sulphur Company for an electric railway from Freeport to Houston, about 100 miles. W. A. Randle, engineer in charge.

Houston (Tex.) Electric Company.—Plans are being considered by the Houston Electric Company for the construction of an extension of the Brunner Street car line to the proposed camp site at the city limits of Houston.

San Antonio (Tex.) Traction Company.—Announcement has been made by W. B. Tuttle, vice-president of the San Antonio Traction Company, that work will be begun on the proposed line to Camp Kelly, the aviation post, as soon as the City Commission grants permission for the transfer of the franchises of the San Antonio Traction Company and the San Antonio Gas & Electric Company to a new corporation to be known as the San Antonio Electric Company.

Tacoma, Wash.—Bids have been asked by the City of Tacoma for the construction of 10,000 ft. of track in the extension of its line to the Todd shipyards. The work will involve the construction of a ½-mile viaduct over the yards of the Chicago, Milwaukee & St. Paul Railway and a 600-ft. trestle over Hylebos Creek waterway. The estimated total cost is $180,000.

Wisconsin Interurban System, Madison, Wis.—The Wisconsin Railroad Commission has granted the Wisconsin Interurban System permission to issue $600,000 in bonds, the proceeds of which will be used to pay indebtedness incurred in building street railway in Portage and Madison and the remainder to be used for construction purposes. The company is building an electric railway between Madison and Portage and Madison and Janesville, Wis. J. E. Jones of Madison is president. [Nov. 11, '16.]

SHOPS AND BUILDINGS

Moncton Tramways, Electric & Gas Company, Ltd., Moncton, N. B.—This company has completed a new machine shop, containing motor-driven lathes, drill presses and grinders.

Johnstown (Pa.) Traction Company.—Work will be begun at once by this company on the construction of a temporary carhouse in Coopersdale for the purpose of keeping a number of cars in the lower section of the city while the Walnut Street bridge is being erected.

Philadelphia, Pa.—Bids opened for the construction of ten stations on the Frankford Elevated line by Director Twining of the Department of City Transit on July 10 were so far above the estimates upon which the department had based its appropriations for the cost of the work that the bids were discarded. Hence new estimates will have to be made and bids readvertised. There were but two bidders for the construction of the ten buildings, and the higher of these bids was $550,000 and the lower $510,000. Bids for the electrical and plumbing installations were well within the department's estimates but were invalidated by the necessity of drawing up entirely new specifications.

POWER HOUSES AND SUBSTATIONS

Fort Wayne & Northern Indiana Traction Company, Fort Wayne, Ind.—This company has awarded a contract to the Engineering Company, Fort Wayne, for the steel extension to be built to its power house.

United Railways & Electric Company, Baltimore, Md.—Bids have been asked by the United Railways & Electric Company for stokers for its Pratt Street power house.

International Railway, Buffalo, N. Y.—The City Council of Niagara Falls has granted the International Railway permission to place overhead transmission cables along Twenty-fourth Street to its new substation.

Tacoma Railway & Power Company, Tacoma, Wash.—A portable substation, including complete equipment, will be installed immediately by the Tacoma Railway & Power Company to increase the power service on the company's line to American Lake. The station will be mounted on a flat car.

Waupaca Electric Service & Railway Company, Waupaca, Wis.—This company is making improvements to its electric power system in Waupaca. A new 225-hp. electric generator will soon be installed and placed in operation. The system will also be changed to 60 cycle.

Manufactures and Markets

Discussions of Market and Trade Conditions for the Manufacturer, Salesman and Purchasing Agent

Rolling Stock Purchases Market Quotations Business Announcements

One-Man Cars Increasingly Popular

Car Orders in General During First Half of 1917 Show Slight Decline as Compared with 1916, but Better than in 1915—Manufacturers Hopeful

Conditions change so rapidly these days that estimates of the future need frequent revision. This is especially true in the electric railway field and particularly in its car-designing and manufacturing divisions. Once each year the ELECTRIC RAILWAY JOURNAL, in its first issue of January, presents authoritative statistics of the number and types of cars and locomotives ordered during the previous year. The records shown for the business of 1916 were of particular interest because of the generally unsettled state of affairs in the transportation and manufacturing industry. It had been difficult during the year to gage the trend of business and it was interesting as well as reassuring to find that the electric railways had ordered 1200 more cars in 1916 than they did in 1915. Yet the total of 3942 cars for 1916 was small in comparison with the totals of earlier years.

ESTIMATES FOR 1917 LARGE

Based on the information available at the beginning of this year, a survey of the opinions of men in important positions in the electric railway car-manufacturing and car-operating divisions of the industry confirmed a view frequently expressed in conversation—that car orders for the first half of 1917 would considerably exceed those for either half of 1916. But now that the first half of 1917 has been completed and the records are available, it is found that the estimates have not been met.

The manufacturer is interested to learn just how many cars have been ordered; first, because the status of the car-building business very clearly reflects the status of the electric railway industry, and second, because the figures for the first half of the year will afford a little firmer foundation on which to base calculations for the second half of this year—a year which is displaying much complexity for all manufacturers.

CARS ORDERED FIRST HALF OF 1917

Here are the figures showing a comparison of the cars ordered for the first six months of this year and for the same periods in 1915 and 1916. These figures include the cars ordered by electric railway companies in the United States and Canada:

	First Six Months	Full Year
1915	1,273	2,782
1916	2,224	3,942
1917	1,943	....

It is noted that the deficiency for the first half of 1917 is 281 cars as compared with the same period for 1916. No doubt a later and more extended census of just what cars are being built in company shops will serve to increase the total number of cars, but the statement may safely be made that 12 per cent fewer cars were ordered from manufacturers and company shops during the first half of 1917 than were ordered duing the first half of 1916.

The largest car order placed this year was that of the Interborough Rapid Transit Company for 377 steel motor cars and 140 steel trail cars for the dual subway system. The total amount of this order, including motor and control equipment and brakes, was reported as $4,390,000. Had it not been for this order the total number of cars ordered by the Eastern roads since Jan. 1 would have been the small figure of 437.

Other orders of size in the Eastern states were 100 cars for the Public Service Railway, 100 Peter Witt type cars for the International Railway Company of Buffalo, 107 double-truck city and interurban cars for Hodenpyl, Hardy & Company, and the Stone & Webster order for 159 one-man safety cars. The latter two orders, however, were for distribution to properties in the Central, Southern and Pacific Coast states.

In the Middle states the number of cars ordered as compared with 1916 was proportionately less than in the East, and it should also be noted that of the 580 cars ordered by the roads in the Middle states since Jan. 1, fully 250 were freight cars.

The quota of cars ordered for Western properties was largely filled by the Stone & Webster one-man safety-car order earlier mentioned. In Canada the records show that but fourteen cars were ordered in addition to the fifty motors and fifty trail cars for the Montreal Tramways.

The figures for the first half of 1917 and 1916 presented by geographical divisions, also are informative:

	ROLLING STOCK PURCHASES			Number of Companies Placing Orders, for First Half of	
	First Six Months 1916	First Six Months 1917	Increase or Decrease	1916	1917
Eastern states	1,257	954	—303	44	21
Middle states	805	580	—225	41	31
Western states	49	145	+96	5	10
Southern states	88	150	+62	14	16
Canada	25	114	+89	3	4
Totals	2,224	1,943	—281	107	82

These figures show that notwithstanding the business activities of the industrial centers, the roads in the Eastern and Middle states as a group have not been able to buy cars this year, even to the number purchased last year, and that the bulk of the orders have come from the big city properties.

THE FASHIONS ARE CHANGING

In reviewing the orders placed so far this year there is noted a substantial increase in the number of light safety one-man cars. While not a great many cars have been ordered for city properties in the Central and Western states, yet it is apparent that lightness and safety have at last been fully recognized by small as well as large roads. The Stone & Webster properties have been the largest buyers so far of the small, light, safety units. The single order for 159 of these cars, which will be of the Birney standardized design, will be distributed among properties located in Atlantic, Pacific and Gulf states. The Illinois Traction System also ordered about fifty of these "little fellows" of its Bosenbury type, and practically all of the properties in the Mississippi Valley which ordered cars have adopted some type of light, safety one-man unit.

A notable increase in the number of freight cars ordered is apparent in reviewing the rolling-stock statistics for the first half of the year. This, of course, is to be expected because of the general demand for freight service in all parts of the country. The largest order for standard M. C. B. freight cars was placed by the Illinois Traction System for 200 M. C. B. type cars, about half of which are for coal traffic.

THE SALES ACTIVITIES

From the first of January until the middle of April, after war had been declared, the rate at which cars were being ordered was in excess of that for several years previous. Since then rolling-stock news has been comparatively meager, so it now seems safe to say that, all other factors considered, the declaration of war and its shroud of doubt were the reasons for the number of car orders placed falling below the well-considered estimates made at the start of this year. In other words, the industry began to order cars in a fairly active way, notwithstanding the especially high prices, and continued to do this until the declaration of war upset financial plans. Had the business continued as it was running for the first three months of the year, it is fair to state that the number of cars placed during 1917 would have exceeded the record for several years past.

Part of the present inactivity, of course, is chargeable to summer, a season of slackness in car ordering, even in normal years. Most of the car builders in the electric railway field have accumulated such stocks of raw materials that they are safe in promising to deliver cars as soon as a railway can obtain the electrical equipment, and they are hopeful that more revenue from the properties will shortly evidence itself in inquiries for more cars.

Car Manufacturers Join Forces

Prominent Companies Form Association for Mutual Benefit of Members and Railways

The Railway Car Manufacturers' Association, whose organization has recently been completed, consists of sixteen car builders. Together they have a capacity for building more than 250,000 cars per annum, a capacity much in excess of the business done during recent years. The purposes of the association are co-operative and educational. Specifically they are: In all lawful ways and by all lawful methods to promote the interests of the car-building industry and to procure, to the fullest possible extent, economical results beneficial to its members and to the purchasers of their products; to foster and promote a spirit of co-operation between its members with respect to safety and welfare work; to afford a means and method for ready interchange of views concerning matters affecting the car-building industry, the interests of the individuals and concerns engaged therein and of the purchasers of their products and of allied industries, and for a full discussion of all such matters; to secure and preserve equitable conditions in the workshops of its members, with a view to the improvement of shop conditions and the proper protection of the interests of both employer and employee; to co-operate with railroads and other consumers of the products of the members of this association and with allied industries, for the purpose of bringing about a standardization of designs and specifications, and a uniformity of methods of inspection and purchasing.

The association, of which Dr. W. F. M. Goss is president, has recently opened offices at 61 Broadway, New York City. Dr. Goss is well known in the fields of steam railroading, mechanical engineering and education, to each of which he has made many notable contributions. He became identified with Purdue University in 1879 and, as dean of engineering and director of the engineering laboratories, co-operated with the steam railroads in making tests of locomotives and parts of railroad equipment. In 1907 he went to the University of Illinois as dean of the engineering schools, and while there was instrumental in establishing the department of railway electrical engineering. In 1915 he was engaged as chief engineer by the Chicago Association of Commerce to prepare a report on smoke abatement and railway terminal electrification in Chicago. He has served as president of the A. S. M. E. and has held important offices in many technical societies.

The manufacturers which are members of the association are as follows: American Car & Foundry Company, Barney & Smith Car Company, Bettendorf Company, J. G. Brill Company, Haskell & Barker Car Company, Harlan & Hollingsworth Corporation, Keith Car & Manufacturing Company, Laconia Car Company, Mount Vernon Car Company, Osgood-Bradley Car Company, Pressed Steel Car Company, Pullman Company, Ralston Steel Car Company, St. Louis Car Company, and Standard Steel Car Company.

Copper production for the month of June has been estimated at 200,000,000 lb. This is the largest amount produced since December, 1916, when the same amount was refined. The lowest yield for any month of the first half of 1917 was for March, when only 150,000,000 lb. were refined. Delays in the delivery of equipment have made it impossible to increase the refining capacity to 225,000,000 lb. monthly as was planned. Inefficiency of labor, strikes, etc., have been important factors preventing the refineries from getting the best that was in their existing capacity.

Why the Detroit United Railway Delays Track Work

Statements Show Patrons the Rail Delivery Situation as It Now Confronts the Electric Railway—Government Needs Must Be Met First

Someone in Detroit who was unacquainted with the present industrial situation publicly stated that this road could secure track steel, yet held off doing so. The frankness of the following answer is commended. The letters quoted will also interest intending purchasers of like material and possibly will find sympathetic readers among other manufacturers.

DELIVERIES YET TO BE MADE ON ORDERS ENTERED IN JANUARY, 1916

The company's statement of delivery conditions follows:

"We have not received a single pound of the 5000 tons of T-rail ordered by us in January, 1916, for use on our interurban lines. The deep girder rail used in paved streets is, however, even more difficult to get. This rail is used only by street railways in paved streets. The aggregate quantity used throughout the country is, of course, small compared with the enormous tonnage of steel manufactured for other purposes. In consequence, the mills are unwilling to interrupt their larger business for the purpose of manufacturing a comparatively small tonnage of this type of rail. They have yet to fill our order for this rail placed in April, 1916, and, of course, have not filled orders which were placed at later dates.

"We quote from a letter received from one of the mills, which was written to us in reply to urgent pleadings that rail be delivered to us: 'The mill situation is getting worse and is likely to be deplorable before midsummer. The demands of the United States government take about two days a week, and this week they are taking all the time. When government orders require two days out of every six, and all the days every third week, there is not much chance to catch up or keep up with orders. While I and our people want to do all we can for you, the demands of the United States government are imperative and are likely to upset everything.'

"Apparently there is a great scarcity of steel. The United States Steel Corporation reports unfilled orders of 11,383,287 tons as of June 30, and that orders for millions of tons of new business are being refused. We have scheduled for completion this year many replacements and new jobs that require the deep girder rail. Our endeavor, of course, is to carry on our work in connection with the city's work, to the end that the public may be least inconvenienced. However impatient we may all be, all of the work cannot be accomplished at one time. It must be carried on in an orderly manner.

"Since the foregoing was received the steel mill sent a second letter reading as follows:

" 'We quote as follows: 350 tons of rail section 114-480, in lengths of 30 ft. and 33 ft., as standard, price $79.20 per gross ton f.o.b. mill with freight prepaid to Detroit, Mich., we to have privilege of shipping not to exceed 10 per cent of second-quality rail at a reduction in price of $2 per ton. The above quotation is made for immediate acceptance and under the following stipulation, viz.: This quotation is subject to the acts, demands or requests of the United States government and is made with the express understanding that shipment will be from the first convenient rolling during 1918. Both buyers and sellers reserve the privilege of cancellation of this order in case the sellers shall notify the buyers prior to July 1, 1918, that they will be unable to make shipment during the remainder of 1918.

" 'Regarding this stipulation it is necessary for us to make it in all future contracts as the requirements of the United States government may be such as to prevent the rolling of any girder rails beyond those already contracted for, for shipment this and next year, and may interfere with the shipment of existing orders. It may be that you will want us to enter the order on the basis as above outlined in order to obtain such preference in rolling as we may be able to give, based upon the natural priority which will be accorded in the chronological order of the dates of contracts placed. If this is satisfactory please wire us immediately.' "

Exports Board Appointed

The exports board consisting of five members from various United States departments whose duties will be to control the exports question under the general instructions of the administration, has been named. E. N. Hurley, former chairman of the Federal Trade Commission, will head the board as the representative of the Department of Commerce. Dr. Alonzo E. Taylor will represent the Department of Agriculture, John B. White the food administrator, and Vance McCormick, chairman of the Democratic National Committee, the Department of State. E. E. Pratt, chief of the Bureau of Foreign and Domestic Commerce, will act as secretary to the board and the council.

NEW YORK METAL MARKET PRICES

	July 5	July 12
Prime Lake, cents per lb	31¾	30¾
Electrolytic, cents per lb	31¾	30¾
Copper wire base, cents per lb	36	36
Lead, cents per lb	11⅜	11¼
Nickel, cents per lb	50	50
Spelter, cents per lb	9¼	9¼
Tin, Straits, cents per lb	62	63
Aluminum, 98 to 99 per cent, cents per lb	59	58

OLD METAL PRICES

	July 5	July 12
Heavy copper, cents per lb	28	27
Light copper, cents per lb	25	24½
Red brass, cents per lb	20	20
Yellow brass, cents per lb	18	18
Lead, heavy, cents per lb	8¾	9¼
Zinc, cents per lb	7¼	7
Steel car axles, Chicago, per net ton	$50.00	$50.00
Old car wheels, Chicago, per gross ton	$39.00	$38.00
Steel rails (scrap), Chicago, per gross ton	$49.50	$48.00
Steel rails (relaying), Chicago, per gross ton	$59.50	$59.50
Machine shop turnings, Chicago, per net ton	$19.50	$20.00

CURRENT PRICES FOR MATERIALS

	July 5	July 12
Rubber-covered wire base, New York, cents per lb.	36½	36½
No 0000 feeder cable (bare), New York, cents per lb.	36½	36½
No. 0000 feeder cable stranded, New York, cents per lb.	33¾	33¾
No. 6 copper wire (insulated), New York, cents per lb.	33	33
No. 6 copper wire (bare), New York, cents per lb.	36	36
Rails, heavy, Bessemer Pittsburgh	$38.00	$38.00
Rails, heavy, O. H., Pittsburgh, per gross ton	$40.00	$40.00
Wire nails, Pittsburgh, per 100 lb	$4.00	$4.00
Railroad spikes, 9/16 in., Pittsburgh, per 100 lb.	$5.00	$5.00
Steel bars, Pittsburgh, per 100 lb	$4.50	$5.00
Sheet iron, black (24 gage), Pittsburgh, per 100 lb.	$8.40	$8.35
Sheet iron, galvanized (24 gage), Pittsburgh, per 100 lb.	$9.55	$9.55
I-beams over 15 in., Pittsburgh, cents per lb	10	10
Galvanized barbed wire, Pittsburgh, cents per lb.	$4.85	$4.85
Galvanized wire, ordinary, Pittsburgh, cents per lb.	$4.65	$4.65
Cement (carload lots), New York, per bbl	$2.22	$2.22
Cement (carload lots), Chicago, per bbl	$2.31	$2.31
Cement (carload lots), Seattle, per bbl	$2.60	$2.60
Linseed oil (raw, 5 bbl. lots), New York, per gal.	$1.16	$1.13
Linseed oil (boiled, 5 bbl. lots), New York, per gal.	$1.17	$1.14
White lead (100 lb. keg), New York, cents per lb.	12¾	12¾
Turpentine (bbl. lots), New York, cents per gal.	42½	41½

ROLLING STOCK

City of Tacoma, Wash., is in the market for four motor cars, six trail cars and one freight locomotive.

Philadelphia (Pa.) Rapid Transit Company is reported to be in the market for forty city cars.

St. Petersburg & Gulf Railway, St. Petersburg, Fla., is reported to have placed an order for six city cars with The J. G. Brill Company.

Toronto (Can.) Suburban Street Railway has purchased three semi-convertible pay-as-you-enter cars from the Tuscaloosa (Ala.) Street Railway. It has also purchased an express car and a snowplow.

London (Ont.) Street Railway has ordered five single-truck single-end pay-as-you-enter cars. These cars will cost about $6,500 each, as compared to $4,500 each paid for similar cars in 1913.

Columbus (Ga.) Railroad on June 16 placed in service on its lines a one-man pay-as-you-enter safety car similar to the eight single-truck safety cars recently ordered by the company from the American Car Company.

Eastern Wisconsin Electric Company, Oshkosh, Wis., has agreed to buy ten new city cars, two interurban cars, a snowplow and other equipment provided the city will grant the elimination of certain unproductive track. The company proposes to spend about $250,000.

Washington, Baltimore & Annapolis Electric Railroad, Baltimore, Md., is reported to have placed an order for eight motor cars and to be in the market for 100 day coaches for handling troop movements in and out of the government's camp at Annapolis Junction, Md.

Public Utilities Company, Evansville, Ind., has specified the following details for ten vestibuled pay-within cars being built for it by the St. Louis Car Company:

Number	10
Builder	St. Louis Car
Type	Pay-within
Seating capacity	40
Weight (total)	36,840
Truck centers, length	19 ft. 0 in.
Over bumpers	41 ft. 4 in.
Over vestibules	40 ft. 4 in.
Over posts	8 ft. 2 in.
Floor to ceiling	7 ft. 6 in.
Sill to trolley base	8 ft. 5¼ in.
Body	Steel sides with wooden superstructure
Interior trim	Honduras mahogany
Headlining	3/16-in. Agasote
Roof	Turtle deck
Underframe	Steel
Air brakes	Westinghouse
Axles	St. Louis Car
Bumpers	Rico anti-climbers
Car trimmings	Bronze, St. Louis Car
Cables	St. Louis Car
Conduits	St. Louis Car
Control	Westinghouse K-36 J.
Couplers	St. Louis Car
Curtain fixtures	Forsyth No. 88
Curtain material	Pantasote No. 77
Designation signs	Ill. E. S. S. mechanism
Door mechanism	Hand-operated
Fenders	Ry. Co.'s design
Gongs	12-in. bronze pneumatic
Hand brakes	Ackley
Hand straps	Rico sanitary
Heaters	Peter Smith, No. P-12
Headlights	Crouse-Hinds
Journal boxes	St. Louis Car
Lightning arresters	West.
Motors	West. 532-B outside hung
Paint	Murphy ABC
Register	International R-5
Sand box	With Reliance trap valve
Sash fixtures	OM Edwards
Seats	Hale & Kilburn
Seating material	Rattan
Springs	Pittsburgh steel spring
Step treads	Mason
Trucks	St. Louis Car 106-A max. traction
Ventilators	Automatic
Wheels	33 driver, 21 in. pony, cast-iron
Special devices	Faraday buzzers

United Railways & Electric Company, Baltimore, Md., noted in the June 2 issue as ordering eighty semi-convertible double-truck pay-as-you-enter cars from The J. G. Brill Company, has specified the following details for this equipment.

Number of cars ordered	80
Date of order	May 16
Date of delivery	Oct. 1
Builder	J. G. Brill
Type	Semi-convertible
Seating capacity	52
Weight (total)	44,000 lb.
Bolster centers	21 ft. 6 in.
Over bumpers	46 ft. 7 in.
Over vestbule	44 ft. 11 in.
Width over all	8 ft. 4½ in.
Rail to trolley base	11 ft. 9 in.
Body	Semi-steel
Interior trim	Natural Cherry
Headlining	Agasote
Roof	Monitor
Air brakes	Westinghouse
Axles	Carnegie—heat treated
Bumpers	Brill
Car trimmings	Brill
Conduits	Ry. standard
Control, type	K-35-U-2
Couplers	Brill
Curtain fixtures	Curtain Supply & National Lock Washer
Curtain material	Pantasote
Designation signs,	Hunter (4 per car)
Door mechanism	Manual
Fare boxes	Johnson
Wheelguards	HB. Automatic
Gears and pinions	GE grade M
Hand brakes	Ackley adjustable
Heaters	Peter Smith electric
Headlights	Dayton Mfg. Co.
Journal boxes	Brill
Lightning arresters,	GE aluminum cells
Motors	4 GE-200-I, outside hung
Paint	Paint and varnish
Registers	International R.-7
Sanders	Brill
Sash fixtures	Brill
Seats	Brill
Seating material	Cane
Springs	Brill
Step treads	Universal Safety
Trolley catchers	None
Trolley base	U. S. No. 6
Trolley wheels or shoes,	Kalamazoo No. 5
Trucks	Brill 27 GE-1
Ventilators	Hinged
Wheels	33 in. cast iron

TRADE NOTES

J. P. Moore of the railway sales department of the Westinghouse Electric & Manufacturing Company, has been transferred to the Cleveland, Ohio, sales office.

Gordon M. Campbell, manufacturing engineer General Electric Company, West Lynn, Mass., has joined the Kerr Turbine Company, Wellsville, N. Y., as works manager.

Bridgeport (Conn.) Brass Company announces the removal of its New York office to suite 2236, Woolworth Building, 233 Broadway, where larger quarters have been secured.

T. A. Wharton has been appointed by the Barrett Company, New York City, as representative of the railway sales department for the Cincinnati branch, with headquarters at 527 Carr Street, Cincinnati.

Driver-Harris Company, Harrison, N. J., announces that all departments will be shut down for one week beginning June 30. This action was taken to provide for necessary repairs in equipment and to give employees an opportunity to recuperate after a long, hard drive. During the week the plant is shut down a skeleton organization only will be maintained.

A. A. Gray and **C. L. Benjamin** have formed a company to act as advertising counsel to manufacturers of electrical, mechanical, chemical and other products, with offices at 608 South Dearborn Street, Chicago. Mr. Benjamin was for nine years advertising manager of the Cutler-Hammer Company, Milwaukee, Wis., and Mr. Gray is widely known as the former managing editor of the *Electrical Review and Western Electrician.*

Safety Car Devices Company, St. Louis, Mo., announces the following recent sales of its safety car brake equipments with complete safety control features: Northern Pennsylvania Traction Company, Meadville, Pa., six sets of equipments, Pittsburgh County Railway, McAlester, Okla., six; Puget Sound International Railway & Power Company, twelve; Columbus (Ga.) Railroad, eight; Tulsa (Okla.) Street Railway, six; Cedar Rapids & Marion Street Railway, Cedar Rapids, Iowa, twenty; the Mason City & Clear Lake Railroad, Mason City, Iowa, seven, and fourteen sets for two Stone & Webster properties.

Combustion Engineering Company, New York, N. Y., in line with the President's proclamation relative to the patriotic duty of all power plant operators to conserve fuel, has assigned one of its efficiency engineers to travel throughout the country until further notice and interview chief engineers and owners of such plants, with a view to reducing the fuel costs by increasing efficiency in every way possible, not only in so far as the stoker is concerned, but in helpful suggestions for minor improvements and changes which a great many plants can perfect with but small expense and trouble when such matters are brought to their attention. It has been estimated that $600,000,000 is the annual fuel loss through inefficiency in power plants in the United States, and it is the purpose of this corporation to give its full measure of co-operation to accomplishing results in cutting down this enormous waste.

NEW ADVERTISING LITERATURE

Wagner Electric Manufacturing Company, St. Louis, Mo.: A book, "Motor Installations," illustrating Wagner motors in different industries.

Greenfield Tap & Die Corporation, Greenfield, Mass.: A booklet describing the "Acorn" die. Contains tables of sizes and prices of dies and holders.

Western Fire Appliance Works, Chicago, Ill.: Folder of its Zeleny thermometer system for indicating changes of temperature in grain in storage.

Reynolds Electric Company, Chicago, Ill.: A booklet, describes and gives table and prices of its color hoods and flashers, also illustrations of electrical displays.

Link Belt Company, Chicago, Ill.: A booklet, "The Ideal Drive for Textile Machinery," descriptive and illustrative of the Link Belt silent chain drive.

National X-Ray Reflector Company, New York, N. Y.: Catalog No. 20 on the use of X-ray reflectors for show windows, floodlighting, industrial and other direct lighting.

Holophane Glass Company, New York, N. Y.: A booklet showing the use of Holophane units with type C lamps. Charts and data for designing installations are given.

Westinghouse Electric & Manufacturing Company, East Pittsburgh, Pa.: Catalog 3A, supplement 1. Describes an improved form of recording-demand watt-hour meter.

National Metal Molding Company, Pittsburgh, Pa., Bulletin No. 201 on this company's "Flexsteel" products, including armored cable, lamp, cord and flexible metallic conduit couplings and fittings.

Richardson Scale Company, Passaic, N. J.: Bulletin No. 101, descriptive of the construction, operation and advantages of this company's automatic coal scale and also its automatic liquid scale.

Arthur Power-Saving Recorder Company, New Haven, Conn.: Illustrated bulletin on reducing coal, power and maintenance bills, discussing methods of car operation to minimize energy consumption.

Reliance Electric & Engineering Company, Cleveland, Ohio: Bulletin 2014 describing the different mechanical and electrical details of this company's type T heavy-duty "Reliance" motors for direct current.

H. M. Byllesby & Company, Chicago, Ill.: A booklet, "Back of the Investment," containing information about the Northern States Power Company and its properties in 1916. This edition is larger and more attractively designed than the first edition, contains many new photographs and in all respects brings the data up to date.

New Publications

Municipal Ownership Fails in U. S. A.— By James B. Wootan. H. I. Gonden, People's Gas Building, Chicago, Ill. Thirty-two pages. Paper, 25 cents.

This booklet contains a list of more than 200 municipal ownership failures—economic failures in all cases and physical also in many cases. Politics, it is said, has been the inevitable cause of the failures, with the taxpayers making up the losses from operation.

The Railroad Problem. By Edward Hungerford. A. C. McClurg & Company, Chicago, Ill. 261 pages. Cloth, $1.50.

The book is a careful study of the physical and financial plight that has overtaken the railroads, and the cause thereof, written by a man who has been in the inside looking out and on the outside looking in. Greatly to the advantage of the book is the fact that Mr. Hungerford has applied to it in goodly measure much of the charm of presentation that has won for him such a host of readers for his magazine articles, some of which form the basis of chapters in the present volume. Mr. Hungerford does not attempt to make out a case for anybody, but he does run pretty well the gamut of the industry from the road itself through organized and unorganized labor. Perhaps the chapter of most interest to men in the electric railway industry is the one on "The Opportunity of the Railroad." For a beginning in this he takes the possibility of the application of electricity as motive power in the operation of the railroad. The opinion of the author is that electrification and general development of terminals have proceeded far too slowly. The book is dedicated to Samuel O. Dunn, editor of the *Railway Age Gazette.*

Electric Traction: A Treatise on the Application of Electric Power to Tramways and Railways. By A. T. Dover, lecturer on electric traction at the Battersea Polytechnic, London, England. New York, The Macmillan Company. 667 pages. 518 illustrations. Price $5.50.

In this book Mr. Dover has compiled a vast amount of information on the principles and present practice of electric railway engineering. As the name of the book indicates, it is quite technical in character, presumably having been the outgrowth of a comprehensive course of lectures. In fact, the general style and arrangement is about what one would expect in a course of advanced lectures on the subject. The author has had students as well as engineers in mind in writing this book, for he gives many examples such as one expects to find in text-books, and appends a number of examination questions drawn from several sources. He has produced a work which all who have to do with rolling stock and power distribution on electric railways can read with profit, even though much of the equipment described is of British manufacture. Obviously the fundamental principles which he takes up are of universal application.

The contents of the book can be roughly separated into two general parts, which, however, are appropriately interwoven. One consists of the theoretical discussion, with some mathematics, of the principles of car movement, motor operation, control, etc. The other is descriptive matter. Several varieties of alternating-current as well as direct-current equipment are covered in both ways, that is theoretical and practical. One of the most valuable features in the whole treatment is the author's practice of commenting upon essential points, in the endeavor to bring out the logical reasons for the use of certain practices where such reasons exist.

Electric Railway Journal

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Car Riders Pay for the Service They Desire

TO utility experts the new suburban franchise of the Columbus Railway, Light & Power Company, described elsewhere this week, will not seem a remarkable novelty. It deserves mention here, however, because it constitutes another recognition of the fact that a community has the right to receive the service it desires if it adequately recompenses private capital for providing such service. Under the Westerville franchise, the car riders control the service, but a fair return to the company is automatically insured by a sliding scale of fares. Furthermore, the company is protected in an interesting way from political chicanery when the question of franchise renewal comes up. If the unexpired term of the original or extended franchise should ever become less than fifteen years, the control of service would go into the hands of the company and it might charge any fare not in excess of the maximum. The car riders can avert this by offering in time an equally equitable renewal, but they are thus prevented from forcing the company into last-minute concessions or operation under sufferance. The franchise in general seems to be written in a big way, with better provision for the future than some electric railway franchises have made.

It Seems Too Optimistic— Almost Idealistic

WITHOUT doubt the prospective increased governmental regulation of industries under war conditions is a matter of interest to utility investors. In our opinion, however, the view on this point taken by L. P. Hammond, as noted elsewhere this week, is too optimistic. It is even inclined toward the idealistic in its conception of existing regulatory practice. Mr. Hammond's position seems to be, in short, that the utility investor can find solace in the already existing system of public control over utilities. These corporations need not have such a fear of a sudden and radical readjustment of earnings as industrial companies might have which would be for the first time placed under governmental regulation. Quite true, but does this follow? "He [the utility investor] is assured that the industry will not be subjected to unwise or unfair regulations and practices through the inexperience or prejudices of those who undertake its regulation, since the existing regulation is the result of deliberate, intelligent action based upon the experience of many years and governed by a mass of commission and court precedents." Does not this presuppose a perfection of regulation which is not yet attained? We believe that many commissioners could well display more knowledge, wisdom and fairness in dealing with utility needs under present conditions. We hope that the day will soon come when Mr. Hammond's statement will be true, but now actualities are what the investor has to consider.

Line Capacity, Not Individual Car Capacity, the Desideratum

THE one-man car idea is spreading, but this fact only emphasizes the importance that the fundamental principles of one-man car operation should be thoroughly understood. It is not suitable for all lines; still less is it suitable for all cars. In fact, there is great danger that in the flush of enthusiasm over the advantages of the general plan, some companies will attempt to apply it to both lines and cars for which operation with conductors is preferable. A case in point is where an attempt was made in a city of medium size, not long ago, to apply one-man operation to some old 45-ft. double-truck cars, with the result that during the rush hours the schedule speed of these cars was reduced to about 7 m.p.h., yet the management kept the cars in service under the belief that their size was necessary to maintain the capacity of the lines. But line capacity is measured not in seats, but in seat-miles. And if, for example, a new type of car capable of a schedule speed of 14 m.p.h. but with only half the seats could have been introduced, the capacity of the line with the same number of cars would have been the same. The change would also have given a far better service to the public and would, no doubt, have resulted in an increase in revenue more than sufficient to pay interest charges on the new investment and write off the book value of the old cars. The merits of one-man car operation are marked, and they should not be lost by an attempt to apply this practice to conditions and to equipment for which it is not suitable.

Labor Cost Data on Special Work Reconstruction

ENGINEERS and managers have a justifiable appetite for cost data covering construction, reconstruction and maintenance, because such data furnish reference standards for comparison and assist in making intelligent estimates. In securing articles of a technical character for the ELECTRIC RAILWAY JOURNAL the attempt is made to obtain permission to include the appropriate cost data where such are available. Occasionally it is possible to secure more or less extensive compilations of such data in particular fields. Examples of these are found in the series of charts on overhead construction costs recently published and in a series on special work reconstruction costs begun in this issue. We realize, of course, that conditions differ on different properties so that any data to be of value for comparison must be revised to fit local conditions. They are of great value, however, as a general guide when reasonably specific. More important yet, the publication of cost data furnishes an incentive to study of local unit costs and thus exerts an impelling force in the direction of more rational expenditure. When these local costs are high or low by comparison with the reference standards, there is a natural inclination to search for the causes of the differences. If the latter are found to be justified by conditions, there results an increased confidence in the procedure which has been followed. Otherwise suggestions as to improvement are bound to be forthcoming. The data on special work costs are based upon the experience of the Brooklyn Rapid Transit engineers and represent averages for a very large number of installations. They have been compiled especially for the benefit of the readers of this paper, and we believe that they will be found invaluable for the purposes outlined above.

The Possibilities for Anti-Friction Bearings

RECENT orders for anti-friction bearings for armatures indicate that the electric railway industry is at last becoming aroused to their value; in fact, one car builder is actually building for stock one-man cars with ball-bearing journals as well as armatures. However, before the bearing makers can go much further with regard to present motors, they must secure more material and moral support. This applies particularly to the substitution of anti-friction bearings on existing designs. So far as new designs are concerned, anti-friction bearings are so readily substituted for the old type that the problem is relatively easy. However, this is not true of present standards. The difficulties are greater and the savings less in converting to the more efficient designs a motor which was made for ordinary bearings. From what we have seen, we doubt the advisability of converting the older types, but would confine the change to the interpole and self-ventilated forms. The application of ball bearings on armatures should be encouraged not only by the railways themselves but also by the motor designers. It is obviously difficult to promote any extended use of armature ball bearings for motors, whether old or new, if the railway has no assurance that it will be able to secure the same features ready-made when it is in the market for additional equipment. No doubt the motor manufacturers will be glad to give their customers the most efficient equipments possible, but it is natural for them to wait until they are assured of a market large enough to reward their departures from existing standards. In plain English, it is up to the railways themselves to break away from the traditional styles of motor-armature bearings. The rising price of fuel is but one of many reasons for thinking and acting along new lines.

President Wilson on Fair Profits

HAD President Wilson been retained as special counsel by the electric railways of the State of New York, which are seeking a way to increase their revenues, he could not have stated the aims of his clients better than he did in his address of July 12 to the business interests of the United States.

The President's text was prices, and in the address he used these words:

> "A just price must, of course, be paid for everything the government buys. By a just price I mean a price which will sustain the industries concerned in a high state of efficiency, provide a living for those who conduct them, enable them to pay good wages, *and make possible the expansions of their enterprises which will from time to time become necessary* as the stupendous undertakings of this great war develop. We could not wisely or reasonably pay less than such prices. They are necessary for the maintenance and development of industry, and the maintenance and development of industry are necessary for the great task we have in hand."

The President goes on to explain that the prices must include not only costs but profits and surpluses for extensions and improvements.

The electric railways of New York State have asked the public service commissions for permission to increase their revenues so that they may do just the very things that the President cites. They want to be able to provide (1) good service, (2) depreciation reserve, (3) good wages, (4) fair profits.

Records on file with the public service commissions show that now, and for several years past, the income of the electric railway companies in the State of New York—and the same is true all over the United States—has not been great enough to meet these fundamental demands.

Now, note that the emphasis in the President's address to the business men is on the necessity of good service and continued good service. When he discusses justness of prices he makes the measure of justness an amount of pay that will perpetuate good service. Herein is a lesson for those critics who are thoughtlessly arguing that because the nickel once produced revenue enough for the maintenance of good street railway service, it still is enough, in spite of the undisputed loss of the nickel's purchasing power and in spite of the fact that it takes nowadays at least 150 nickels to pay as much of the railroad expenses as 100 nickels would pay for five years ago.

Contained within the President's address, too, are the ideas that underlie a sound financial policy for the conduct of any business enterprise, electric railways included. A depreciation reserve should be set aside before dividends are paid.

Contributions to a reserve from current income to maintain a property in a complete state of efficiency are set down by the President as something that a fair price includes. In asking that very thing from the public service commissions the carriers have been attacked by the opposition. Yet the necessity of a depreciation reserve is fundamental to good finance, finance that protects the public not only in keeping up service, but in providing for its improvements from time to time. The Supreme Court of the United States has expressed itself plainly (Knoxville case, 1909) on this point, holding that it is not only the right of the company to make such depreciation provision out of current income, but that it is its duty. The Public Service Commission of the Second District of New York in the Niagara Light, Heat & Power case declared that to provide for depreciation by borrowing was wholly unsound and added to its discussion of this subject the observation that "an end to such rottenness of method finally comes in a dilapidated and useless plant."

We speak of these things here only because of the common and unfair criticism leveled at the carriers, who because they point out the necessity of providing for depreciation out of current income have been accused of attempting to "rob" the public. To the voice of the New York State commissions and of the Supreme Court of the United States is now added the voice of the President of the United States to answer this unsound and unfair criticism.

Long-Distance Transmission in Heavy Electric Traction

PRACTICE on the Chicago, Milwaukee & St. Paul with regard to power transmission directs attention to the rather remarkable manner in which the limitations of load factor—that bane of electric operation with thin traffic—are being nullified by extension of intervals between power stations. On the St. Paul's most recent project, that of the electrification between Othello and Tacoma, power is to be furnished from a network of high-tension lines at the western end, while a 100,000-volt line from Long Lake on the Spokane River extends across country for about 100 miles before reaching the eastern end near Othello. From this point the railway's transmission line along the right-of-way supplies substations for practically 150 miles further until the power network west of the Cascade Mountains is reached.

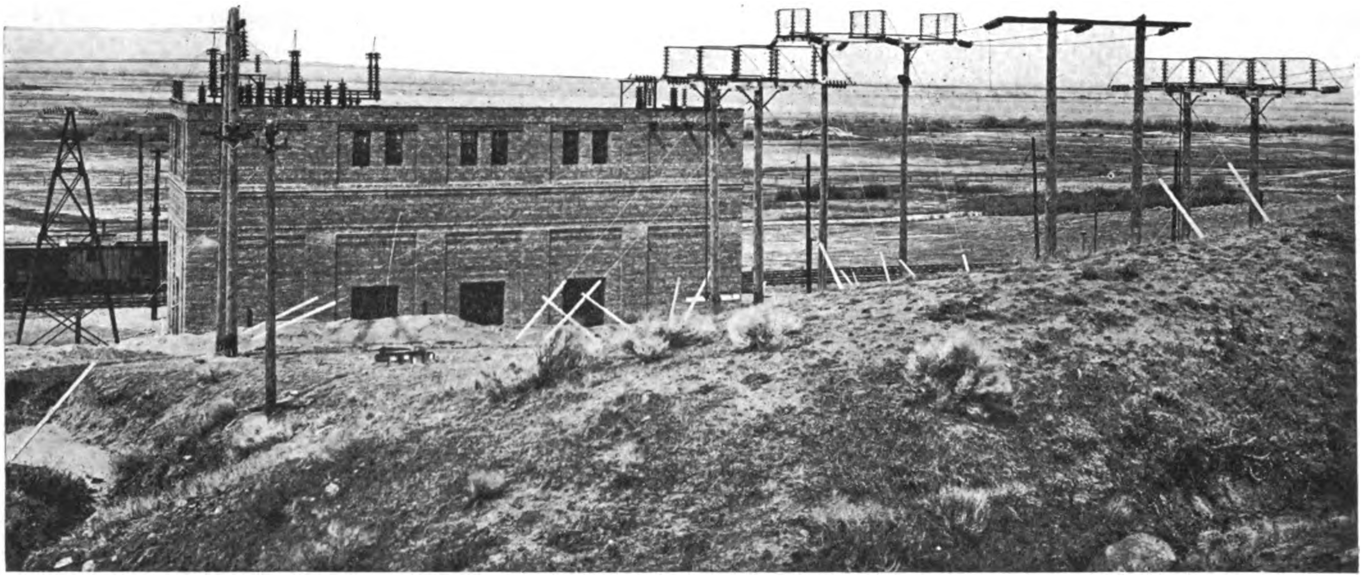
Much the same thing is in evidence at the western end of the company's original 440-mile electrification. The eastern part of this section of the railway approximates the form of a great circular arc which begins just west of the main range of the Rockies and swings first southeast and then northeast across the Big Belt range out onto the plains of western Montana. Approximately at the center from which this arc is struck with a 90-mile radius are the Great Falls developments. These form the main source of power for the eastern end of the electrification, although they, together with a network of lines from smaller stations, also supply industrial loads in the cities of Butte and Anaconda, respectively 130 miles and 160 miles away. At the western end of this electric zone in Idaho the factor of industrial loads is materially less, and dependence for continuity of supply is placed upon a single hydroelectric station at Thompson's Falls near the extreme western end of the division. In consequence, a short circuit on the railway's right-of-way transmission line near its western end would mean that distribution must be effected all the way from Great Falls to the Idaho line. This maximum transmission distance, similarly to the case of the electrification now in progress, is roughly 250 miles.

No doubt the satisfactory record of the existing installation, notwithstanding the length of line involved, has been due in part to the excellent working conditions existing throughout the Rocky Mountain region, whose extreme dryness is reported even to permit the occasional use of impregnated wood for high-tension insulating purposes. Yet the possibility of 250-mile intervals between power stations has thus at least been made very definite.

What this means to heavy electric traction may be exemplified by assuming, for the sake of illustration, a level road with a 250-mile spacing for the points of power supply. Neglecting passenger service, it may be said that each freight train will require about eighteen hours to pass through the zone served by a power station, and if only two trains per day are operated in each direction the demand on the station, assuming reasonably even train spacing, cannot be less than the load imposed by two trains nor more than that imposed by four. Neglecting starts and waits, this would give in theory a load factor of 75 per cent. If four trains were operated each way daily, the minimum number of trains at one time in a power station zone would be six and the maximum eight, giving in theory a load factor of 87 per cent.

If, now, the length of zone should have been only half that assumed above, or 125 miles, the minimum number of trains served by a power station would be zero, in case two trains each way were operated daily and the spacing each way was therefore twelve hours. The maximum load would be that of two trains, and it is conceivable that this load might last only nine hours, or the time required for one train to pass through the zone, in case the trains met midway. The theoretical load factor would then be only 37 per cent, as opposed to 75 per cent with the longer zone, while if four trains each way per day were operated the figure would be 75 per cent, as opposed to 87 per cent with a power station spacing of 250 miles.

Of course, these figures for load factors are impossible of attainment in practice, because in the first place the heavy drafts of energy for starting trains have been neglected, and in the second place no time has been allowed for trains to stop en route. In addition, daily load factors only have been considered, although seasonal variations in traffic as great as 50 per cent are not uncommon. However, when relative values of the figures are considered there is clearly shown the vital necessity for keeping intervals between power stations at a maximum, especially when traffic is thin.



SUBSTATION AND TRANSMISSION-LINE EQUIPMENT TYPICAL OF NEW INSTALLATION

Equipment for St. Paul's New Electrified Division

Details of Power Supply, Substation Location and Capacity, and Line Construction for 217 Route-Miles of Electrified Track as Planned for the Seattle-Othello Division of the Chicago, Milwaukee & St. Paul Railway

As recently announced in the ELECTRIC RAILWAY JOURNAL, the Chicago, Milwaukee & St. Paul Railway has undertaken the electrification of a new division at the western end of its transcontinental line. The new work comprises 98.7 route-miles between Othello and Cle Elum, 89.9 route-miles between Cle Elum and Seattle, and 28.3 route-miles between Black River Junction (about 10 miles south of Seattle) and Tacoma.

The total route mileage of 216.9 as given above consists mainly of single track, and the figures do not include any track mileage for yards and sidings. Because of the greater efficiency of yard and siding tracks when electrical operation is in force, the railway company has not yet decided how much of this class of trackage should be electrified. At present, therefore, only route mileages can be given.

The coming electrification of 216.9 miles, plus the 437.6 miles at present electrified between Harlowton and Avery, makes an imposing total of 654.5 route-miles electrically operated by the St. Paul. This is not only the longest electric route in the world, but will be also the longest in single-track mileage, undoubtedly, since the original electrification has 149.4 miles of yard and siding track alone and the electrified trackage in the Seattle and Tacoma yards may bring the grand total close to 1000 miles.

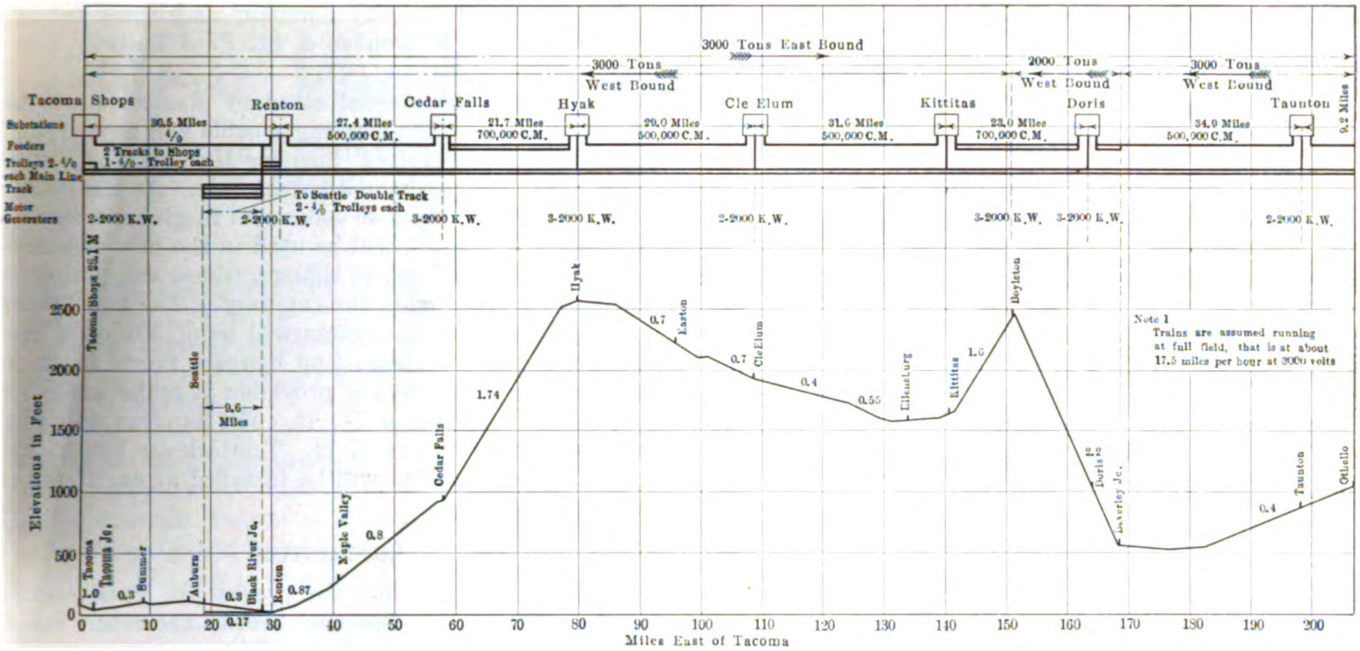
About half of the coming electrification covers heavy mountain grades, including a number of tunnels. The physical characteristics of the new electrically-operated division will, therefore, closely approximate those obtaining on the four electrically-operated divisions in Montana and Idaho.

Arrangements have been made with the Inter-mountain Power Company to supply power required for the new electrification from Othello to Seattle and Tacoma. This power will be generated principally in the Washington Water Power Company's plant on the Spokane River, some thirty miles northwest of the city of Spokane, and at the Snoqualmie and other plants belonging to the Stone & Webster system of western Washington.

The railway company's own transmission line along the right-of-way will be 100,000 volts, 60-cycles, three-phase, built to about the same standards as its present lines in Montana and Idaho. The transmission wires will be No. 00, six-strand copper with hemp core, and the aerial ground wire and individual pole grounds of 3/8-in., seven-strand, Siemens-Martin galvanized wire. This transmission system will extend from Taunton, near Othello, to Cedar Falls, a distance of 140 miles. This will serve the eastern end of the new electrification. The extreme western end, or the section lying west of Cedar Falls, will have its substations tied in with a network of hydroelectric lines operated by the companies supplying the energy to the railway.

SUBSTATIONS, FEEDERS AND BONDS

Substation locations are as tabulated below. The capacities that are given correspond to the known ability of motor-generators of like rating on the Harlowton-Avery electrification to handle certain loads. All substation and feeder capacities are based on a trailing train load of 3000 tons eastbound and westbound, except for an 18-mile westbound grade of 2.2 per cent just west of the Columbia River, where the train load is reduced to 2000 tons, this ruling westbound grade ex-



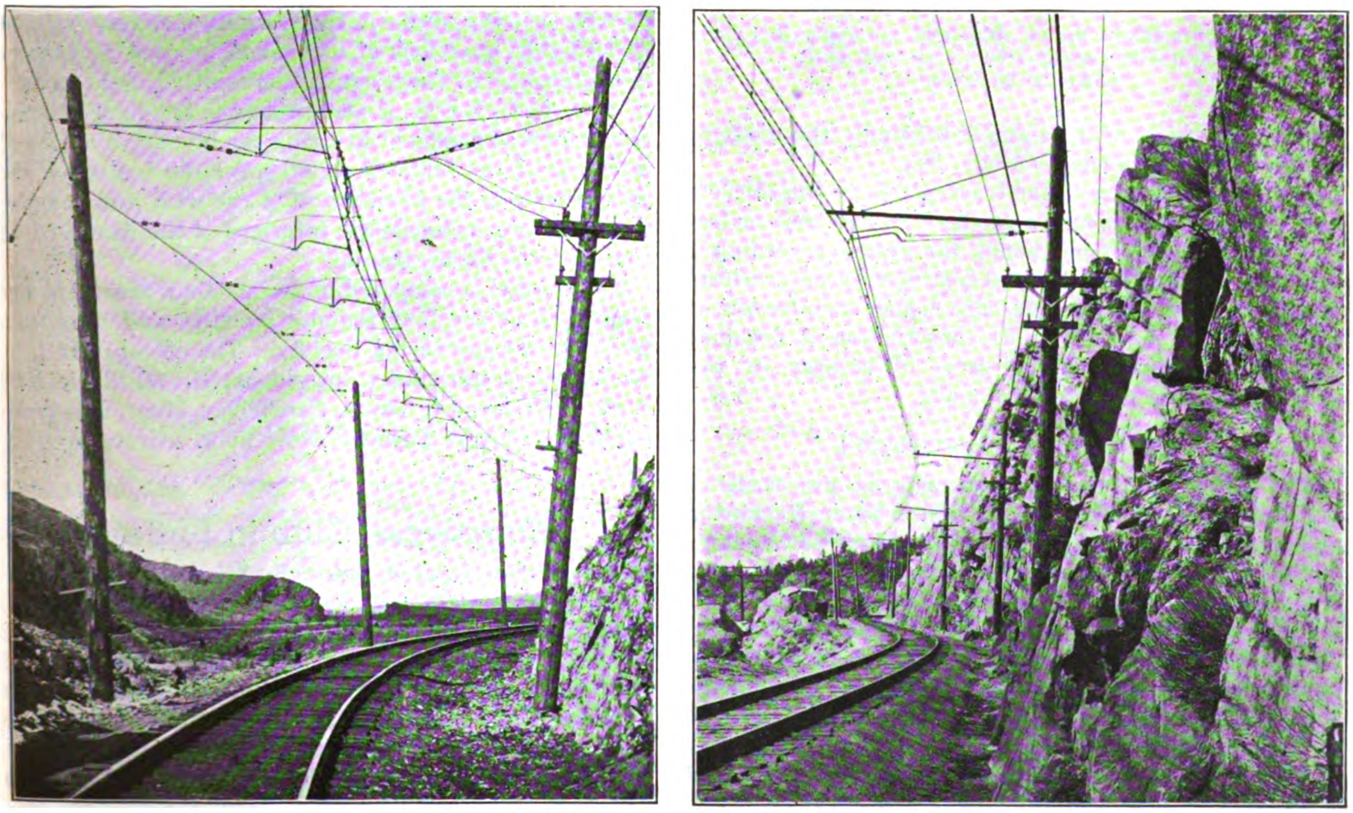
ST. PAUL EQUIPMENT—DIAGRAM SHOWING PROFILE OF SEATTLE-OTHELLO DIVISION TOGETHER WITH SUBSTATION LOCATIONS AND FEEDER CAPACITIES

tending between the stations of Beverly Junction and Boylston on the eastern slope of the abrupt divide between the Columbia and Yakima Rivers. The ruling grade eastbound is 1.74 per cent, and it extends for 20 miles east of Cedar Falls to the summit of the Cascade Mountains.

The order and capacity of substations beginning at the east end are given in the following table:

Substations	Motor-Generators
Taunton, 9.2 miles from Othello	Two 2000-kw.
Doris, 34.9 miles from Taunton	Three 2000-kw.
Kittitas, 23 miles from Doris	Three 2000-kw.
Cle Elum, 31.6 miles from Kittipas	Two 2000-kw.
Hyak, 29.0 miles from Cle Elum	Three 2000-kw.
Cedar Falls, 21.7 miles from Hyak	Three 2000-kw.
Renton, 27.4 miles from Cedar Falls	Three 2000-kw.
Tacoma, 30.5 miles from Renton	Two 2000-kw.

The Renton station serves the 10-mile, double-track line that extends from Black River Junction west to Seattle. There is a distance of 2.4 miles between Renton and Black River Junction, and this is included in the section listed in the run to the Tacoma substation. The foregoing substation ratings are based upon 150 per cent load for the motor-generator sets for a period of two hours, and 300 per cent load for a period of five minutes. All substation buildings will be of brick,

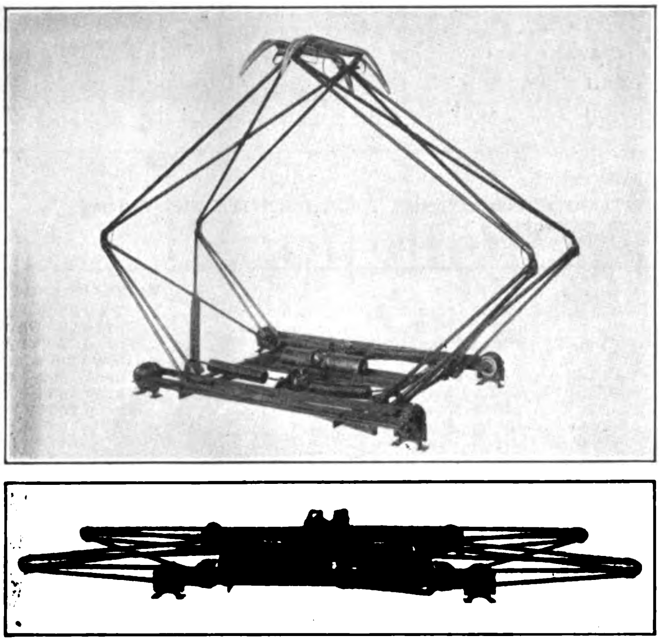


ST. PAUL EQUIPMENT—TYPICAL ARRANGEMENT OF OVERHEAD CONTACT SYSTEM ON SHARP CURVE AND ON MODERATE CURVE with concrete foundations. At Hyak the machines will be set considerably above the track level to avoid the extraordinarily deep snows that are common in the locality.

The initial feeder capacities in copper are as shown in the following table:

Taunton-Beverly Junction	One 500,000 circ. mil
Beverly Junction-Dor.s	Two 500,000 circ. mil
Doris-Kittitas	Two 700,000 circ. mil
Kittipas-Cle Elum-Hyak	One 500,000 circ. mil
Hyak-Cedar Falls	Two 700,000 circ. mil
Cedar Falls-Renton	One 500,000 circ. mil
Renton-Tacoma	One No. 0000

No feeders will be installed on the double-track section between Black River Junction and Seattle, as the four trolley wires will be ample to supply the draft of power without excessive voltage drop.



ST. PAUL EQUIPMENT—VIEWS SHOWING DOUBLE-PAN PANTOGRAPH FOR LOCOMOTIVE IN RAISED AND LOWERED POSITION

Each rail of the main-line track will have one 250,000-circ.mil expansion bond on grades of 1 per cent or less and two 250,000-circ.mil bonds for grades exceeding 1 per cent. These bonds will be tied in with an overhead negative return of No. 0000 bare copper at intervals of approximately 8000 ft. This construction is designed to protect trackmen against large differences in rail potential in case of defective bonds.

3000-VOLT D.C. DISTRIBUTION

The d.c. distribution system will be practically a duplicate of the present installation between Harlowton and Avery, as this has proved to be entirely satisfactory during the last year's experience with it. Cedar poles will be standard except for a limited number of steel bridges over multiple track sections and at terminals. Over the Columbia River Bridge the wooden pole construction will be replaced with a combination transmission and trolley wire structure. There will be also some center pole construction and possibly steel supports on curves over the double-track line between Seattle and Black River Junction, these tracks being owned by the Oregon-Washington Railway & Navigation Company and Pacific Coast Railway Company and leased for use by the Chicago, Milwaukee & St. Paul Railway Company's trains.

Throughout, the present catenary standards will be followed exactly. The messenger cable will be of ½-in., seven-strand, galvanized Siemens-Martin steel, with hangers of ¼-in. galvanized steel rods. As the double trolley wire has proved so successful in giving a flexible non-arcing contact, it will be used in the new construction in all cases except at sidings, where only one wire will be suspended from the catenary. The two trolley wires on the main-line tracks will be of No. 0000 copper, clipped to the closed loop hangers every 15 ft. in staggered relation, so that provision is really made for supports at intervals of 7½ ft. The hangers will vary in length from 8 in. to 27 in. Ten-inch air breaks and disconnecting switches will be installed at each side of every passing track.

LOCOMOTIVES

It will be recalled that the present St. Paul electric locomotives used for passenger service are really standard freight locomotives that have been provided with passenger gearing. The manufacturers have now been asked to bid on designs specifically intended for passenger service. This passenger type will then be made standard for such service, while the present machines will be used only for freight service. No change is contemplated in the pantograph collectors.

Four Engineering Societies Form National Council

By co-operation of the four national societies of civil, mining, mechanical and electrical engineers, respectively, a representative body has been formed under the auspices of the United Engineering Society for the purpose of speaking authoritatively for all member societies on all public questions of a common interest or concern to engineers. At the organization meeting, held on June 27 in New York City, a committee was appointed to consider the best means of utilizing the inventive ability of members of the founder societies for the benefit of the government in the prosecution of the war, and the government bureaus have been informed of the desire of the council to be of assistance.

The council is composed of twenty-four members, five from each of the four founder societies and four from the United Engineering Society. The officers are I. N. Hollis, Worcester, Mass., president; H. W. Buck, New York, and George F. Swain, Cambridge, Mass, vice-presidents and Calvert Townley, New York, secretary.

Employees' Club in Buffalo

The International Railway, Buffalo, N. Y., is organizing a club for all of its employees. At a recent meeting in rooms which are being fitted up on the second floor of the package express terminal, several hundred platform employees, clerks, carhouse men and others attended. The heads of all the departments were present and the spirit of co-operation shown indicated that the club will be a success. The club is being formed so as to bring the various employees of the company into closer co-operation.

New Pacific Electric Repair Shops

Plans Are Nearing Completion for a Splendid Plant for the Maintenance and Building of Electric Passenger Cars and Freight Cars at Torrance, the Coming "Iron City" of Southern California

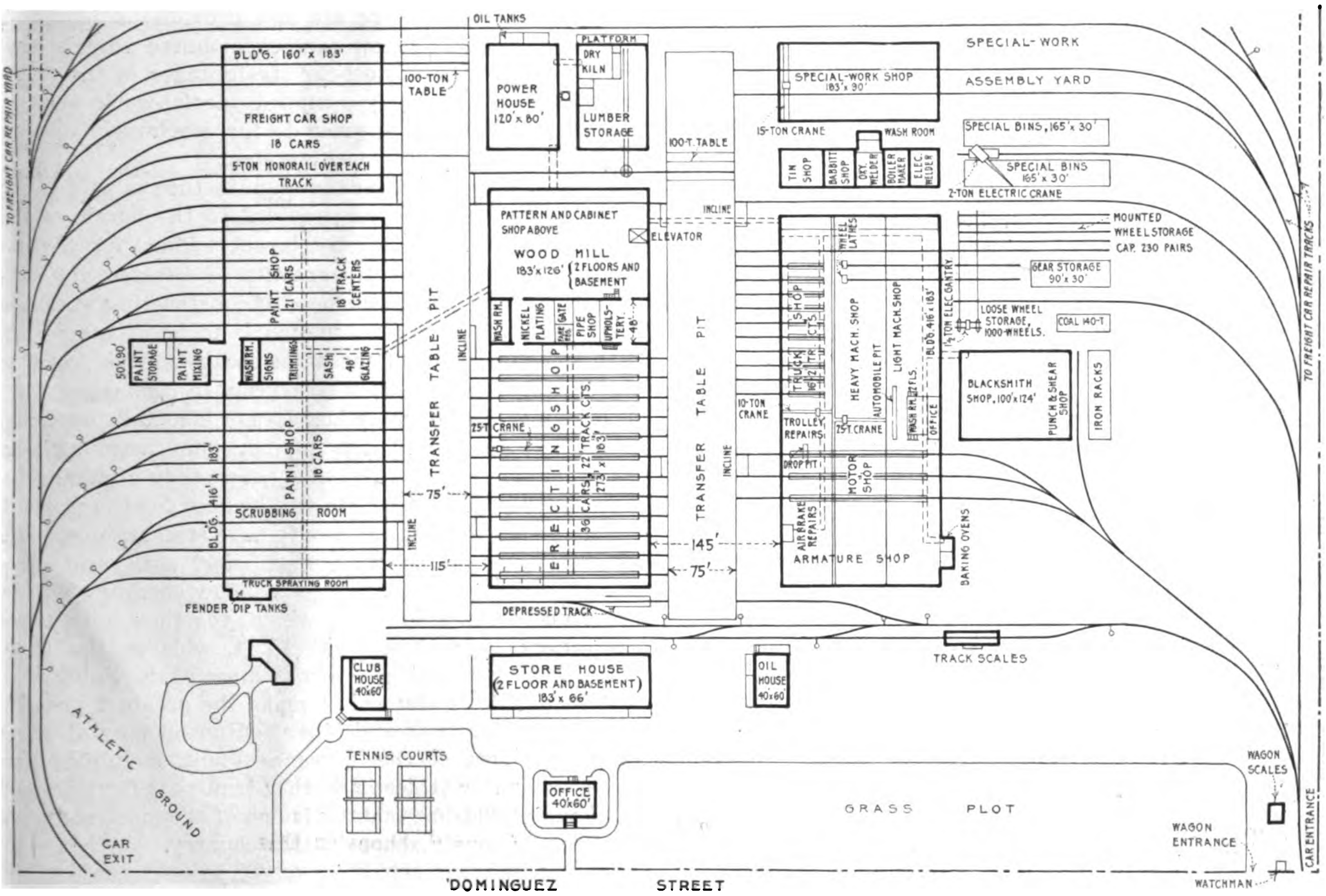
ABOUT 20 miles south of Los Angeles, on the San Pedro line of the Pacific Electric Railway, lies the three-year-old town of Torrance, which is rapidly becoming the industrial city of southern California. Because of its proximity to San Pedro (the harbor of Los Angeles) and the availability of cheap land, many large companies have left cramped quarters at Los Angeles and have built at this point, and the Pacific Electric Railway is preparing to follow suit.

The new Pacific Electric shops are to be located on a plot of 125 acres, which will meet all present needs and allow for 100 per cent future expansion, besides permitting ample storage for heavy freight service. It is of interest in this connection to note that the removal of the present Los Angeles shops of the railway company makes way for the warehouse system of the Los Angeles Union Terminal Company. This change indicates that the Pacific Electric Railway is more than keeping pace with the rapid growth of the city of Los Angeles by helping to insure the city's progress along logical and economical lines.

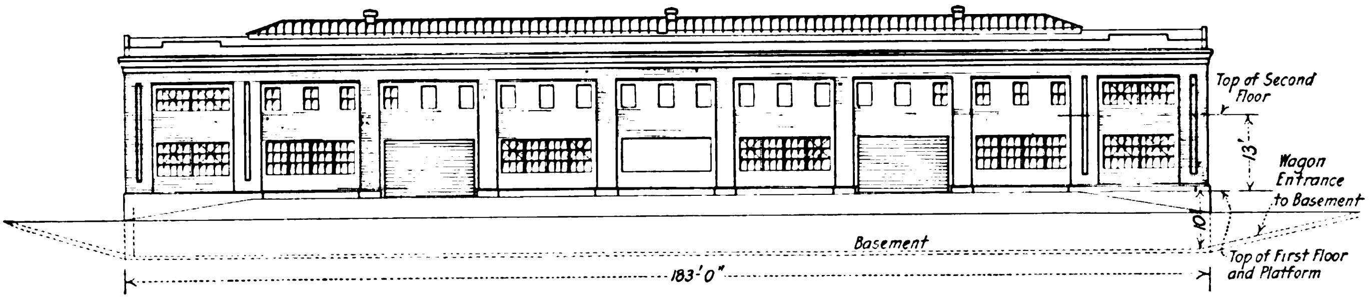
The new shops are to have about 100 per cent more capacity than is now required for the company's equipment. Only heavy overhauling and new work will be regularly undertaken. All light repairs are expected to be handled in the various division carhouses, and the present plan is to run equipment for eighteen months or more between general overhaulings. Owing to this plan there are many unique features in the general layout of buildings.

The accompanying general layout, shown below, is the result of several months' careful study directed toward exactly fitting the needs of this location and the Pacific Electric System. For example, it has been found that southwest trade winds prevail for 90 per cent of the time, and in consequence the paint shop is located at the southwest corner of the yard where dust and soot from the shops will not interfere with painting and finishing operations.

In general the buildings have been laid out to require as few reverse movements and as little handling of material as possible. An outline of the routing plan may be obtained by referring to the plan. A car needing complete overhauling will be run into the east bay of the motor shop shown at the right. At this point connections between the trucks and the car body will be loosened, and parts needing repairs in this building, such as trolleys, controllers, air-brake equipment, etc.,


OIL TANKS
TO FREIGHT CAR REPAIR YARD
BLD'G. 160' x 183'
FREIGHT CAR SHOP
18 CARS
5-TON MONORAIL OVER EACH TRACK
100-TON TABLE
POWER HOUSE 120' x 80'
PLATFORM
DRY KILN
LUMBER STORAGE
100-T. TABLE
SPECIAL-WORK SHOP 183' x 90'
SPECIAL-WORK
ASSEMBLY YARD
15-TON CRANE
WASH ROOM
TIN SHOP
BABBITT SHOP
OXY. WELDER
BOILER MAKER
ELEC. WELDER
SPECIAL BINS, 165' x 30'
SPECIAL BINS 165' x 30'
2-TON ELECTRIC CRANE
PATTERN AND CABINET SHOP ABOVE
WOOD MILL 183' x 126' 2 FLOORS AND BASEMENT
ELEVATOR
INCLINE
MOUNTED WHEEL STORAGE CAP. 230 PAIRS
GEAR STORAGE 90' x 30'
PAINT SHOP 21 CARS
18' TRACK CENTERS
50' x 90'
PAINT STORAGE
PAINT MIXING
WASH RM.
SIGNS
TRIMMINGS
SASH
48'
GLAZING
TRANSFER TABLE PIT
INCLINE
WASH RM.
NICKEL PLATING
FARE REG.
GATE
PIPE SHOP
UPHOLSTERY
48'
ERECTING SHOP
36 CARS, 22' TRACK CTS. 273' x 183'
25-T CRANE
WHEEL LATHES
TRUCK SHOP
16 1/2' TR. CTS.
HEAVY MACH. SHOP
AUTOMOBILE PIT
LIGHT MACH. SHOP
WASH RM. 2 FLS.
OFFICE
BLD'G. 416' x 183'
1 1/2 TON ELEC. GANTRY
LOOSE WHEEL STORAGE, 1000 WHEELS.
COAL 140-T
BLACKSMITH SHOP, 100' x 124'
PUNCH & SHEAR SHOP
IRON RACKS
TO FREIGHT CAR REPAIR TRACKS
10-TON CRANE
TROLLEY REPAIRS
25-T. CRANE
DROP PIT
MOTOR SHOP
AIR BRAKE REPAIRS
ARMATURE SHOP
BAKING OVENS
BLD'G. 416' x 183'
PAINT SHOP
18 CARS
SCRUBBING ROOM
TRUCK SPRAYING ROOM
FENDER DIP TANKS
75'
115'
145'
75'
DEPRESSED TRACK
TRACK SCALES
CLUB HOUSE 40' x 60'
STORE HOUSE (2 FLOOR AND BASEMENT) 183' x 66'
OIL HOUSE 40 x 60
ATHLETIC GROUND
TENNIS COURTS
OFFICE 40' x 60'
GRASS PLOT
WAGON SCALES
WAGON ENTRANCE
CAR ENTRANCE
CAR EXIT
DOMINGUEZ STREET
WATCHMAN

PACIFIC ELECTRIC SHOPS—GENERAL LAYOUT, SHOWING ARRANGEMENT OF PERMANENT BUILDINGS



PACIFIC ELECTRIC SHOPS—ELEVATION OF STOREHOUSE, SHOWING ARCHITECTURAL FEATURES TYPICAL OF THE SHOP BUILDINGS

will be removed. The car then will proceed to the center bay, where the 25-ton electric traveling crane will lift the body, and the trucks will be rolled into the west bay, dummy trucks being placed under the body. The motors and their casings will be removed from the trucks by the 10-ton electric traveling crane and taken to the cleaning room in the armature shop, where they will be lowered through a trapdoor in the roof. The trucks will then proceed to the truck shop via either the transfer table or the 10-ton crane. The car body will be hauled by the shop locomotive via the 100-ton, 75-ft. transfer table into the erecting shop.

Arriving in the east bay of the erecting shop, the car body will be stripped of upholstery, gates, fare registers and all other parts in need of repair or replacement. These parts enter the departments assigned to them through doors in the fire walls and the car body will move toward the west bay to be repaired and reassembled. The repaired trucks will be hauled by the shop locomotive via the west transfer table to the west bay of the erecting shop. The car body, which is in this shop, will be raised by the 25-ton electric traveling crane and the trucks rolled under it.

The completely repaired car next enters the scrubbing room of the paint shop under its own power, where it will be thoroughly cleaned. The trucks will be sprayed with a waterproof paint in the truck spraying room.

The car then will proceed to the paint shop, where it will be completely painted and varnished, the new paint being dried by steam heat radiating from shallow pits underneath the car. The fenders and the parts which have been dipped will then be replaced and the car will be ready for service.

The wood mill, which is two stories high, will be served by a 12-ft. x 19-ft. operatorless electric freight elevator with micro-leveling devices. Shavings and sawdust waste will go through an exhaust duct to the boiler in the power house near by.

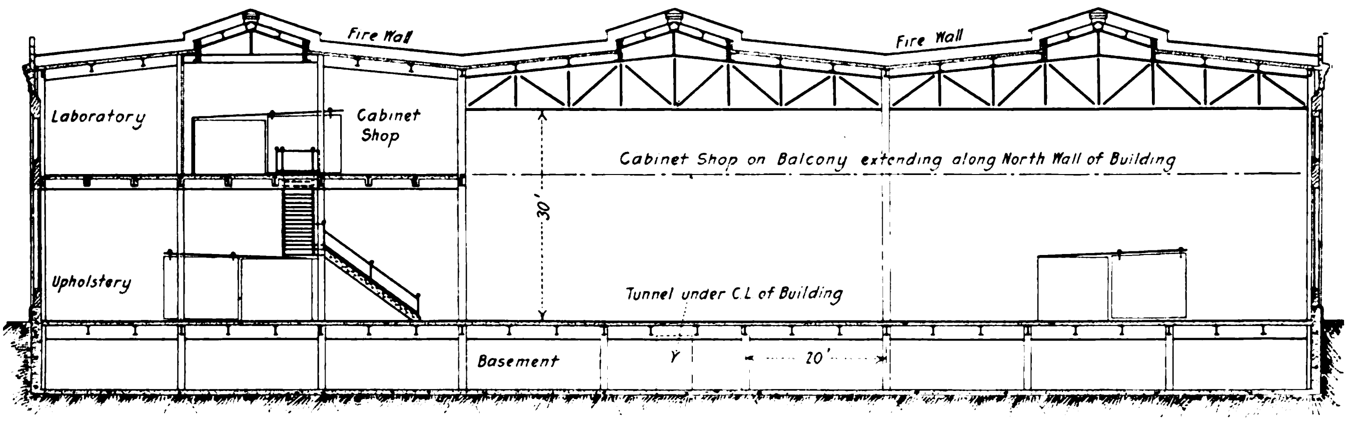
A substation will be located in the power house to care for local car shop and freight car movements. Owing to the climate, heat will be required only to accelerate the paint shop process.

Other interesting features of the shop layout are the basements under the wood mill, truck shop and machine shops for the shafting and the driving belts, thus eliminating much confusion and danger. Pipe ducts for conveying water, air, etc., are also installed below the floors. There are also provided a depressed track for unloading new cars or mounted wheels onto the transfer table, a steel-car straightener in the erecting shop; a completely-equipped special-work shop, a clubhouse and athletic grounds for employees, and an automobile pit in the machine shop.

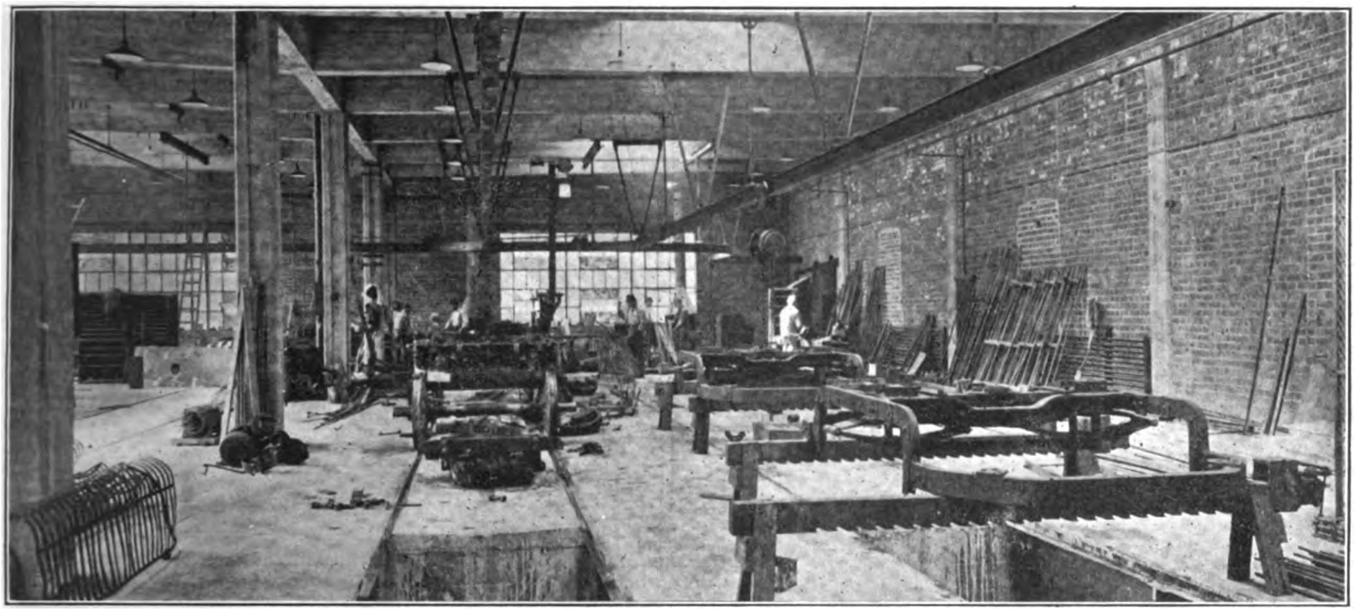
Extensive facilities for the manufacture as well as the repair of cars are to be provided to the north of the shop buildings shown on the layout. Plans for the immediate future include the erection of a temporary shop 220 ft. x 72 ft. for the purpose of constructing standard freight cars. This construction is to be of temporary rather than permanent character because of the fact that the Pacific Electric Railway expects to commence work at once upon 300 or more box cars of 80,000-lb. capacity. Since permanent buildings for car-manufacturing purposes could hardly be completed in less than nine months' time, a temporary structure will be used for the present.

The principal buildings are to have steel frames, brick walls, reinforced concrete roof, steel sash and creosoted wood block floor. Large window openings will be provided in the side walls, which, together with three continuous runs of skylight 15 ft. wide in the three main buildings, will give a maximum of daylight.

Although it is planned to make the greatest possible use of machine tools and other equipment now at other shops, the cost of the Torrance Plant, including new cranes, transfer tables and other transport devices, will be about $1,200,000, making it one of the most complete electric car repair shops in this country.


Fire Wall
Fire Wall
Laboratory
Cabinet Shop
Cabinet Shop on Balcony extending along North Wall of Building
30'
Upholstery
Tunnel under C.L of Building
Basement
20'

PACIFIC ELECTRIC SHOPS—CROSS-SECTION OF WOOD MILL, LOOKING SOUTH TOWARD FIRE WALL



ROCK ISLAND SHOPS—TRUCK SHOP EQUIPPED WITH MONO-RAIL TRAVELING HOISTS

Tri-City Railway's New Shop

A Combined Shop and Carhouse with Exceptionally Complete Equipment Has Been Built by This Company at Rock Island, Ill., Particular Attention Being Given to Minimizing Fire Risk by the Use of Reinforced Concrete Construction and Frequent Fire Walls

A NEW carhouse and shop building has recently been built by the Tri-City Railway Company to replace a brick and steel-truss structure that was destroyed by fire four years ago. The new building was constructed as two separate units, the first consisting of the four carhouse bays, which were erected on the site of the fire shortly after it occurred. This work was begun in June, 1913, and was completed for car storage and temporary accommodation of some shop equipment by December of the same year. Construction of the second unit was postponed for financial reasons until August, 1916, and this was completed in its details this spring.

All of the design and engineering supervision of the new structure was handled by the company forces, as were also the track work, much of the rock excavation, and the clearing away of the fire débris. The building construction was contracted to a local firm. While the second unit, which replaced an old wooden carhouse, was being built the superintendent, receiver and trainmen were housed temporarily in an old car set out in one of the unheated bays previously constructed, and much of the machinery and stock was placed in an adjoining lot under a 40-ft. x 80-ft. tent.

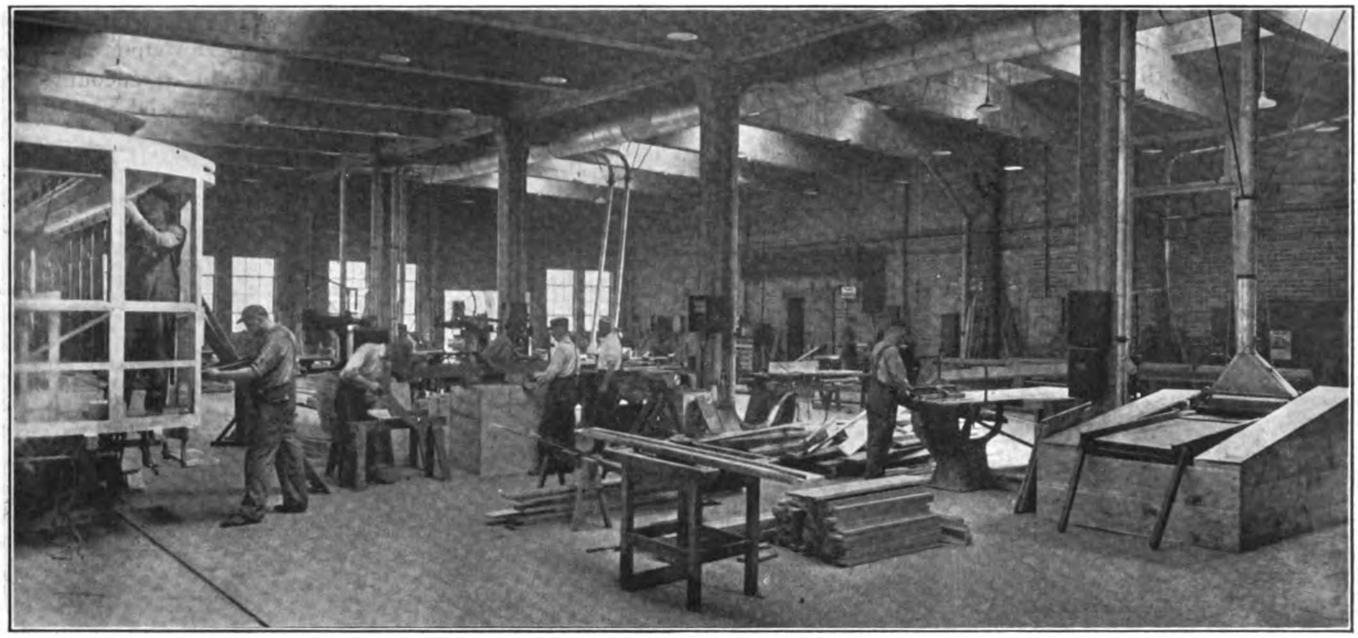
The new building occupies an old quarry site and, at the rear, extends close to a high bluff. Foundation difficulties were experienced because of the greatly varying depth of a very hard limestone and on account of a large brick sewer that diagonally crosses the lot near the surface. Construction throughout consists of reinforced concrete columns and beams and roof slabs with tar and gravel topping. Partitions are made of paving block laid in half-cement mortar, and metal sash and skylights, Kinnear doors and a front of dark brown brick with terra-cotta trim have been installed.

The entire building of eight bays has a storage capacity for sixty-three cars and a shop capacity for sixteen cars. Normally thirty-five cars operate from this carhouse, with an ordinary maximum of forty-five during peak hours.

There is installed a heating system that consists principally of three-column and four-column radiators from 32 in. to 45 in. high, depending on the location, together with pipe coils hung on the walls. Returns are carried through a concrete trench to an automatic pump in the long inspection pit shown in the plan drawing of the machine shop. This trench is covered by a 2-in. reinforced-concrete slab, made in sections, which can be lifted out if required.

For lighting there is a system controlled from a central switchboard in the carpenter shop near the receiver's office. Additional switchboards control the lights in each shop, and there are individual or group switches in the office portion of the building. Base outlets are provided in the pits, also in the columns of the paint and carpenter shop, these being intended for attaching lights with long cords. In general the lighting is provided by 100-watt type "C" Mazda lamps, and all of the lamps in the shops are provided with 16-in. porcelain reflectors.

Four tracks run through the carpenter shop. One of these goes outside the rear of the carhouse and alongside the wooden shed for lumber storage. Including the wood mill, the size of the carpenter shop is approximately 100 ft. x 100 ft. All of the wood-working machines are run by individual motors, and a cyclone blower system carries the sawdust and shavings to a collector over the boiler room, in which a vault is pro-



ROCK ISLAND SHOPS—CARPENTER SHOP AND WOOD MILL WITH MOTOR-DRIVEN TOOLS

vided for shaving storage. The glue room is provided with a lathe with 16-in. swing, 8-ft. centers, and glue pots which are heated by gas. A temperature of 80 deg. Fahr. is provided for this room.

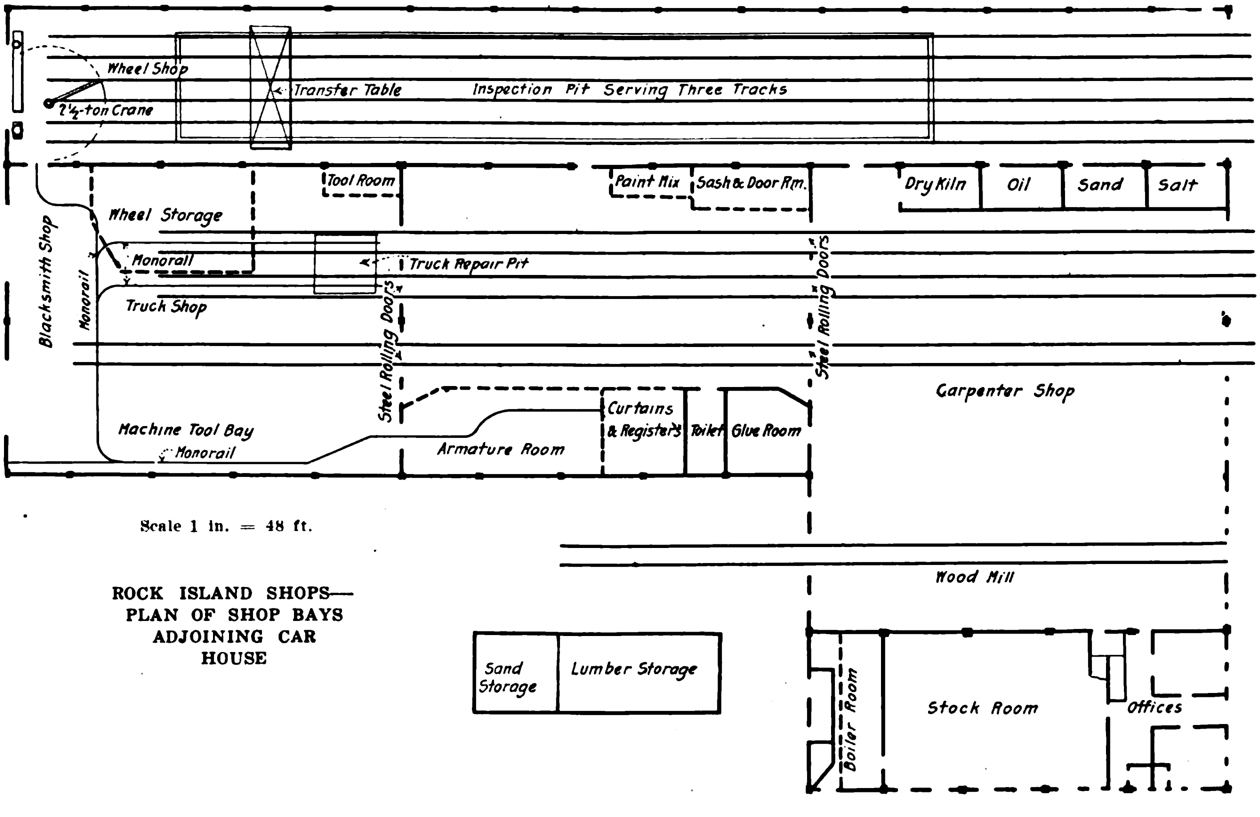
The paint shop is about 100 ft. x 54 ft., with the paint-mixing and sash-and-door rooms at one side. These rooms, as well as the armature room and the curtain and register room, are separated from the paint shop by iron grill partitions.

The machine shop is about 95 ft. x 75 ft., and the bay adjoining this shop is provided with a long pit under three tracks, which is utilized for car inspection.

A wheel press and wheel borer are installed at the rear end of this bay, and there is also a transfer table connecting the three tracks. An overhead carrier system is provided for connecting the machine shop pits and the machine tool bay with the armature room.

To support the trolley wire over the shop tracks a steel insert is provided in the bottom of each concrete beam at the center line of each car track. To this insert is bolted a piece of wood 4 in. x 4 in. x 22 in., this being placed parallel to the track. The carhouse hangers for the trolley are fastened to the outside end of this wooden block.

A wooden lumber storage shed is provided at the rear section of the shops, the size of this being 20 ft. x 40 ft. Adjoining this is the main sand storage, 20 ft. x 20 ft. in dimensions, this giving a capacity for 200 yd.


Wheel Shop
2½-ton Crane
Transfer Table
Inspection Pit Serving Three Tracks
Tool Room
Paint Mix
Sash & Door Rm.
Dry Kiln
Oil
Sand
Salt
Blacksmith Shop
Wheel Storage
Monorail
Truck Repair Pit
Steel Rolling Doors
Truck Shop
Monorail
Steel Rolling Doors
Carpenter Shop
Machine Tool Bay
Monorail
Armature Room
Curtains & Registers
Toilet
Glue Room
Wood Mill
Sand Storage
Lumber Storage
Boiler Room
Stock Room
Offices

Scale 1 in. = 48 ft.

ROCK ISLAND SHOPS—
PLAN OF SHOP BAYS
ADJOINING CAR
HOUSE

of sand. The sand room, from which the cars are sanded daily, is located, together with the salt room, oil room and dry kiln, between the carpenter shop and the inspection bay. The oil room is provided with five Bowser pumps with underground storage tanks, and also with a rack on which oil barrels are placed by means of a chain hoist operating on an I-beam.

Following is a list of the machine tools installed: For the machine shop, three engine lathes, radial drill, two drill presses, shaper, milling machine, bolt cutter, grindstone, dry grinder, tool grinder, drill grinder, power hack saw; for the blacksmith shop, two forges, furnace, air hammer; for the wheel shop, wheel press, wheel borer, dry grinder; for the wood mill, two jointers, planer, rip saw, cut-off saw, shaper, band saw, boring machine, sticker, sander, tenoner, swing saw, mortiser, grindstone, emery wheel.

Two floors are provided for part of the building. The two-story portion is used, on the first floor, for receiver's and superintendent's offices, stock room and boiler room, and, on the second floor, for trainmen's quarters. The stock room is provided throughout with metal shelving, the size of this room being 53 ft. x 37 ft.

For the shower baths and washroom in the trainmen's quarters on the second floor a Ruud automatic water heater is provided in the boiler room, a reserve capacity being provided near the heater. The trainmen's quarters have a poolroom containing two standard pool tables, with chairs and fixtures finished in dark brown. The floor is covered with linoleum. The trainmen's locker room is provided with 129 lockers, and there is a meeting room at the rear of the second floor which has a platform at one side, base outlets being installed for attaching moving-picture apparatus.

Virtually everything possible was done to make this carhouse and shop a low fire risk. The brick and concrete walls, with concrete columns, beams, roof slabs and skylight curb, provide as nearly a fireproof structure as possible. All bays are separated from each other by 13-in. walls, and openings are protected by double fire doors, while the partition wall between the paint and machine shops is provided with double rolling shutters. Fire extinguishers, sand pails, fire hydrants and other protective devices have also been provided to minimize the fire risk and secure advantageous insurance rates, and an A. D. T. system has been installed, while an additional city fire-alarm box near the property is being considered.

Intercommunicating telephones are provided in each shop with a central station in the receiver's office.

The Coming Decade in Development of the Electric Street Railway

E. H. McHenry Visualizes the Immediate Future in the Light of Experience of the Steam Railroads

In discussing some of the present aspects and future prospects of the electric railway business with one of the editors of the ELECTRIC RAILWAY JOURNAL recently, E. H. McHenry of the firm of McHenry & Murray, New Haven, Conn., formerly vice-president of the New Haven Railroad, expressed some ideas which may well be pondered carefully by the managers and other operators of electric railways.

Reasoning from the analogous history of the steam railroads, Mr. McHenry expressed the belief that the street and interurban railway is entering upon a decade in which very difficult conditions will be encountered. The ever-increasing demand for improved and additional service cannot be so readily compensated by commensurate increase in fares as in steam railway service by reason of the practical and psychological limits set by the all but universal adoption of the "nickel" as the basic maximum "short-ride" fare. The public will not willingly consent to the establishment of another and higher basic rate, nor yet to the logical alternative of a reduction of the amount of service rendered for such fare. If restricted in the exercise of both alternatives, electric railways can then only find relief by the reduction of operating expenses, for which the opportunities will be relatively slender in the face of increasing charges for fuel, labor and materials, unless secured in the form of exemptions from taxes, paving assessments and other burdens of like character now superposed upon the service requirements. Relief in this form, although reasonable and sound in theory, cannot be expected until the public has been educated by bitter experience into a clearer perception of the relations of the character of the service demanded to the cost of such service and of the inherent unreasonableness of its demand for service of a higher value than that for which it is willing to pay.

A general and bad breakdown in steam service was first necessary before even a glimmering perception of this relation recently began to dawn upon the public, and it is much to be feared that a costly and trying experience of the same kind will be necessary in the lighter and less completely unified electric railway service before this fact will be brought home to the public and the necessary relief afforded.

The steam railroads, it is hoped, are emerging from their dark days, for the public is showing a willingness to bear its share of the burdens which have been laid upon the railroads by economic conditions. It is natural that relief should come to the steam railroads first, because it is clearly evident to the public that the prosperity of the country depends upon having adequate and efficiently operated railroad facilities.

The case of the electric railways is different, in a way, although ultimately they will be granted relief for the same reasons as those effective with the steam railroads. It is, however, less evident to the riding public that it is dependent upon the electric railway. In the cities it is often possible to walk rather than ride, or the irresponsible but convenient jitney may tempt the prospective rider away from the safer and more comfortable trolley car. The private automobile, of course, is a serious competitor of the electric railway, not only in the cities but also outside. Municipal ownership of street railways has been proposed as a remedy for the difficulty of operating them with satisfaction to the public. This, in Mr. McHenry's opinion, would not prove satisfactory or economical. Considering the returns which are made for municipally owned and operated roads here and abroad, it is clear that the public does not receive in the form of profit as much as privately owned railways pay in direct and indirect taxes. This fact also the public will appreciate in time and will so modify the conditions under which the railways are permitted to operate that those who have money invested in these railways may receive a fair return.

New Home for Lincoln Traction

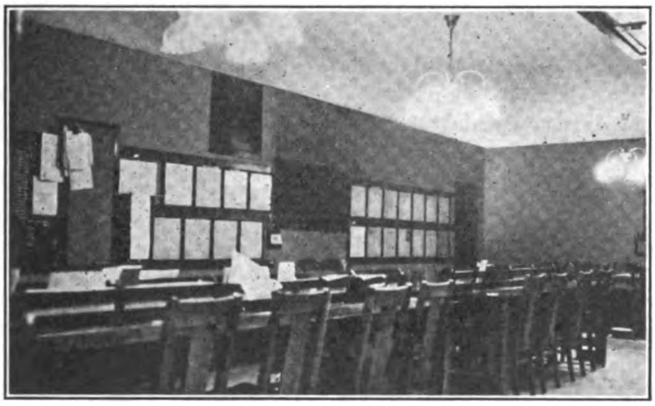
Building Just Erected by Lincoln Traction Company Officials Provides Beautiful Offices for Company Business

A BEAUTIFUL white tile concrete and steel ten-story office building has recently been built at a prominent corner on the principal business street of Lincoln, Neb., by the Lincoln Terminal Company, the officers of which are officials of the Lincoln Traction Company. Part of the main floor is given over to salesrooms for the light and power division of the company's business. On the third floor a suite of offices extending across the front of the building is used by the traction company officials. The president's office occupies the central room of this suite, with the superintendent of the lighting division on one side of him and the vice-president and general manager in charge of the railway end of the business on the other side. The general manager's office overlooks the principal car lines in the downtown district, thus making it most convenient from an operating standpoint. The other offices used by the traction company are grouped about this principal suite across the front.

LINCOLN TRACTION CO
LIGHT - HEAT - POWER

NEW TERMINAL BUILDING AT LINCOLN

The dispatcher's office is located over the main entrance to the building and on the half story off the landing between the first and second floors. The entire front of his office is window glass, which greatly facilitates his control of cars and trainmen. Being only a short distance above the ground, he is able to talk readily with and signal trainmen in front of the building. His office is also within easy access of the trainmen when they have occasion to talk with him personally. A telephone mounted on a post at the curb immediately in front of the dispatcher communicates direct with him.



TRAINMEN'S REPORT ROOM IN THE BASEMENT

The front section of the basement of the terminal building is finely equipped for the use of trainmen. Access to these rooms is gained by a short stairway from the lobby of the building or from an outside stairway at the side of the building. These rooms extend under glass sidewalks on the two sides of the building which give ample day-lighting to the trainmen's quarters. A large billiard and game room is finely furnished and is equipped with four regulation billiard and pool tables, forming a popular and attractive place for the trainmen off duty. Another room is equipped with a long table and chairs for the use of the trainmen in making out reports. A bulletin board extends along one wall, and all notices to trainmen are posted here in frames behind glass. Just off this room is an office for the use of the superintendent of transportation, and this is also well lighted by means of glass in the sidewalk above. Another fairly large room is equipped with steel lockers and steel tables, where the men may eat their lunches. Just off this room is a large lavatory and toilet room, finished in marble and tile and equipped with the most modern type of porcelain fixtures and a marble shower bath. The locker room and toilet room are located right at the foot of the stairway so that they are very conveniently situated for the use of the trainmen when on or off duty.

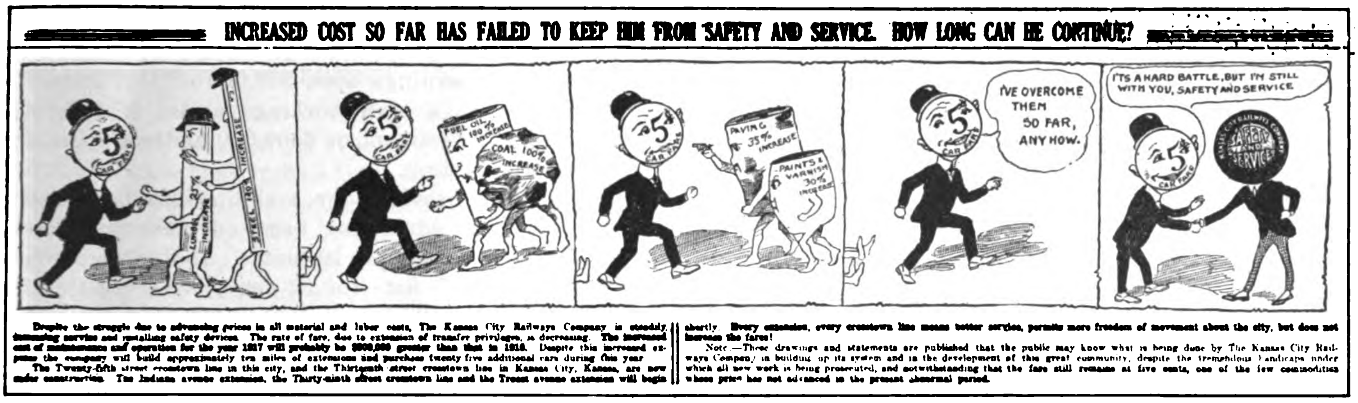
Why Kansas City People Understand

The Advertisements from the Daily Papers Reproduced Herewith Show How the Public Is Informed About Railway Problems

PREVIOUS articles in the ELECTRIC RAILWAY JOURNAL have told of the success which the Kansas City (Mo.) Railways is having with its public relations work. The advertisements reproduced herewith from the daily papers simply show some of the more recent publicity work. For example, the daily publication of the causes for street car delays has been one of the most successful features of the company's "let-the-public-know" policy. It shifts the responsibility from the railway and makes the passengers "sore" at the unavoidable track conditions instead of at the company.

Any improvement in the company's service is thought to be a fit subject for advertisement, for otherwise the riders may fail to notice the change for the better. Likewise, the cartoon form of telling of the higher material costs is effective and may serve to place the people in the right frame of mind to appreciate the necessity of an increase in fare.

Recently an unusual newspaper advertisement expressed the company's regret for a serious accident which had happened that day. This was published in the same issue with the story of the accident. The newspapers secured all their information concerning the accident from the publicity manager, E. B. Atchley, who, as is his custom, told the absolute truth. It was one of those cases where no one seemed to be particularly to blame, there being perhaps a combination of carelessness on the part of both parties. The advertisement was used simply to point out the need of greater care on the part of everyone. Neither of the newspapers which ran the story attempted to place the


INCREASED COST SO FAR HAS FAILED TO KEEP HIM FROM SAFETY AND SERVICE. HOW LONG CAN HE CONTINUE?
5¢ CAR FARE
LUMBER 25% INCREASE
STEEL 140% INCREASE
FUEL OIL 100% INCREASE
COAL 100% INCREASE
PAVING 35% INCREASE
PAINTS & VARNISH 30% INCREASE
I'VE OVERCOME THEM SO FAR, ANY HOW.
IT'S A HARD BATTLE, BUT I'M STILL WITH YOU, SAFETY AND SERVICE
SAFETY AND SERVICE

Despite the struggle due to advancing prices in all material and labor costs, The Kansas City Railways Company is steadily increasing service and installing safety devices. The rate of fare, due to extension of transfer privileges, is decreasing. The increased cost of maintenance and operation for the year 1917 will probably be $500,000 greater than that in 1916. Despite this increased expense the company will build approximately ten miles of extensions and purchase twenty five additional cars during this year.

The Twenty-fifth street crosstown line in this city, and the Thirteenth street crosstown line in Kansas City, Kansas, are now under construction. The Indiana avenue extension, the Thirty-ninth street crosstown line and the Troost avenue extension will begin shortly. Every extension, every crosstown line means better service, permits more freedom of movement about the city, but does not increase the fares!

Note.—These drawings and statements are published that the public may know what is being done by The Kansas City Railways Company in building up its system and in the development of this great community, despite the tremendous handicaps under which all new work is being prosecuted, and notwithstanding that the fare still remains at five cents, one of the few commodities whose price has not advanced in the present abnormal period.

The Kansas City Railways

Deeply regret the serious and unfortunate accident at Mt. Washington Tuesday forenoon when seven persons were injured.

This company is striving to its utmost to impress carefulness and safety upon each of its employees and asks the public, and particularly the drivers of automobiles, to exercise great care in passing in front of cars at street crossings and elsewhere. None of us can be too careful.

Street Car Delays

Friday Morning, April 27

At 8:52 a dray wagon stalled on the tracks at Sixth and Delaware delayed Argentine and Observation Park cars 25 minutes.

At 8:58 a wagon stalled at Nineteenth and Oak blocked Jackson Avenue and Holmes Street cars 12 minutes.

At 9:06 an auto backing from the curb collided with a Holmes Street car at Sixteenth and Walnut, blocking traffic 10 minutes.

Track rebuilding on the Independence Avenue line between Indiana and Bales Avenue caused some delay to the new *5-minute schedule* installed today on that line. This interference will be temporary and the improved service will undoubtedly be working admirably in a few days.

Complaints and suggestions always given prompt, courteous attention.

THE KANSAS CITY RAILWAYS.

April 27, 1917.

The Kansas City Railways

We exceedingly regret the delay in service at 8 o'clock yesterday morning. This delay was caused by an ice jam, sand and the extremely low stage of the river.

This has necessitated continuous blasting of sand bars opposite our quadruple intake pipes at the power plant, the river front and Grand Avenue.

For three hours—from 4 to 7 p. m.—Thursday, December 14, these conditions forced us to lessen the heat in our cars. This is the only time the heat in the cars has been reduced since it was first turned on late in October.

KANSAS CITY RAILWAYS
1500 Grand Avenue

The Track Hog a Menace to Traffic and Safety!

Suppose you are in a hurry—and wait several minutes for a street car. You grow impatient and wonder what is the matter—and condemn the car service. Then two, three, perhaps four cars come along in a bunch—the first two overcrowded. The following headlines from Wednesday's Star [illegible] one reason why the cars were bunched:

THE CAR TRACKS SUITED THEM.

So Father and Son Were Fined for Delaying Street Cars.

Testimony showed traffic was blocked between Forty-seventh street and Seventeenth! The offenders remarked "that it seemed to be smoother on the car tracks so we struck there." Yes, they admitted the motormen rang the gongs repeatedly but "that didn't bother them any."

So Judge Kernan fined them. The offenders declared "only the street car company was inconvenienced," but the court took the viewpoint that the people who were riding on the delayed cars and those waiting along the line were the ones discommoded!

Why, the street railway company was the least interest discommoded. It is the passengers—the people who daily go to and from their work on the street cars—who are discommoded by the TRACK HOG.

The Railways Company is doing everything it can to provide service. Cars are operated on fixed schedules. Additional cars are being placed on all lines where there is heavy traffic. Conditions have improved under the recent traffic ordinances. But do not forget that the street railway company is not to blame where city ordinances are violated—not to blame where the TRACK HOG insists on operating. That is for YOU to consider!

THE KANSAS CITY RAILWAYS
Philip J. Kealy
PRESIDENT.

Note—This advertisement is published in an endeavor to bring to the attention of the people of Kansas City a thorough understanding of traffic delays. The correction is in the hands of the community, not the company.

IMPROVED SERVICE ON FIFTEENTH STREET LINE

To Patrons:—

Effective Monday morning, April 23, improved service will be established on the **Fifteenth Street Line** during the morning and evening rush hour periods. **Two additional cars** will be placed in service on that date and the following schedule will prevail during the two periods.

(CUT OUT AND SAVE)

Leaving 15th and Crystal		Leaving 8th and Walnut	
[illegible]	[illegible]	[illegible]	[illegible]

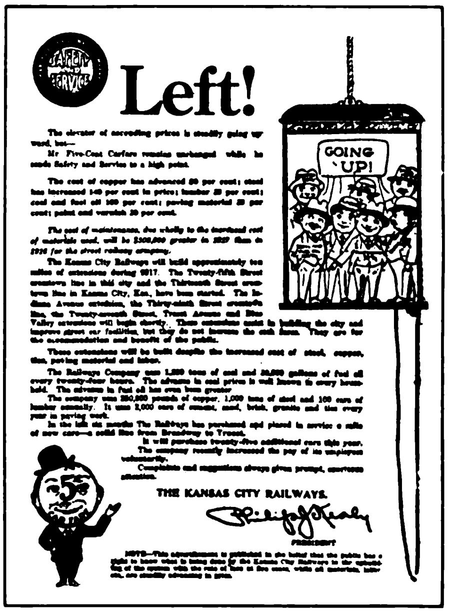
It is the policy of The Railways to improve service on any line where the increase in patronage will justify additional service.

It is the desire of this company to satisfy all its patrons at all times.

Complaints and suggestions always given prompt, courteous attention.

THE KANSAS CITY RAILWAYS
Philip J. Kealy
President.

April 21, 1917.



Left!

The elevator of ascending prices is steadily going upward, but—

Mr. Five-Cent Carfare remains unchanged while he sends Safety and Service to a high point.

The cost of copper has advanced 90 per cent; steel has increased 140 per cent in price; lumber 25 per cent; coal and fuel oil 100 per cent; paving material 35 per cent; paint and varnish 30 per cent.

The cost of maintenance, due wholly to the increased cost of materials used, will be $500,000 greater in 1917 than in 1916 for the street railway company.

The Kansas City Railways will build approximately ten miles of extensions during 1917. The Twenty-fifth Street crosstown line in this city and the Thirteenth Street crosstown line in Kansas City, Kan., have been started. The Indiana Avenue extension, the Thirty-ninth Street crosstown line, the Twenty-seventh Street, Troost Avenue and Blue Valley extensions will begin shortly. These extensions assist in building the city and improve street car facilities, but they do not increase the cash fares. They are for the accommodation and benefit of the public.

These extensions will be built despite the increased cost of steel, copper, ties, paving material and labor.

The Railways Company uses 1,200 tons of coal and 30,000 gallons of fuel oil every twenty-four hours. The advance in coal prices is well known to every household. The advance in fuel oil has even been greater.

The company uses 250,000 pounds of copper, 1,000 tons of steel and 100 cars of lumber annually. It uses 2,000 cars of cement, sand, brick, granite and ties every year in paving work.

In the last six months The Railways has purchased and placed in service a mile of new cars—a solid line from Broadway to Troost.

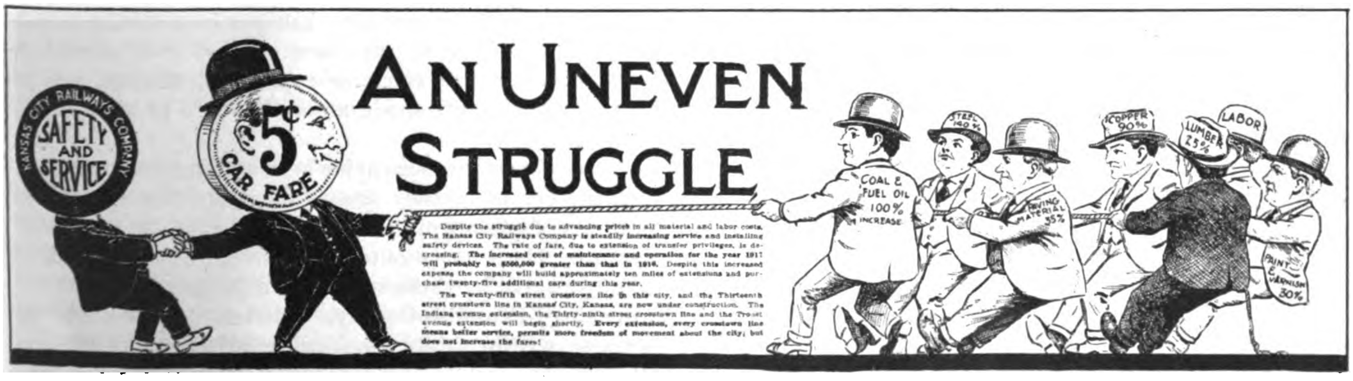
It will purchase twenty-five additional cars this year.

The company recently increased the pay of its employees voluntarily.

Complaints and suggestions always given prompt, courteous attention.

THE KANSAS CITY RAILWAYS.
Philip J. Kealy
PRESIDENT

NOTE—This advertisement is published in the belief that the public has a right to know what is being done by the Kansas City Railways in the upbuilding of the system with the rate of fare at five cents, while all materials, labor, etc., are steadily advancing in price.



Despite the struggle due to advancing prices in all material and labor costs, The Kansas City Railways Company is steadily increasing service and installing safety devices. The rate of fare, due to extension of transfer privileges, is decreasing. The increased cost of maintenance and operation for the year 1917 will probably be $500,000 greater than that in 1916. Despite this increased expense the company will build approximately ten miles of extensions and purchase twenty-five additional cars during this year.

The Twenty-fifth street crosstown line in this city, and the Thirteenth street crosstown line in Kansas City, Kansas, are now under construction. The Indiana avenue extension, the Thirty-ninth street crosstown line and the Troost avenue extension will begin shortly. Every extension, every crosstown line means better service, permits more freedom of movement about the city; but does not increase the fares!

TYPICAL NEWSPAPER ADVERTISEMENTS OF KANSAS CITY RAILWAYS blame on anyone. No one afterward contended that the advertisement was an acknowledgment of the company's responsibility for the accident.

A feature of the company's publicity policy is that the publicity manager never tries to get a story (free advertising) in any of the papers. If the company has anything to say, it buys the space. Then it can say just what it wants to. On the other hand, newspaper reporters are constantly dropping into the publicity manager's office for news, for they have learned they can depend upon him to give them the truth regardless of what the situation may be. If there is a company matter which, for certain good reasons, it is not desired to announce until later, the newspaper men are so informed. They have not yet betrayed this confidence.

A Franchise for the Car Riders

Under Columbus Suburban Franchise Car Riders Are to Have What They Demand in the Way of Service, and That Service Is to Be Furnished at Cost

THE new franchise recently granted for the Westerville suburban line of the Columbus Railway, Power & Light Company, Columbus, Ohio, is said by the company to be a model for future electric railway franchises in Ohio. Some points of this were mentioned in the ELECTRIC RAILWAY JOURNAL of June 23, page 1156, but further details will now be given.

The two principles underlying the franchise are the following: First, the community served has a right to any kind of service it desires and to the control of that service. Second, the individuals receiving that service should pay the cost thereof, such cost to include a fair return on the capital invested.

LENGTH OF FRANCHISE AND CONTROL OF SERVICE

The original franchise is for twenty-five years. Any time after it takes effect, however, the enabling body, the county commissioners, have the right to renew it for such period, not less than fifteen years or less than the then expired term, as they may be by law authorized. The commissioners through an appointed representative, the street railway commissioner, have the right to control the service, including the fixing and altering of schedules, the changing of service and the establishing of stops. They must not require service to such an extent that enough money will not be produced to make good any loss in the working capital later described.

The commissioners have general control of service, however, only when under the original franchise or any renewal accepted by the company the grant has more than fifteen years to run. When the grant or any renewal has less than fifteen years to run, the company assumes control of the service and may charge during the unexpired term any fare not in excess of the maximum now provided. If the commissioners, however, offer a renewal extending the life more than fifteen years and this contains no substantial changes or additions to the burden of the company, the commissioners retain control if the renewal is refused by the company. Yet it is especially provided that the right to accept such offer of renewal at all times remains with the company.

EARNINGS ALLOWED AND FARES TO BE CHARGED

The company is allowed to earn 6 per cent upon its present investment and 8 per cent upon future capital investment. Its present investment was fixed by arbitration at $350,000. For the first ten years the company waives all earnings upon $75,000 of this amount. It adds, however, a cash working capital of $25,000, making a total investment of $300,000 at the beginning of franchise operation.

The franchise provides for a sliding scale of fares. The following schedule has been adopted for ticket fares: (a) Four tickets for 10 cents; (b) five tickets for 15 cents; (c) ten tickets for 35 cents; (d) five tickets for 20 cents; (e) ten tickets for 45 cents; (f) five tickets for 25 cents; (g) ten tickets for 55 cents, and (h) five tickets for 30 cents. The maximum cash fare to be charged is 6 cents for any zone, there being three zones now established for a distance of 10.364 miles. As long as the zone rate of fare upon a ticket basis is 4.5 cents or less, the cash fare is to be 5 cents a zone. When the ticket fare is more than 4.5 cents, the cash fare will be 6 cents a zone. Nothing in the grant precludes the use of commuters' rates with the approval of the county commissioners, but such rates can be established only by the company.

The fare used at the first is that provided in (d), five tickets for 20 cents, or a cash fare of 5 cents. Changes from this or any other rate are to be made upon the following basis: To the working capital, beginning at $25,000, are to be added each month all passenger and freight receipts. From it each month is to be deducted the cost of operation, one-twelfth of the estimated annual taxes and one-twelfth of the annual return upon the investment for that month. When the balance equals or exceeds $35,000, the next lower rate of fare must be put into effect; and when it equals or is less than $15,000, the next higher rate of fare. Any lowering of fares must take place at the order of the county commissioners after any monthly report from the company discloses the condition of the fund to warrant it. Any raising of the fare may be made by the company after its report is filed.

IMPROVEMENTS, PURCHASE AND ARBITRATION

Either the company or the county commissioners may propose extensions, betterments or permanent improvements. When proposed by the commissioners, such improvements must be made if the company can procure the necessary money, unless they are held to impair the present or future ability to earn the allowed return. In such a case the company's claims must be arbitrated. Improvements proposed by the company must be approved by the commissioners before the expense is incurred. All approved improvements are, of course, added to the rate basis.

It is agreed that the company will at any time, upon six months' notice in writing by the commissioners, sell to the public its property at 110 per cent of the investment at the date of purchase. This will consist of $350,000, plus the working capital of $25,000 and all capital investments made after the date of the present franchise.

Whenever differences arise between the commissioners and the company they are to be submitted to arbitration, the decision of the board to be binding upon all parties. Each party is to select an arbitrator, the third being selected by these two or by a judge of the Court of Appeals of Franklin County. The board must render its decision within thirty days unless all members agree to an extension.

Getting Up Booklets That Create Traffic

ALMOST every electric railway has issued booklets to guide strangers in reaching points of interest and at the same time induce them to use the street cars. It is often questioned whether such advertising really promotes traffic, but that it does has been proved in Denver. This city, of course, has the advantage of being a great tourist stopping point. In making up advertising booklets, J. C. Davidson, publicity manager, has capitalized this fact.

One of the booklets used some time ago by the Denver Tramway, entitled "What to See in Denver," secured a material amount of traffic which the company would not have obtained otherwise. The success was largely due to the manner in which the information was set forth and to the method of distribution. A small boy above the average in intelligence was employed to meet every important tourist train between 6 a. m. and 9.30 p. m. each day during the entire summer. He was dressed in a uniform with a cap bearing the word "Information." As the tourists came out of the depot, he approached them, saying he wished to give them a booklet about Denver. A total of 50,000 copies was distributed during three months by this means.

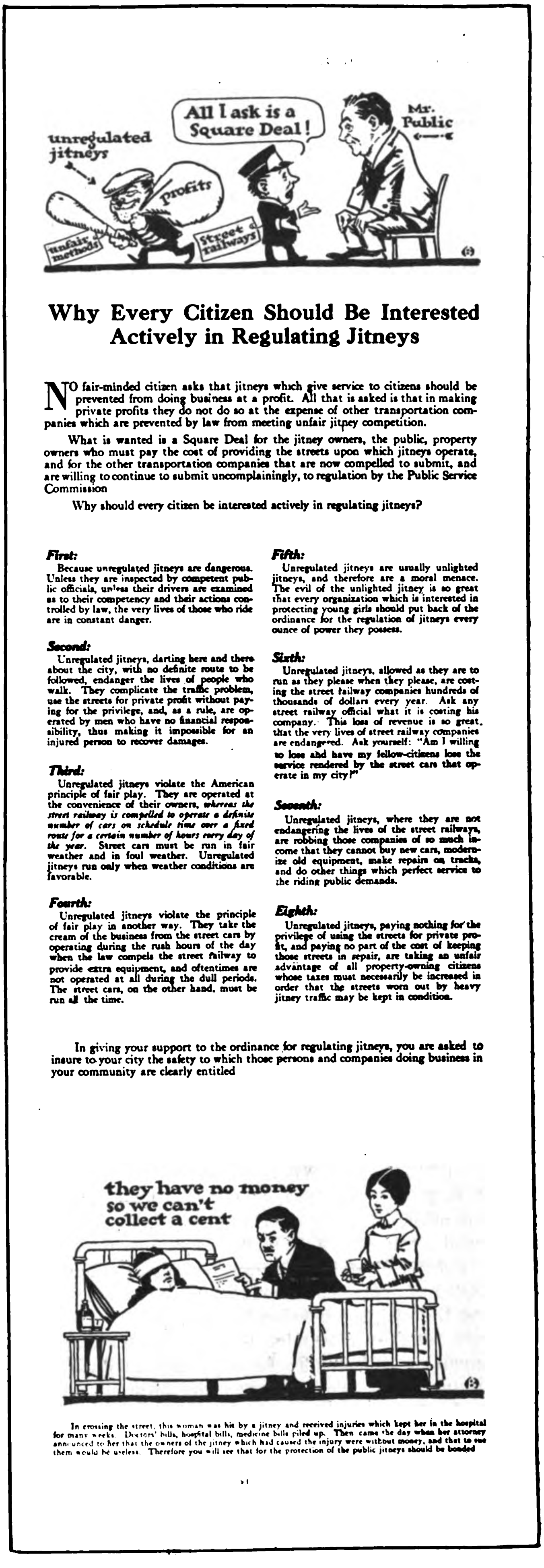
When the tourist opened this booklet, he found trips listed to points of interest in Denver, routing him from the Union Station and back again, and giving the time required and the cost. Forty-four trips were listed in this manner. The booklet also contained many pictures, and the reading matter pointed out the interesting things en route.

A booklet which created a great deal of traffic from local residents was entitled "Prize Picnic Places." To attract people who could not afford long interurban rides but were tired of going to city parks for outings, Mr. Davidson set about finding new picnic spots on the electric railway system. Through the company's car pamphlet, *"Tram-o-Grams,"* prizes were offered for information as to new picnic spots. From sixty-four replies forty good picnic spots were selected, twenty or more being practically unknown. When a leaflet regarding these was prepared, with pictures and directions, a goodly amount of new traffic was secured.

Jitneys Should Be Regulated

THE circular reproduced in the opposite column summarizes in a striking way the reasons why the public should be interested in the regulation of jitney traffic. Six thousand of these circulars were sent out by the Bay State Street Railway, Boston, Mass., to its employees. In each case the circular was inclosed with the current issue of *Triangle Talks*, the employees' publication.

Copies of the circular were also stacked up in the waiting rooms of the company. Others were inserted in all outgoing letters. Moreover, the publicity department furnished the newspapers in the company's territory with electros of the cuts, and many of them reproduced the circular. All this has helped to make the public better understand what a "fair deal" to electric railways means.


unregulated jitneys
All I ask is a Square Deal!
Mr. Public
profits
unfair methods
Street Railways

Why Every Citizen Should Be Interested Actively in Regulating Jitneys

NO fair-minded citizen asks that jitneys which give service to citizens should be prevented from doing business at a profit. All that is asked is that in making private profits they do not do so at the expense of other transportation companies which are prevented by law from meeting unfair jitney competition.

What is wanted is a Square Deal for the jitney owners, the public, property owners who must pay the cost of providing the streets upon which jitneys operate, and for the other transportation companies that are now compelled to submit, and are willing to continue to submit uncomplainingly, to regulation by the Public Service Commission

Why should every citizen be interested actively in regulating jitneys?

First:

Because unregulated jitneys are dangerous. Unless they are inspected by competent public officials, unless their drivers are examined as to their competency and their actions controlled by law, the very lives of those who ride are in constant danger.

Second:

Unregulated jitneys, darting here and there about the city, with no definite route to be followed, endanger the lives of people who walk. They complicate the traffic problem, use the streets for private profit without paying for the privilege, and, as a rule, are operated by men who have no financial responsibility, thus making it impossible for an injured person to recover damages.

Third:

Unregulated jitneys violate the American principle of fair play. They are operated at the convenience of their owners, *whereas the street railway is compelled to operate a definite number of cars on schedule time over a fixed route for a certain number of hours every day of the year.* Street cars must be run in fair weather and in foul weather. Unregulated jitneys run only when weather conditions are favorable.

Fourth:

Unregulated jitneys violate the principle of fair play in another way. They take the cream of the business from the street cars by operating during the rush hours of the day when the law compels the street railway to provide extra equipment, and oftentimes are not operated at all during the dull periods. The street cars, on the other hand, must be run all the time.

Fifth:

Unregulated jitneys are usually unlighted jitneys, and therefore are a moral menace. The evil of the unlighted jitney is so great that every organization which is interested in protecting young girls should put back of the ordinance for the regulation of jitneys every ounce of power they possess.

Sixth:

Unregulated jitneys, allowed as they are to run as they please when they please, are costing the street railway companies hundreds of thousands of dollars every year. Ask any street railway official what it is costing his company. This loss of revenue is so great that the very lives of street railway companies are endangered. Ask yourself: "Am I willing to lose and have my fellow-citizens lose the service rendered by the street cars that operate in my city?"

Seventh:

Unregulated jitneys, where they are not endangering the lives of the street railways, are robbing those companies of so much income that they cannot buy new cars, modernize old equipment, make repairs on tracks, and do other things which perfect service to the riding public demands.

Eighth:

Unregulated jitneys, paying nothing for the privilege of using the streets for private profit, and paying no part of the cost of keeping those streets in repair, are taking an unfair advantage of all property-owning citizens whose taxes must necessarily be increased in order that the streets worn out by heavy jitney traffic may be kept in condition.

In giving your support to the ordinance for regulating jitneys, you are asked to insure to your city the safety to which those persons and companies doing business in your community are clearly entitled

In crossing the street, this woman was hit by a jitney and received injuries which kept her in the hospital for many weeks. Doctors' bills, hospital bills, medicine bills piled up. Then came the day when her attorney announced to her that the owners of the jitney which had caused the injury were without money, and that to sue them would be useless. Therefore you will see that for the protection of the public jitneys should be bonded

EIGHT REASONS PROVING NEED FOR JITNEY REGULATION

New York Line Presents Case

New York & North Shore Traction Company Tells First District Commission Why It Needs a Seven-Cent Fare

On July 16 the New York & North Shore Traction Company, Roslyn, N. Y., began and finished the presentation of its direct case on its application to the Public Service Commission for the First District for an increase in fare from 5 cents to 7 cents. As noted in the ELECTRIC RAILWAY JOURNAL of July 14, this company has been granted a fare increase on its zone system in Nassau County, and it now is seeking relief for its lines in Queens County, New York City.

The company presented more than fifty exhibits to show its financial and operating status. The fixed asset account of the company as of Dec. 31, 1908, adjusted to meet commission requirements, was $358,735. Between then and June 30, 1917, there was added under commission supervision $1,253,272, making a total of $1,612,008. All of this, according to J. G. Moran, secretary and general manager, represents used and useful property except $1,100, the original cost of a lot purchased for a substation which was not built.

The securities approved, issued and outstanding total $1,779,350. The difference between this and the fixed assets of $1,612,008 is represented by discount on bonds, materials and supplies, cost of bonds deposited with the city and other items for which securities were allowed but which were ordered credited to fixed capital and written off through a suspense account.

Beginning with July 1, 1915, the company set aside a reserve of three-quarters of 1 per cent of the gross receipts for depreciation of equipment and 1.5 per cent for depreciation of way and structures. If this rule had been in force since the beginning of complete operation in 1910, the accrued depreciation, the company estimates, would amount to $16,587 for way and structures and $8,303 for equipment. With the straight-line method at 3 per cent a year, the total accrued depreciation would be $262,463.

According to the company's comparative income statement since the year ended June 30, 1911, the gross income was as follows: 1911, $28,568; 1912, $40,307; 1913, $19,302; 1914, $39,365; 1915, $49,560; 1916, $49,803, and 1917, $39,638. After paying interest on bonds, rentals and other deductions, the income available to the holders of stock ($150,000 for 1911-1913; $979,350 for 1914-1917) was as follows: 1911, $19,369; 1912, $21,582; 1913, $7,317 (deficit); 1914, $7,432; 1915, $3,211; 1916, $2,032, and 1917, $8,882 (deficit). The company has never paid any cash dividends, and at no time has earned a fair return. The increases already granted by the Second District Commission are estimated to yield $8,850 of additional revenue, and that desired from the First District Commission $34,605.

Council for the commission brought out the fact that the company will be confronted with rapid transit competition in Queens County when the city program is completed. The commissioners then asked why it would not be advisable to adopt a zone system in this section instead of a 7-cent fare. Mr. Moran said that as far as the communities were concerned a zone system could be used on the lines in Queens County as well as on those in Nassau County, but that the company now has only P.-A.-Y.-E. cars operating in Queens County, and also that a 7-cent fare would give more revenue now. When rapid transit competition developed, it would be time to discuss any needed way of meeting it. The hearing was adjourned until July 23 to enable the city to prepare cross-examination if it so wishes.

The beginning of the hearings on the applications of the Staten Island Midland Railway and the Richmond Light & Railroad Company for a 6-cent fare was postponed from July 16 to Sept. 10.

Jurisdiction Partly Admitted

New York Second District Commission Grants Power to Raise Rates Above Old Legal Maximum—No Opinion Yet About Cases Involving Franchise Rates

The Public Service Commission for the Second District of New York announced on July 18 at Albany a partial decision as to its power to grant an increase in fare from 5 cents to 6 cents to twenty-eight petitioning electric railways in its jurisdiction.

The commission stated that as to all cases pending before it in which authority to increase rates does not involve determination of the effect of alleged contracts or franchise restrictions as to such rates, it is of the opinion that it has authority in a proper case to permit an increase of fare in excess of the maximum fixed by the railroad law. This in substance prohibited street surface railways from charging any passenger more than 5 cents for one continuous ride from any point on its road or on any road, line or branch operated by it or under its control to any other point thereof or of any connecting branch thereof within the limits of any incorporated city or village.

In regard to applications for leave to increase rates which if granted would authorize a rate in excess of that alleged to have been fixed under contract with or by a franchise granted to and accepted by the railway corporation, the commission made at this time no determination as to its jurisdiction. It is not known now how many cities will raise this issue, but the fact will probably become apparent when the commission resumes its hearings on July 25.

As to the method of procedure in cases to be taken up in accordance with the foregoing, and in cases which may be taken up in pursuance of further determination that may be made by the commission as to its jurisdiction in any of the pending applications, the commission stated that the burden of proof is upon the railways to establish that the present maximum rates are unjust and unreasonable. Moreover, they must show that with due regard among other things to a reasonable average return upon the value of the property actually used in the public service and to the necessity of making reservation out of income for surplus and contingencies, the proposed rates properly should be approved and fixed by the commission as just and reasonable.

The Public Service Railway, Newark, N. J., has paid to the city of Newark $199,948, which represents 5 per cent of the gross income from fares within that city during the past year. The sum exceeds that paid in 1916 by $22,297. The Newark anniversary celebration had a considerable effect upon the year's earnings.

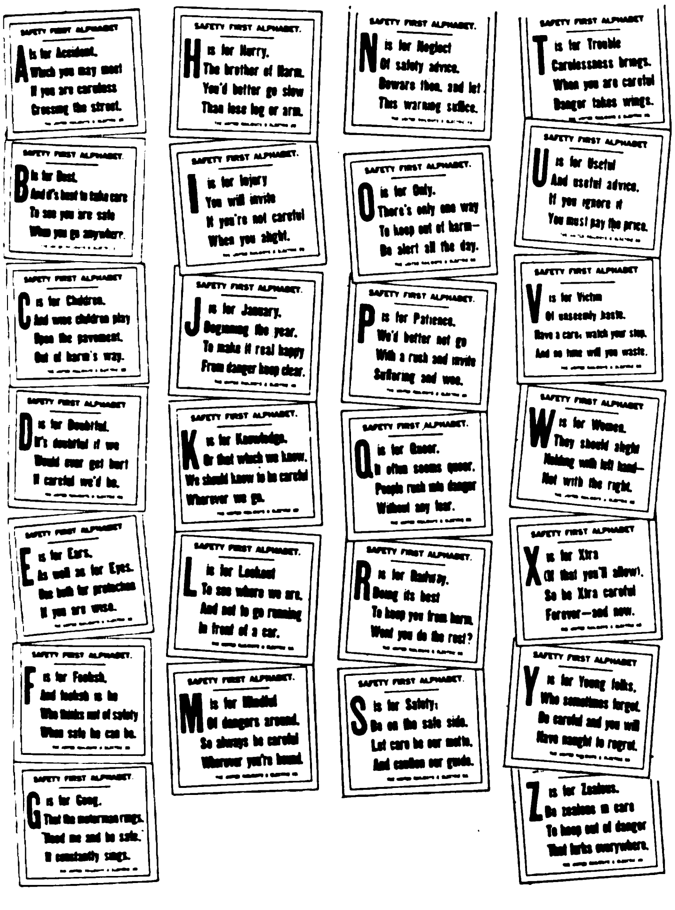
Safety from A to Z

How the United Railways & Electric Company Has Told the Story of Safety Through the Alphabet

THE United Railways & Electric Company, Baltimore, Md., has for years, in the course of its varied safety work, kept in its cars racks for the display of large cards. The most recent set of cards, which are described by Dwight Burroughs, publicity manager, in the June *United Railways Forum,* were those used for a "safety alphabet."

This alphabet was designed with simple words and catchy jingles, so that the verses, as shown in the accompanying cut, might be read and remembered by children as well as adults. When the first letter appeared, the company began to receive communications from all sorts of self-constituted literary critics. While the comments and criticisms were rolling in, however, something else was happening.

Every boy and girl in the city was learning verse "A." It went into the homes and was discussed. People could not help remembering it and wondering what the next verse would be. Verses "B" and "C" met with the same reception, and so the alphablet went on performing its mission of attracting attention to safety.



SAFETY FIRST ALPHABET.
A is for Accident,
Which you may meet
If you are careless
Crossing the street.

SAFETY FIRST ALPHABET.
B is for Best,
And it's best to take care
To see you are safe
When you go anywhere.

SAFETY FIRST ALPHABET.
C is for Children,
And some children play
Upon the pavement,
Out of harm's way.

SAFETY FIRST ALPHABET.
D is for Doubtful.
It's doubtful if we
Would ever get hurt
If careful we'd be.

SAFETY FIRST ALPHABET.
E is for Ears,
As well as for Eyes.
Use both for protection
If you are wise.

SAFETY FIRST ALPHABET.
F is for Foolish,
And foolish is he
Who thinks not of safety
When safe he can be.

SAFETY FIRST ALPHABET.
G is for Gong,
That the motorman rings.
"Heed me and be safe."
It constantly sings.

SAFETY FIRST ALPHABET.
H is for Hurry,
The brother of Harm.
You'd better go slow
Than lose leg or arm.

SAFETY FIRST ALPHABET.
I is for Injury
You will invite
If you're not careful
When you alight.

SAFETY FIRST ALPHABET.
J is for January,
Beginning the year.
To make it real happy
From danger keep clear.

SAFETY FIRST ALPHABET.
K is for Knowledge,
Or that which we know.
We should know to be careful
Wherever we go.

SAFETY FIRST ALPHABET.
L is for Lookout
To see where we are,
And not to go running
In front of a car.

SAFETY FIRST ALPHABET.
M is for Mindful
Of dangers around.
So always be careful
Wherever you're bound.

SAFETY FIRST ALPHABET.
N is for Neglect
Of safety advice.
Beware then, and let
This warning suffice.

SAFETY FIRST ALPHABET.
O is for Only.
There's only one way
To keep out of harm—
Be alert all the day.

SAFETY FIRST ALPHABET.
P is for Patience.
We'd better not go
With a rush and invite
Suffering and woe.

SAFETY FIRST ALPHABET.
Q is for Queer.
It often seems queer.
People rush into danger
Without any fear.

SAFETY FIRST ALPHABET.
R is for Railway,
Doing its best
To keep you from harm.
Won't you do the rest?

SAFETY FIRST ALPHABET.
S is for Safety;
Be on the safe side.
Let care be our motto,
And caution our guide.

SAFETY FIRST ALPHABET
T is for Trouble
Carelessness brings.
When you are careful
Danger takes wings.

SAFETY FIRST ALPHABET
U is for Useful
And useful advice.
If you ignore it
You must pay the price.

SAFETY FIRST ALPHABET
V is for Victim
Of unseemly haste.
Have a care, watch your step,
And no time will you waste.

SAFETY FIRST ALPHABET
W is for Women.
They should alight
Holding with left hand—
Not with the right.

SAFETY FIRST ALPHABET
X is for Xtra
(If that you'll allow).
So be Xtra careful
Forever—and now.

SAFETY FIRST ALPHABET
Y is for Young folks,
Who sometimes forget.
Be careful and you will
Have naught to regret.

Z is for Zealous.
Be zealous in care
To keep out of danger
That lurks everywhere.

BALTIMORE SAFETY ALPHABET

Soon the principals of various public schools asked for the cards so that they could be used for the purpose of instilling the safety idea among the pupils.

At a night school in northeast Baltimore, attended chiefly by aliens, some of them adults, the principal uses the cards as an aid in teaching the English language and safety at the same time. The school found that it could get from the cards a vocabulary of simple words which enabled the pupils to converse in English without other mediums.

The cards were used at the Central Y. M. C. A. in connection with a class in safety. Several churches and Sunday schools employed the cards to teach the safety lesson at entertainments. Individuals secured sets of the cards for the instruction of children in their families.

Thus, while the safety alphabet was performing its mission in the racks in the cars, it was also entering the schools and homes of the city with its simple message—a message not easily forgotten.

COMMUNICATION

Paving Is Sometimes a Proper Charge

SOUTHWESTERN ELECTRICAL & GAS ASSOCIATION
DALLAS, TEX., July 16, 1917.

To the Editors:

I have read with much interest Mr. R. C. Cram's article on "What Shall We Do with the Paving Burden?" and the editorial on this article, both in your issue of June 23. Within the last year or two I have spent considerable time examining track and paving in a large number of cities, in size from forty and fifty thousand population to those of a quarter of a million, and I have been very greatly impressed by two important conditions. The first of these is the effect of track construction on the useful life of its abutting pavement. The second is the wonderfully changed results caused by the recent almost exclusive operation of self-propelled rubber-tired vehicles over city pavements. Perhaps I can better illustrate my impressions in this matter by giving the views of the city engineer of a large city which I lately visited. These views have since been duplicated by those of many other city engineers and by city officials who have control of streets and roadways.

In talking with this engineer on the subject of paving I said that it had always seemed to me inequitable to compel the railways to pay for the installation, maintenance and renewal of the pavement in and abutting their track when the operation of the cars on this track in no wise used or injured the pavement and when, as an actual fact, steel-tired wagons used the rails as a wheel-way. His reply was virtually as follows:

"That may be partially true under certain conditions and a portion of it may have been absolutely true in the past, but the situation has changed considerably within the last few years, partly in favor of the railways but partly against them. The part in favor is that the railways have begun to realize that the so-called 'elastic' or 'resilient' track with 'ballast' under it is a 'pavement destroyer,' as it allows to the track a slight vertical movement which is not shared by the pavement, so that the track sooner or later parts company with paving, to the detriment of both. Hence the nearer the railways make their track and their pavement one integral structural unit, the longer will be the life of both.

"The second condition is the change caused by self-propelled rubber-tired vehicles. We have in this city two streets on which there is very little steel-tired or animal traffic. These two streets are approximately the same width, they are very nearly parallel for a long distance, and there is no great difference in the undersoil or the grades. Both are paved with the same character of pavements, viz., a plastic pavement with crushed stone filling, laid on concrete at about the same time and by the same contractors. One has no railway track on it; on a large portion of the other there is a single track, laid with grooved rail, and with turnouts. As both streets lead from about the same section in the heart of the city to the same manufacturing suburb, the traffic on each is a matter of choice. As the heavy trucks selected the street without the railway tracks just as soon as it had been paved, the lighter traffic, such as automobiles and fast operating delivery wagons, etc., uses the street with the railway track. Both these streets were paved about three or three and one-half years ago, and to-day the street without the track, and which has the heavier vehicular traffic, is in perfect condition, while that which has the railway track is commencing to have bad places closely adjacent to the rails, caused partly by the repairs which had to be made to the joints in the track and partly by the fact of the movement of the track in the pavement, this track being of the 'elastic' type with rail joints.

"Therefore I feel in this particular case, and it is duplicated in other parts of our city and in many other cities, that the electric railway is fully responsible on the one of these streets where it operates for all the repairs which will have to be made between its rails and for 2 ft. outside of them—if, indeed, it should not pay for the repavement of the entire street when the original pavement needs renewal. There are several types of pavement which, if properly laid on streets without railway tracks, will, with rubber-tired self-propelled vehicles, last almost indefinitely and with very slight repairs. This cannot be said of a similarly paved street where the pavement is cut longitudinally by two or four rails as this 'cutting' will by itself weaken the pavement and shorten its life beyond what it would be if it were an integral and unbroken whole."

These remarks are worth consideration by all electric railways. If there is one thing that is absolutely unstandard it is the matter of track construction and paving in city streets. All other structures are built according to thoroughly established engineering principles, yet the average city railway track with its superimposed paving is the only "structure" which is not built in accordance with the best engineering principles and practice, and it is the one which, of all street railway structures, should be so built because it is subject to more diverse stresses and strains than any other one of the structures.

Let the good work of the JOURNAL and Mr. Cram go on, but let it proceed in such a manner that it will point out not only where the railways have been at fault in laying their tracks so that the addition of their tracks to a street actually shortens the life of its paving, but also whether it is actually possible, under the present and coming conditions of the other vehicular traffic, so to construct the track and its paving that that track will not be a detriment to the street paving as a whole. The vital point is: that if this can be done, all future tracklaying must be so done and, if it cannot be done, the electric railways must make up their minds that they will—equitably and justly—have to pay not only all costs of paving over their tracks but, possibly, the supplemental damage caused to the whole street paving by their track. This condition is looming up in the minds of those controlling municipal paving. No good will come from ignoring it. If there is a method of avoiding it, let it be found as soon as possible. If there is no such method, let us face the alternative and forefend it in every legitimate way.

H. S. COOPER, Secretary.

Texas Claim Agents Meet

Texas interurban lines and city lines were well represented at the meeting of the Railway Claim Agents' Association of Texas at Galveston on July 13 and 14. R. L. Miller of the Northern Texas Traction Company of Fort Worth read a paper on the effect of pay-as-you-enter cars and one-man cars in reducing accidents. Mr. Miller said that both served greatly to reduce the accidents caused by persons attempting to board or alight from moving cars, explaining that with either car, if properly constructed, it is impossible for a person to attempt to board or alight from a car until the door is opened.

The handling of unreported claims against street railways was discussed by F. J. Johnson, chief adjuster for the San Antonio Traction Company, and K. M. Watson, general claim agent for the Northern Texas Traction Company. The best method of handling claims resulting from train or street car wrecks and several other topics were discussed by traction men.

AMERICAN ASSOCIATION NEWS

Public Utility Conference

Delegates have been selected to represent the American Electric Railway Association at the conference at Washington, D. C., to consider the provisions of the war revenue bill that relate to public utilities. Those who will represent the association are L. S. Storrs, E. G. Connette, J. N. Shannahan and E. B. Burritt.

Why We Should Have Increased Revenue

The above was the topic discussed at the meeting of the Connecticut County section on June 27. This meeting was held at a local hotel and was preceded by a dinner served to 110 members. The section orchestra furnished music during the dinner.

The necessity for increased revenue was explained and illustrated in papers by L. S. Storrs, president; J. H. Sanford, purchasing agent; W. R. Durham, Jr., engineer maintenance of way; Leslie Spraggon, inspector of rolling equipment; W. E. Jones, statistician; A. S. Davis, supervisor of power, and C. H. Chapman, manager Bridgeport division. A chart prepared by the statistician showed how the company's expenses had increased compared with earnings, and how the net income had decreased for corresponding months this year and last. The accident record of the company and the nature of liability cases on the docket at the time were also treated by the assistant attorney of the company, S. W. Baldwin, and the attorney, J. F. Berry.

EQUIPMENT and MAINTENANCE

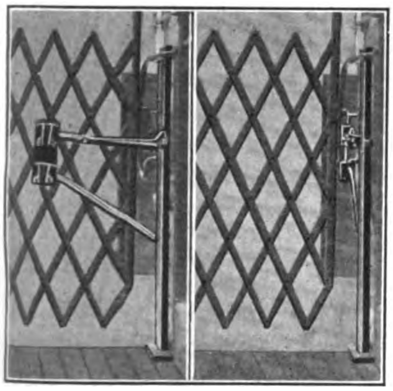
HAVE YOU A GOOD WAY OF DOING A JOB?
—Pass It Along

Read in This Issue: **The First Installment of the Cost Data on Special Work Renewals, by M. Bernard**

Inexpensive Fare-Box Bracket and Window Sign

BY C. S. BANGHART
Vice-President and General Manager Binghamton (N. Y.) Railway

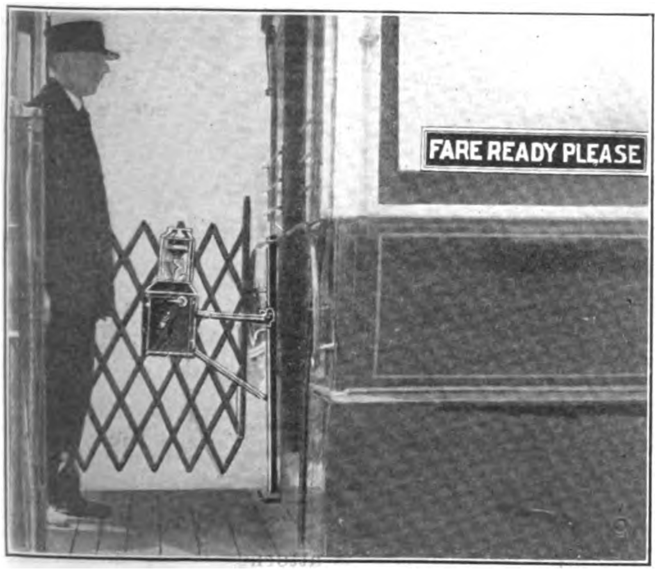
Prepayment fare boxes have recently been installed in some of our old open-platform cars by means of a swinging bracket shown in the illustration. This is arranged so that it can swing back and be securely fastened against the bulkhead when the fare box is used on the other end of the car.



VIEW OF BRACKET WITH FARE BOX REMOVED, AND VIEW OF BRACKET IN OUT-OF-THE-WAY POSITION

The sockets into which the fare box fits are electrically welded to an iron plate which in turn is welded to the bracket pipe supports. The cost of the job was only $2 per car, making a very cheap way of altering the old cars so they could be used as trippers and for emergency service with the other equipment, which is practically all of the prepayment type.

The cars are loaded at the rear end and unloaded at the front. The sign "Fare Ready, Please," which is shown in one of the illustrations, is not painted on the window, but is printed on a strip of paper, using white letters on a black background. The paper is then glued to the window pane. This has proved to be an inexpensive sign and at the same time it is very effective as the white letters are illuminated at night by the car lights, which make them very distinct.



INEXPENSIVE FARE-BOX BRACKET AND PAPER WINDOW SIGN

Anti-Fouling Guards for Trolley Wheels

To prevent trolley wheels from being caught in overhead work with consequent tearing down of the construction or the distortion of wheel flanges, the United Railroads of San Francisco has devised the anti-fouling shields shown above.

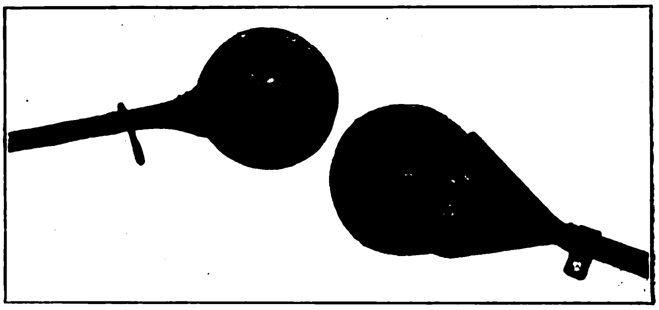


Photo by Mentz, San Francisco
TROLLEY HARP BEFORE AND AFTER APPLICATION OF ANTI-FOULING GUARD

The shield is made of two pieces of No. 12 sheet steel shaped on the dies shown in the illustration and fastened on each side of the trolley harp. The two sections are then welded together.

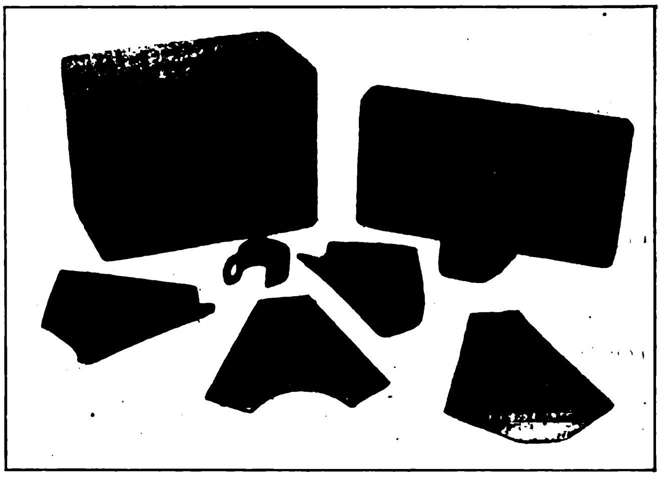


Photo by Mentz, San Francisco
SHAPING DIES AND COMPONENT PARTS OF ANTI-FOULING GUARD

Cost Data on Special Work Renewals—I

In Various Articles Published in Engineering Periodicals It Is Very Striking to Note the Absence of Any General Information Showing the Cost of Renewing Special Work

By M. BERNARD
Assistant Engineer Way & Structures Department,
Brooklyn (N. Y.) Rapid Transit System

IT is evident that this subject has not received the consideration it deserves, since the cost of special work maintenance amounts to one-third at least of total track maintenance, exclusive of paving. The writer, therefore, with the hope of stimulating the publication of similar costs from other properties, has compiled a large number of cost data concerning the renewal of the various layouts of special work and plain curves. These data are the average of a large number of actual jobs. The costs include pavement restoration except where there is a 2-ft. strip of asphalt outside the outer rails, in which case the restoration of this strip is not included. The data on two kinds of plain curves are given below, and the remaining costs will be given in succeeding issues.

In order that these data may be of maximum use, an explanation of the terms used in the compilation follows: By "light traffic" is meant either the divergence of cars during progress of work, or a traffic of not more than 150 cars per day of twenty-four hours. "Average traffic" denotes the passage of about 325 cars per day of twenty-four hours, and "heavy traffic" that of 750 or more.

By "labor" is meant the labor cost of tearing out the old paving and special work and installing the new at the location where the work is done. "Handling" signifies the cost of loading the necessary materials at the various storage yards as well as the unloading of same at the place of renewal. It also includes the cost of transportation and the cost of removal of old or left-over material. Since the transportation is done by a subsidiary company, which adds profit and overhead expense to the net cost, this item may differ considerably from that obtained on other railways. Under "miscellaneous" are included the expense of city inspectors, expense incurred when portable crossovers are used for divergence of cars during renewal, watchmen's wages, and incidental engineering expense. The total of these three items—labor, handling and miscellaneous—therefore includes everything except the cost of materials.

On account of the unsettled labor conditions prevailing since the beginning of the war, the costs given are based on pre-war wages, the average track labor on which these costs are based being taken at 20 cents per hour.

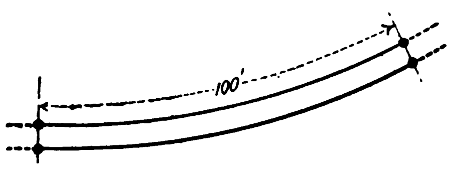


Fig. 1—Single Track Plain Curve (flat)

Length—100 ft. single track
Construction removed—9-in. girder rail—8-in. granite on sand
New construction—7-in. girder rail—5-in. granite on concrete
Pavement outside of track—Granite on concrete

	Light Traffic	Average Traffic	Heavy Traffic
Labor	$144.00	$175.00	$195.00
Handling	75.00	90.00	100.00
Miscellaneous	28.00	35.00	40.00
Total (except materials)	$247.00	$300.00	$335.00
Cost per single track foot	2.47	3.00	3.35

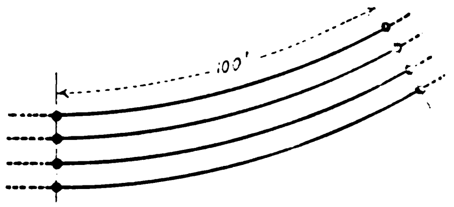


Fig. 2—Double Track Plain Curve (flat)

Length—100 ft. double track
Construction removed—9 in. girder rail—8-in. granite on sand
New construction—7-in. girder rail—5-in. granite on concrete
Pavement outside of track—Granite on concrete

	Light Traffic	Average Traffic	Heavy Traffic
Labor	$290.00	$360.00	$405.00
Handling	160.00	190.00	225.00
Miscellaneous	60.00	75.00	85.00
Total (except materials)	$510.00	$625.00	$715.00
Cost per single track foot	2.55	3.13	3.58

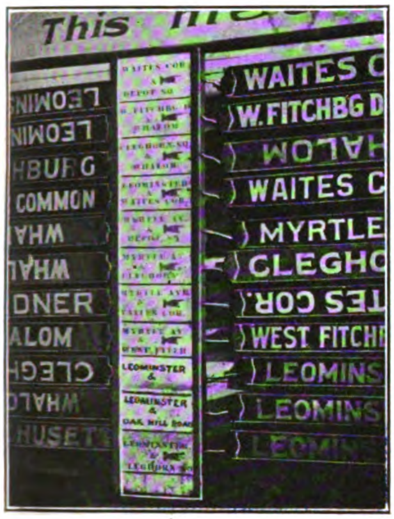
ADDITIONAL COST DATA TO BE GIVEN IN SUCCEEDING ISSUES

Compact Rack with Horizontal Classification and Storage of Car Signs

BY W. P. LISH

Master Mechanic Fitchburg & Leominster Street Railway, Fitchburg, Mass.

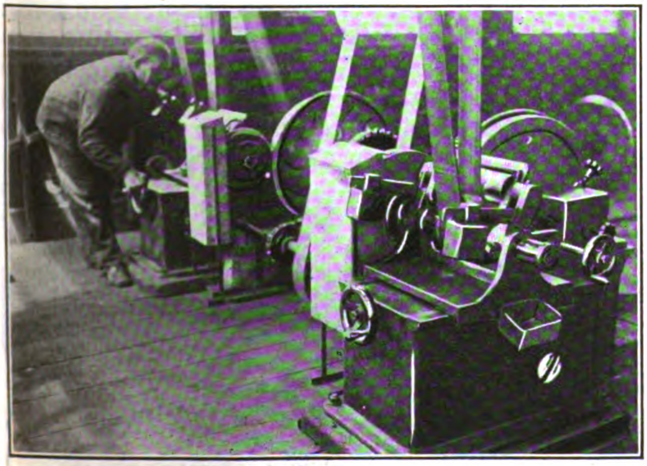
Six hundred and sixteen car signs can be stored in a space but 15 ft. long and 5 ft. high, at the main carhouse of this road, by the use of the rack shown in part in the accompanying illustration. The signs are classified by horizontal sets of guide signs about 5 in. x 9 in. in size, mounted at the left-hand side of each section of the vertical storage panels as shown. Fourteen signs of a particular designation may be stored in each compartment, the latter being formed by ⅜-in. iron rods, bent as shown in the illustration and attached to a wooden frame of 2-in. x 1¼-in. members. Four vertical groups of signs suffice for the company's service at this point. As this rack is different in many respects from the one described in the issue of the ELECTRIC RAILWAY JOURNAL for March 31, 1917, page 607, I thought it would no doubt be of interest to your readers.



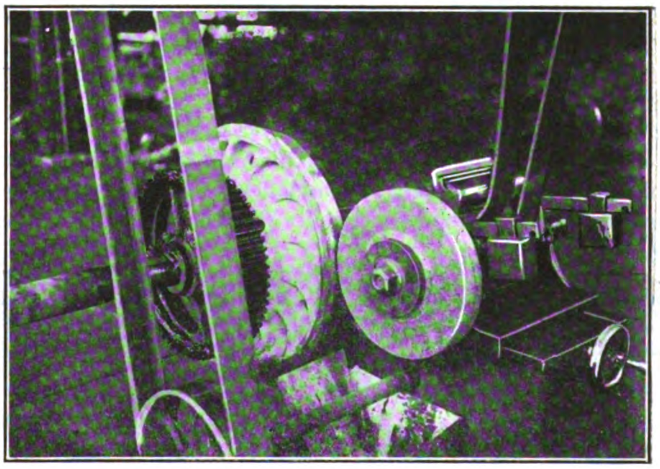
RACK WHICH FACILITATES HANDLING OF CAR SIGNS IN FITCHBURG

Wheel Grinding Made a Pleasure by Use of Dust Guards

Until recently one of the most unwelcome jobs in the shops of the San Francisco-Oakland Terminal Railways was the grinding of chilled-iron wheels. The emery dust had a most disagreeable way of impairing the cleanliness and health of the operator besides messing up the surroundings. All of this has now been overcome by equipping the grinding machine with an exhaust box by which all dust is led to a barrel of water just outside the shop wall. The paste formed by the water and emery is used for filling in low spots around the yards.



WHEEL GRINDING MACHINE EQUIPPED WITH DUST GUARDS FOR PROTECTION OF OPERATOR



WHEEL GRINDING MACHINE WITH DUST GUARD REMOVED TO SHOW FLUE WHICH CARRIES AWAY IRON DUST

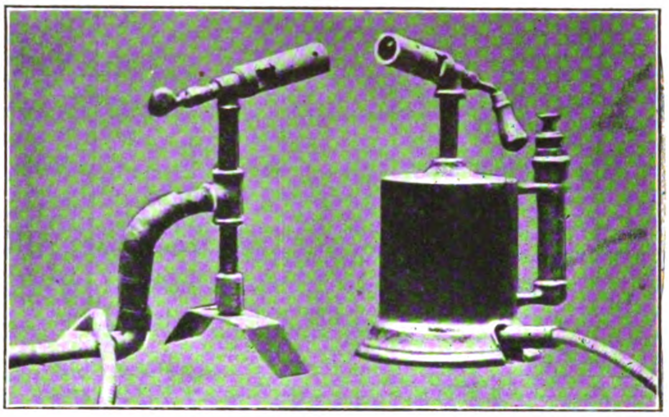
Gas Versus Gasoline Torches for Paint Removal

BY HENRY MEYER

Master Mechanic Beaver Valley Traction Company, New Brighton, Pa.

In our shops we have found that gas torches make a better means of burning off old paint from car bodies than the commonly-used gasoline blow torches.

The accompanying illustration shows a home-made gas burner and a gasoline torch that has been converted for use with illuminating gas instead of gasoline. The gas connections for these burners are overhead, the tubing is light, and consequently the operator states that where formerly his left arm used to tire in cleaning paint from the car body on account of the weight of the gasoline in addition to the weight of the blow torch, now his right arm, which he uses for scraping, tires first because there is no stopping to pump up the air pressure. We have also found these gas burners to be desirable both from the standpoint of the time saved in cleaning off the paint and in the reduction of the fire risk in the company's shops.



TWO TYPES OF HOME-MADE GAS BURNERS USED BY THE BEAVER VALLEY TRACTION COMPANY

Overhead Kinks from Cleveland

Threadless Pull-Over Casting, Spring for Trolley-Trough Hangers, Glass-Insert Section Insulators and Other Practical Devices

The first instállment of the Cleveland overhead kinks was published in the July 14 issue of the ELECTRIC RAILWAY JOURNAL, page 64. The second and final installment, given below, describes several more ingenious pieces of overhead equipment which have been devised by James Scott, superintendent of overhead.

THREADLESS PULL-OVER

A pull-over casting so designed that it may be installed without the use of any tool other than a hammer is shown in Fig. 1. It may be used with an ear having a specially designed shank, or the ordinary pull-over ear can be adapted for use with this pull-over casting by screwing a plug into the shank. A 13/16-in. hole in the pull-over slips over the shank of the ear and a small steel wedge, 2½ in. long, is driven into the square hole provided in the casting for this purpose. The wedge, when driven in, locks with the groove in the shank of the ear and holds it permanently in place. The wedge is given a pitch of ¼ in. in 2½ in. This pull-over greatly facilitates replacements under heavy traffic conditions since the ear does not have to be removed and it is only a moment's work to drive in the wedge.

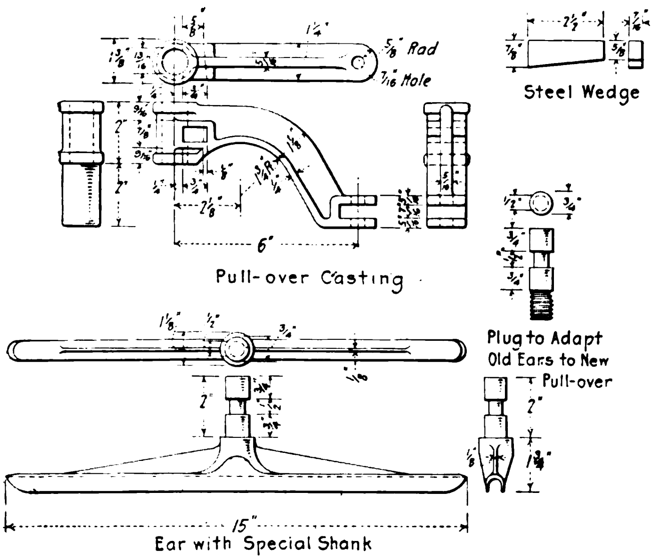


FIG. 1—DETAILS OF THREADLESS PULL-OVER CASTING AND EAR WITH SPECIAL SHANK

SPRING HANGER FOR TROLLEY TROUGHS

A special hanger designed to eliminate the constant flashing which is seen at viaducts or wherever there is rigid overhead construction is shown in Fig. 2. The hanger consists of an ordinary ear attached to a long steel spring which is fastened rigidly at one end by means of two insulated bolts through the trolley trough, and supported at the opposite end by a single bolt on which it is free to slide. As the trolley wheel approaches this ear the spring provides some flexibility and prevents the recoil of the trolley wheel which results when the wheel strikes a perfectly rigid support. Some freedom of action vertically is also given by the ½-in. space provided between the bolt head and the fiber washer next to the trough.

SCREW EAR DESIGNED FOR PERFECT ALIGNMENT

An ear which will permit of an extra one-quarter or one-half turn in order to make it come into perfect alignment with the trolley wire is shown in Fig. 3. In the ordinary threaded ear, it is necessary to either use spring washers or frequently to leave the ear slightly loose in its threaded connection with the hanger in order that it may be straight with the wire. In this new ear the extra quarter or half turn is gained by the construction at the top of the shank. Two schemes are used for accomplishing this purpose. In one case the inside of the shank is beveled off above the thread to give a very thin sharp edge at the top. In the other case a series of sharp teeth are cut in the face of the shank. In either case the uppermost edges which come in contact with the hanger first will turn over slightly as the ear is screwed tight, thus allowing the ear to be tightened into perfect alignment with the wire.

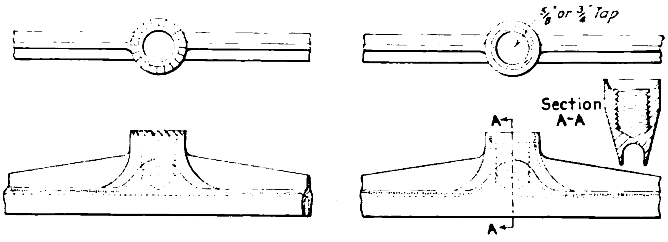


FIG. 3—TWO TYPES OF TROLLEY EARS DESIGNED TO GIVE PROPER ALIGNMENT WITH THE TROLLEY WIRE

GLASS-INSERT SECTION INSULATOR

The substitution of a glass insert for the usual fiber section is the principal feature of a new design section insulator shown in Fig. 4. The method of fastening this glass section to the hickory block by means of clips bolted to the block is clearly shown in the drawing. The glass is cast with special holes for fastening purposes. The approaches on this section insulator are made of brass castings, which are also bolted to the hickory block insulating section. The purpose of the glass insert, which is renewable separately from the remainder of the insulator, is to prolong the life of the sectionalizing insulator. The fiber block which is ordi-

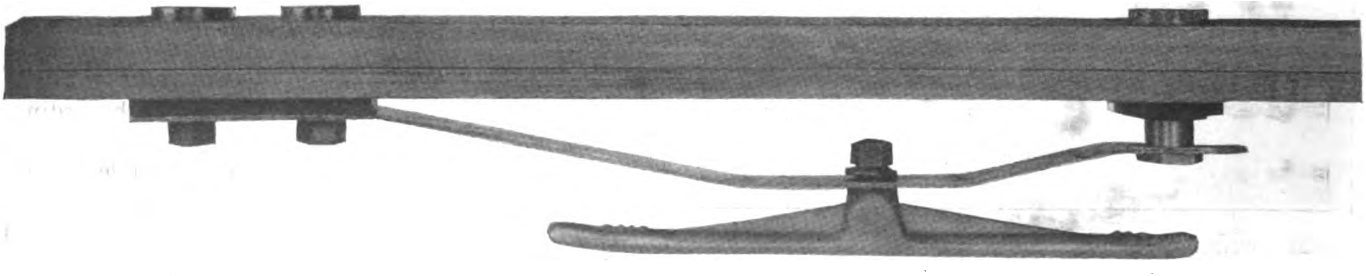


FIG. 2—TROLLEY TROUGH HANGER MOUNTED ON SPRING TO OBTAIN FLEXIBILITY AND ELIMINATE FLASHING

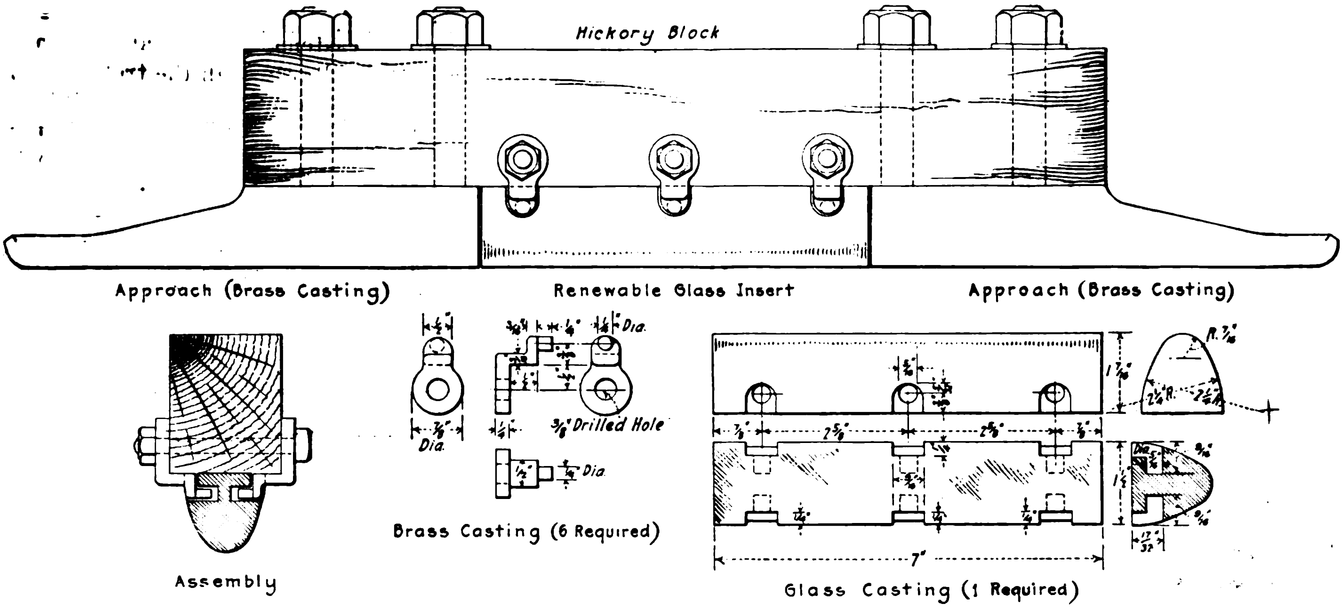


FIG. 4—SECTION INSULATOR WITH GLASS INSERT MOUNTED BETWEEN BRASS APPROACHES

narily used for this purpose is rapidly burned away by the arc which is pulled from the brass casting as the trolley wheel leaves it with the controller in the "on" position. The life of the glass insert is much longer since it does not burn away. Little trouble has been experienced with breakage of the glass.

A number of the special fittings described above have been manufactured for Mr. Scott by the Drew Electric & Manufacturing Company, Indianapolis, Ind.

CONCRETE PAINT FOR PROTECTING SPAN WIRE

Mr. Scott has been experimenting with the use of concrete paint on span wire to prevent rusting. This concrete paint is a thin mixture of very rich concrete and is applied with a brush so that it fills up the space between the strands of the span wire. Span wire which was thus protected more than a year ago and has received no attention since shows no signs whatever of corrosion, nor has the concrete paint fallen off the wire as the result of the vibration.

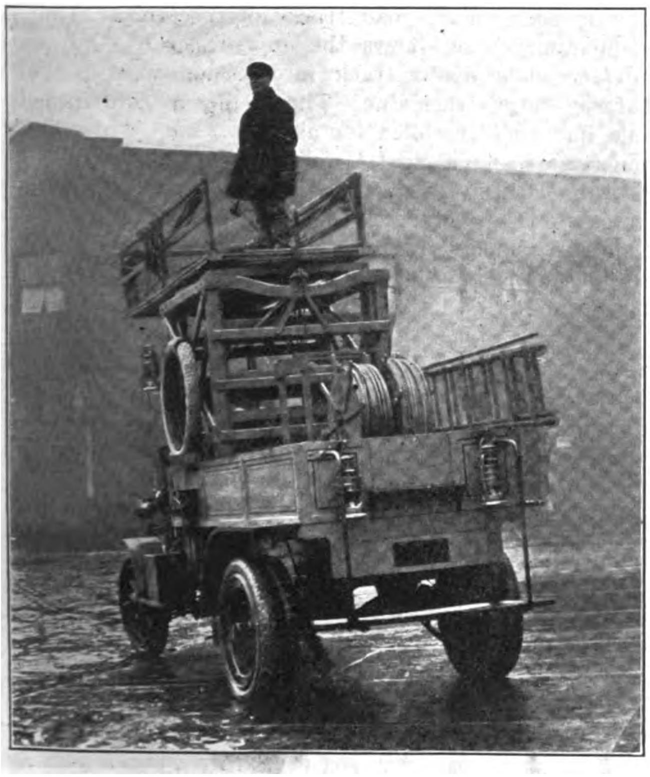


FIG. 5—TYPICAL LINE TRUCK OF CLEVELAND RAILWAY

LINE TRUCKS

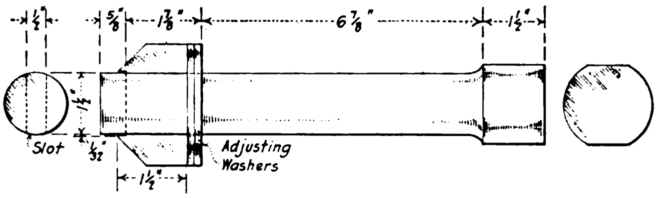
The type of line trucks used by the Cleveland Railway is shown in Fig. 5. These trucks are manufactured by the Detroit-Wyandotte Motor Car Company of Wyandotte, Mich., and they are so equipped that two men can handle practically any overhead job which may arise. At night frequently the entire work, including driving of the truck and repair of overhead, is done by one man. The tower platform may be swung around to extend in the opposite direction from that shown. The end of a new section of wire can be taken from the reel in the back end and clamped to the trolley wire, and the truck can be run along the track and a new section of trolley wire strung with a very short delay to traffic. The two reels in the truck are of capacity sufficient to carry 1600 ft. of span wire and an equal amount of No. 00 trolley wire. Their location at the rear of the truck facilitates their use. A brake provided on each makes it possible to use them for holding the wire taut while fastening it.

FEEDER CABLE DIVIDED AT STREET CROSSING

A simple means of dividing the load into two parts where it was necessary to carry a 1,000,000-circ. mil. cable across the street was accomplished as follows: At the next to the last pole on the first side of the street the 1,000,000-circ. mil. cable was connected to two 500,000-circ. mil. cables. One of these was spanned across the street at this point and the other was carried on the next pole and then across the street. At this point the two were joined in the 1,000,000-circ. mil. cable again. This construction made it possible to use the ordinary concrete poles at the corner without any additional reinforcing, while if the 1,000,000-circ. mil. cable had been carried across at one point it would have been necessary to put in some very heavy construction, as there was no space in which to guy the corner pole.

Pin Substituted for Equalizer Spring Bolt

The Elmira Water, Light & Railroad Company has in service some Brill 27-GE-1 trucks on which trouble was experienced because of the rapid rusting of the nut on the equalizer spring bolt. The thread of the bolt became badly worn too so that adjustment was impossible.



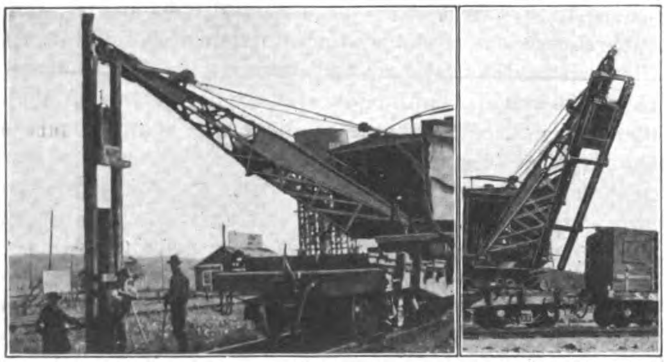
PIN AND WEDGE USED IN PLACE OF EQUALIZR SPRING BOLT

To remedy this the pin and wedge shown in the illustration were substituted for the bolt and nut. Adjustment is now made by means of shims or washers between the wedge and the bolster spring seat rocker.

Ditcher Used as a Pile Driver by Western Railway

A ditcher has been used successfully by the Spokane & Inland Empire Railroad to drive stub poles and piles. The pile-driving attachment, which was made in the company's shops at a total cost of $34.09, consisted of 8-in. x 8-in. x 18-ft. leads, braced with two ½-in. x 6-in. wrought-iron bands and connected across the top with a 1-in. x 6-in. iron strap. This was suspended from the end of the ditcher boom by an eyebolt, which was attached to two pieces of ½-in. angle iron bolted on either side of the end of the boom. The line for the hammer, which weighed 2145 lb., ran over a sheave, which was also supported by the two angles. When en route the lower end of the leads was pulled in by a cable, so that the pile-driving attachment lay on the under side and nearly parallel with the boom, the hammer being held in place at the upper end. Views of the apparatus in the operating and traveling positions are shown below.

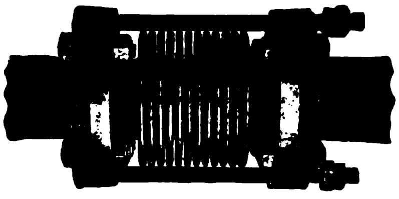
With this arrangement it is possible to drive piles or stub poles on either side of a double-track line without having to transfer the ditcher from one track to the other. Stubs can be placed on either side, in front of, or behind a pole, and this at less than 25 per cent of the former cost. The ditcher used was made by the American Hoist & Derrick Company of St. Paul, Minn.



DRIVING A PILE WITH A DITCHER—PILE DRIVER IN POSITION SO THAT THE DITCHER CAN BE MOVED

One-Piece Expansion Joint

Taking up pipe expansion by means of loops and U-bends requires considerable extra space as well as extensive construction, while stuffing boxes and long sweep joints require frequent attention and repacking to avoid leaking. These difficulties are avoided in the use of the one-piece expansion joint illustrated herewith, which is the product of the R. D. Nuttall Company, Pittsburgh, Pa.

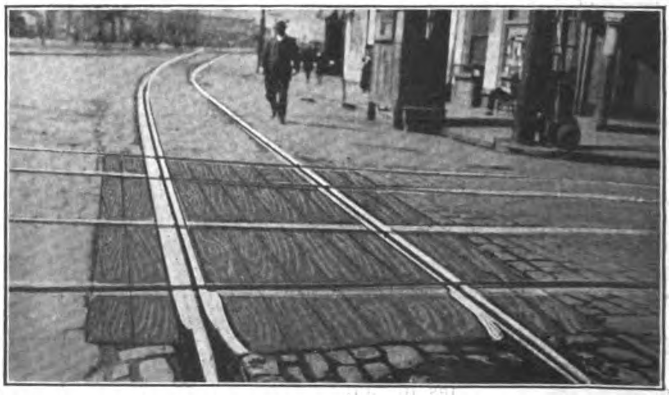


EXPANSION JOINT OF NEW DESIGN

The corrugations are machined from the solid blank instead of being molded or bent into shape, and while the thin steel walls require careful machining, the result is a strong non-leaking joint, which is readily responsive to small amounts of expansion or contraction in the pipe line. The action in the joint is the same as that of an accordion or bellows. This joint requires but a small amount of additional space for installation, and as the expansion in the pipe is taken up by the corrugations, there are no stuffing boxes to be taken care of.

Paving Track Intersection with Old Ties

The New Orleans Railway & Light Company, of which M. V. Houlard is superintendent of tracks, has had excellent results from the use of old creosoted ties for paving some steam-road track intersections. The accompanying view shows the appearance of the street surface at a double-track intersection with a steam railway single-track line. The paving at this intersection had been installed for about a year. This paving consists of sound old ties adzed to fit the back of the rails and closely fitted into the steel work. This form of paving for intersections has the advantages of low first cost, smooth surface, comparatively long life, and the tight blocking of the 6-in. wooden floor serves to maintain the position of the parts of the special work.



OLD CREOSOTED TIES USED FOR PAVING AT A STEAM-ROAD AND ELECTRIC RAILWAY INTERSECTION IN NEW ORLEANS

News of Electric Railways

Traffic and Transportation

Financial and Corporate **Personal Mention** **Construction News**

Strikes in Tacoma and Seattle

Men in Tacoma Go Out, Followed by Seattle Men, Who Were Engaged in Arbitrating Their Differences

Three hundred members of the union organized recently among the trainmen of the Tacoma Railway & Power Company, Tacoma, Wash., went on strike on July 16 when L. H. Bean, manager of the company, refused to recognize the union. At midnight on July 16 about 1800 employees of the Puget Sound Traction, Light & Power Company, Seattle, went on a sympathetic strike, following the refusal of A. W. Leonard, president of the Seattle company, to intervene in the Tacoma situation and the refusal of L. H. Bean, manager of the Tacoma company, to reinstate seven employees alleged to have been dismissed because of their activities in organizing the local men at Tacoma.

The transportation systems in both cities were paralyzed on July 17. Every available vehicle was brought into use. Peaceful pickets were stationed by the employees at all points of advantage. The police were detailed for the protection of the company properties. There was no violence up to the night of July 17. Interurban trains between Seattle, Tacoma, Everett and way points were run as usual. The municipal line of the city of Tacoma serving tide flats industries, operated by the Tacoma company under lease, and the car line to the army cantonment at American Lake were both completely tied up. The business men and the civic bodies of the city brought pressure to bear at once on the officials of the companies to have them accede to the requests of employees. The settlement of the strike in both cities hinges largely on recognition of the union. The Seattle strike affects, in addition to the platform men, the members of eleven affiliated unions including electricians, blacksmiths, engineers, carpenters, painters and linemen.

COURT DIRECTS SERVICE BE RESUMED

No cars were operated in Seattle up to July 20. An alternative writ directing the Puget Sound Traction, Light & Power Company to resume service in Seattle was signed on July 19 by Judge Boyd J. Talman of the King County Superior Court. This writ was made returnable on July 23. The petition was presented to Judge Talman by Corporation Counsel Hugh M. Caldwell of the city. It asked that in the event the company failed to operate cars the men be punished for contempt of court and a receiver be appointed to take charge of and operate the lines subject to the order of the court, until the company established that it could operate its lines.

The company gave the employees until July 20 to apply for reinstatement without loss of rank. President Leonard of the company stated that service would be resumed in Seattle at once if adequate protection was guaranteed by the city. Mayor Gill promised protection by threatening the arrest of any strike breakers brought in by the company. Company officials stated that fifty former employees had applied for reinstatement. This was denied by the officers of the unions.

Meanwhile the question of transportation has become intensely acute. As an emergency measure the court has accordingly granted temporary permission for the operation of jitneys. Motor trucks and private cars were also pressed into service to handle any surplus of passengers beyond the ability of the jitneys to care for.

It was asserted on July 19 that the employees of the Stone & Webster properties in Bellingham and Everett had asked the Seattle union to assist in organizing the men in those cities. It was considered likely at that time that the strike would be extended to those cities.

Ten cars were being operated under guard in Tacoma on July 20. No violence was reported from that city.

Until the strike of the Tacoma employees, the outlook in Seattle was that the differences between the Seattle company and the employees would be settled by arbitration. Two members of the arbitration board had been appointed. Later the men declared in favor of settling as many questions as possible by conciliation, and on this account the third arbitrator had not yet been chosen.

SEATTLE ARBITRATION

Negotiations started long before the strike of July 16 for a settlement of the differences previously existing between the Puget Sound Traction, Light & Power Company, Seattle, and its employees were well under way on July 13 when the material intended for use in this issue of the ELECTRIC RAILWAY JOURNAL was dispatched by mail from Seattle by the resident correspondent of the paper in that city. At a recent meeting between the committee representing the trainmen and President Leonard of the company revised requests were presented by the employees. The statement was made that the demands of the trainmen had not been changed, but that the situation had been altered by all the other organized crafts working for the company making an effort to effect a blanket agreement with the company providing for increased wages and an eight-hour day and closed shop conditions which implied recognition of the Amalgamated Association. The members of the committees were endeavoring to agree on as many points as possible so as to reduce the work of the arbitration board, as stated in the account of the strike in Seattle, and so overcome, if possible, the need for calling in the third arbitrator.

PRESIDENT LEONARD ON SEATTLE SITUATION

A. W. Leonard, president of the company, in speaking of the situation on July 13 was reported to have said:

"We depend on arbitration. The conferences and conciliation meetings by the company's officers with representatives of the employees can only pave the way for the final arbitration to which we have agreed of the formal demands made by the trainmen and filed on June 23. Those demands were made specific. Arbitration of wages and working conditions was agreed to, and two members of the board of arbitration have been named, James A. Duncan by the employees, and C. J. Franklin by the company. On July 3 an additional list of dmands from employees of many other departments was presented. The company has recognized the changed living conditions by announcing three voluntary wage advances to trainmen in a period of three months, and a 40 per cent reduction in the term of service required to reach the maximum wage, meaning an increase of 14 per cent to trainmen at an annual cost of $140,000 to the company. All of these concessions were made prior to the presentation of any formal demand upon the part of the employees. They were made in the interest of the public, of better service to the public, by making employment more desirable, that the company might be assured an adequate and dependable supply of efficient labor with which to maintain that high standard of service which has always been our aim and purpose."

WAGES PAID IN TACOMA

The new wage scale which went into effect in Tacoma on July 1 was reviewed in the ELECTRIC RAILWAY JOURNAL of July 7, page 32. The second increase was granted on June 1. Subsequently the company announced a still further increase in wages effective on July 15 to the following scale: First six months, 27 cents; second six months, 28 cents; second year, 29 cents; third year, 30 cents; fourth year, 31 cents; fifth year, 32 cents; sixth year and thereafter, 34 cents.

St. Louis Ordinance Put Over

Further Conferences with Company Decided Upon by City Officials Before Measure Goes to Aldermen

The plan miscarried which had been proposed for the introduction into the Board of Aldermen of St. Louis, Mo., on July 13 of the ordinance for the settlement by compromise of the questions at issue between the city and the United Railways under the general terms outlined in the ELECTRIC RAILWAY JOURNAL of July 14, page 71. Postponement of the introduction of the measure was brought about by Mayor Kiel. He is said now to believe that serious objection will be raised to the provisions of the new grant to the company under which the city becomes a partner of the company in so far as the measure does not guarantee the payment of the amount of the mill and the occupational taxes. Meanwhile the Board of Aldermen has voted to adjourn from July 27 to September. So far as formal consideration of the franchise matter by the elected representatives of the city is concerned this would seem to put the matter over until the fall.

Louis P. Aloe, president of the Board of Aldermen and ex officio member of the Board of Estimate and Apportionment, called attention, at a meeting of that body on July 13, to the fact that the city is not guaranteed a specific revenue under the draft agreed upon by the city and the railway. Mr. Aloe declared that this omission was fatal to the success of the bill, and Mayor Kiel and Mr. Nolte thereupon started an inquiry into the situation. City Counselor Danes and C. E. Smith, engineer for the city, were summoned. The Mayor decided to take the matter up with the officials of the company and announced that he would call another meeting of the conference for the night of July 16. When it was found advisable to hold up the bill to take up the question of insertion of a clause guaranteeing the payment of $485,000 to the city annually, the printing of the bill was suspended. The officials had expected to distribute copies of the bill, but it was decided to give out no draft of the measure until it is finally perfected.

ALTERNATIVE PROPOSAL SUGGESTED

The joint conference in the office of the Mayor on the evening of July 16 between the officials of the city and the representatives of the company resulted in throwing the whole street railway franchise situation wide open again. An alternative ordinance is now proposed providing an entirely new plan of settlement of the franchise and mill tax problems and eliminating the city as a partner of the company. In brief, the proposal now is to validate the company's existing franchise to 1948, require the company to pay to the city 3 per cent of its gross receipts annually, permit the company to pay the accrued mill tax of $2.300,000 in ten annual payments and require the company to make many extensions and betterments. It was announced that an effort would be made to have the Aldermen consider both the new ordinance and the city partnership plan on July 20. The public will be permitted to express its choice and suggest amendments or changes. It is stated unofficially that the plan advanced on July 16 would not make necessary a financial readjustment of the company, as the city would not under the terms of the grant be interested as a partner in the financial or operating problem of the company. It is said that under the non-partnership plan the revenue to the city from the company would be decreased about $100,000 a year at present, but that later it would be in excess of the present payments. It is understood that at the meeting on July 16 the company refused to guarantee that under the city partnership plan the city's share of the profits would be at least $485,000 a year.

The Civic League of St. Louis is opposed to the proposed settlement with the company as is also organized labor. A committee representing the Civic League has declared that the proposed arrangement would be detrimental to the municipality and the company. The chairman of the committee which announced its dissent is Charles W. Bates, former city counselor. There are also on this committee Joseph L. Hornsby, former chairman of the Public Service Commission of St. Louis, which made an appraisal of the property of the company in 1912, and William F. Woerner, author of the mill tax ordinance and former member of the Public Service Commission of Missouri. They cite nine counts in their opposition to the measure. Attorney-General Frank W. McAllister has announced that he had been asked, as a state official, to investigate the ordinance by which the city will become a partner of the company.

PRESIDENT MORTIMER REVIEWS SITUATION

James D. Mortimer, president of the North American Company, issued the following statement concerning the United Railways:

"The settlement of the mill tax and franchise difficulties was first undertaken by the United Railways in 1911. An ordinance providing for a lump sum settlement of accrued mill tax, a reduction in the future tax and a confirmation of the franchise rights until 1948 was recommended by a special committee of the St. Louis Municipal Assembly in 1911, but failed of passage before the main body. Since that time the St. Louis public has gradually come to believe that the mill tax and franchise matters should be settled, and at the last municipal election the successful candidates for office openly avowed their intention of promptly settling all disputes between the city and the company.

"The city officials have taken the lead in the negotiations now in progress and have drafted a form of franchise ordinance somewhat similar to the so-called Kansas City plan. It provides for a new fifty-year franchise, a joint board of control, and a division of the surplus earnings in excess of agreed percentages on the initial utility capital, and on all future accretions. If an ordinance can be agreed to and is passed by the Board of Aldermen, the company proposes to offer this to all the security holders and ascertain if the necessary adjustments in the financial structure of the company can be made to comply with the terms of the ordinance. The initial utility capital will probably be fixed at $60,000,000 or $65,000,000 and the face amount of all outstanding securities will probably have to be reduced to a figure approaching a sum as finally agreed upon.

"There are now outstanding on the property $11,350,000 face amount of underlying bonds, $9,800,000 of St. Louis Transit 5's due in 1924, $30,350,000 of general mortgage 4's due 1934, and $4,500,000 of Suburban Railway general 5's due 1923, making a total in round figures of $56,000,000 face amount. There are outstanding in the hands of the public $16,379,900 par value of 5 per cent cumulative preferred stock and $24,913,800 par value of common stock, a total of $41,293,700. The total capitalization is accordingly about $97,000,000. If the finances of the company are adjusted so that the face amount of outstanding securities approximates the $60,000,000 or $65,000,000 of initial utility capital proposed by the city in the present franchise negotiations, there will have to be a reduction of $32,000,000 to $35,000,000 in the face amount of securities at present outstanding.

"The St. Louis Transit Company 5's, the United Railways general mortgage 4's, and the Suburban Railway 5's, are selling at substantial discounts under par. All these mortgages are closed except in so far as they may be used for the retirement of underlying issues and afford no means for financing capital requirements. All such money during the last ten years has been provided from the earnings of the company.

"Should the franchise negotiations now in progress result in arrangements with the city which the company can properly recommend to its security holders, there will have to be adjustments in the amount of junior bond issues outstanding and in the amounts of preferred and common stock. That it will be suggested to the holders of general mortgage 4's that the face amount of their securities be reduced has been sensed for some time past and has been responsible for the formation of the committee, announcement of which was made on July 9. It is reported that committees to represent the other junior bond issues have either been formed or are in process of formation.

"The preferred shareholders have a committee, but it has not yet asked for the deposit of stock. The North American Company is interested only in the common stock, of which it owns about 72 per cent; it will ask other holders of common stock to join with it in any plans for reorganization which may be promulgated."

Massachusetts Investigation Opened

Special Commission Which Is to Report to the Legislature of 1918 Begins Its Work

The street railway investigation commission created by Chap. 129, Massachusetts Resolves, 1917, held its first public hearing on July 10 at Boston. Senator J. W. Martin, Jr., presided. The commission is required to study the general problems of street railway administration and financing and report to the 1918 Legislature in January with special reference to improving the economic condition and usefulness of the companies now in operation in the State. Among counsel who registered were Bentley W. Warren, for the Massachusetts Street Railway Association and the New England Street Railway Club; James F. Jackson, for the Bay State Street Railway, and Robert H. Holt for the Boston Elevated Railway.

COUNSEL FOR COMPANY STATES CASE

A preliminary statement by Mr. Warren emphasized the freedom of the Massachusetts lines from over-capitalization and the desire of the companies to furnish the fullest possible information to the commission. He pointed out that the present financial condition of the roads was almost a matter of common knowledge. As an instance of the need of improved credit conditions the speaker said that the West End Street Railway (the Boston surface lines) for many years regarded as a most conservative trustees' investment has recently been forced to issue bonds at 6 per cent interest. The Springfield Street Railway, for many years considered one of the strongest companies in the State, was now before the Public Service Commission seeking the right to issue 6 per cent bonds. Its last issue of bonds was fifteen years ago, and a 4 per cent return then easily attracted a market. Boston Elevated Railway stock, representing a paid-in investment of $110 per share, was selling for $60, and the company was near the end of its financial resources. These conditions meant a complete cessation of development and also a steady deterioration of plant. Higher charges for the service were absolutely necessary. The investing public was shunning street railways because it felt that the State was not interested in seeing that these public utilities were enabled to earn a proper return.

Mr. Jackson advised the commission that the Bay State company was opposed to the present system of street railway taxation in Massachusetts with reference to the excise and commutation taxes. Evidence bearing upon electric railway freight and express development and possibilities will also be presented later. Mr. Jackson, who was formerly chairman of the Massachusetts Railroad Commission, declared that in general the securities of the Massachusetts railways stood as properly representative of the actual investment.

In a communication to the commission suggesting various lines of inquiry into street railway management and administrative methods, former Senator R. M. Washburn intimated that the commission might find itself, after the investigation, to be the first Massachusetts tribunal unanimously to advocate as perhaps the proper remedy for present conditions a 6, 7 or 8-cent fare. This meant courage and perhaps political suicide. The hearing was adjourned to July 24 at Boston.

Strike in Lima

Electric railway traffic at Lima, Ohio, has been at a standstill since July 11, when fifty motormen and conductors on the local line of the Ohio Electric Railway went out on strike. The men demanded the abolishment of split runs and a reduction of the workday to nine hours, together with an increase in wages from 24 to 28 cents and from 25 to 30 cents an hour. H. G. Gilpin, general manager, agreed to increase the maximum wages, but said he could make no change in the minimum figure. He also stated that improvements would be made in working conditions. The men refused to accept his offer.

The company attempted to operate cars on July 16. The strikers attacked the cars. The attempt to resume service was finally given up and the cars were run back to the carhouse.

Four Extensions to Be Built in Cincinnati

At a special meeting on July 13 the Council of Cincinnati, Ohio, ordered extensions to four of the Cincinnati Traction Company's lines. Their construction will mean the expenditure of upward of $250,000 before the end of the year.

Walter A. Draper, vice-president of the Cincinnati Traction Company, objected to the extension of the North Norwood line at this time, because of the excessive cost involved, but was unable to convince Council on this point. He said the extension would necessitate the construction of a new substation at a cost of $37,000 and the purchase of power from the Union Gas & Electric Company, or the location of a complete substation equipment and the construction of a new transmission line from the Pendleton power station to Blair Avenue at an estimated cost of $101,000. He declared that to the cost of either project must be added $15,000 for additional cars and an annual operating expense of $37,960.

At a meeting of the Federated Improvement Association on July 12, P. A. Pursell, president of the California Improvement Association, made at attack on the Cincinnati Traction Company because of the terms made to interurban lines for the use of its tracks and power. He declared the company received 3 cents out of each 5-cent fare collected by the interurban lines and thus kept them out of the city. He said further that residents of California, which is now part of the city, are compelled to pay a 10-cent fare between that place and the business section of the city.

Railway a Political Issue

Cleveland Mayoralty Candidates Seek to Ride Into Public Favor on the Back of the Cleveland Railway

Mayor Harry L. Davis of Cleveland, Ohio, who is a candidate for re-election on the Republican ticket, insists that everything possible should be done to retain the 3-cent fare, although the increased cost of materials and labor renders it more and more difficult to do so. He says that the company should exert every effort to overcome its present difficulties until the new substation in Cedar Avenue is completed. In his opinion the placing of this plant in operation will tend to keep the expenses down, as the new contract with the Cleveland Electric Illuminating Company for power will then become effective.

Edmund B. Haserodt, Democratic anti-organization candidate, charges that the Davis administration has pushed the street railway question into politics again by exerting every effort to maintain the 3-cent fare. He thinks that with municipal ownership an increase in the rate of fare could be avoided.

THREE-CENT FARE PROBABLY MUST GO

William A. Stinchcomb, Democratic organization candidate, thinks that it is impossible to preserve the 3-cent rate much longer. He says that the Tayler grant does not provide for 3-cent fare alone, but specifically states that the people shall be entitled to transportation at cost plus 6 per cent for dividends on the company's stock. Mr. Stinchcomb said that under Tom L. Johnson the 3-cent fare became a slogan, but workmen were then receiving $1.75 a day, whereas their wages are now $3 a day.

Hugh F. Taylor, president of the Union Wire & Iron Works, and an independent candidate for Mayor, says the 3-cent fare should be preserved. He is having a booklet prepared, reviewing the street railway situation.

John J. Stanley, president of the Cleveland Railway, told the newspaper men that the prospect of continuing the 3-cent rate would be better, if the daily load carried by the road could be more evenly distributed through the twenty-four hours of the day. If the present rate of fare is to continue, the earnings per car mile must be increased, or the cost of operation per mile must be reduced. Cost of operation can be kept down only by not improving the service as traffic increases, or by a better distribution of the load.

Strike on Syracuse Suburban Lines

Strikes of the employees of the Syracuse, Lake Shore & Northern Railway and the Syracuse & Northern Electric Railway, Inc., Syracuse, N. Y., were called on July 4. The matter of wages had previously been the subject of conferences between the managers of the roads and the representatives of the employees, and in spite of the fact that progress was being made toward a new working contract the union men on July 3 demanded an immediate raise in pay from 32 cents to 35 cents an hour under threat of calling out the men on the holiday. The company offered to arbitrate, but this proposal was rejected and the men quit work.

On July 6 there was a conference in Syracuse between T. C. Cherry and William J. Harvie, general managers of the railways, and members of the State Board of Mediation at which the managers placed before the board the formal statement made previously by them to the public. This statement said that the men were receiving the prevailing wage scale in the vicinity; that their wages had been raised twice within a year and five times within seven years. The financial status of the companies was also gone into and reference made to the appeal of the companies to the Public Service Commission for increases in fares.

At a meeting of the employees on July 9 it was decided to accept the proposal of the companies to arbitrate, which policy the railroads urged from the first. A board of two arbitrators was agreed upon. Service was resumed on July 11.

Carlton A. Chase was chosen to the board of arbitration to represent the railways and Erasmus A. Pellenz was selected to represent the men. They went into conference at once to see if the matter could not be settled by conciliation without the need of choosing an umpire. In this they succeeded, for on July 14 they handed down a decision awarding the men an advance of 1½ cents an hour. This means an increase from 32 to 33½ cents an hour. The original demand of the men was for 7 cents more an hour. The new wages will be written into the contracts to be executed in the near future. The advance in wages is retroactive to May 1.

Improving Seattle's Municipal Railway

Four Bills Passed by the City Council Looking Toward Important Changes in the Present System

The development of Seattle's municipal street railway system was provided for by the City Council recently by the passage of four bills, one authorizing the construction of an extension to Division "A" into Ballard; one providing for the connection of Divisions "A" and "C", by an elevated line across the south end of the city; one for the changing of the trolley system on Division "A" from a double to single wire, and the fourth appropriating funds from the city lighting department depreciation fund, as a temporary loan to the municipal street railway bond fund. On each of these four bills the Council received a minority report made by Councilmen R. H. Thomson and Will H. Hanna. The minority held that it would not indorse the railway extension until figures could be produced showing whether the proposed projects would pay. The final vote on the bills was seven to two, Messrs. Thomson and Hanna voting against the measures. The bill for the extension of the municipal railway into Ballard calls for the construction of a new line, beginning at the north end of the Lake Washington Canal bridge, and extending along Fifteenth Avenue N. W., and Leary Avenue. The bill provides an appropriation of $25,000 for this work. The sum of $5,000 is appropriated for the changing of the trolley system on Division "A."

The measure for the elevated line provides for the construction of a viaduct, with the necessary grades and approaches on Washington Street, Whatcom Avenue, Railroad Avenue and West Spokane Street. According to estimates of Councilman Oliver T. Erickson, father of the project, the construction alone, minus cost of condemnation proceedings, will approximate the expenditure of $330,000. Councilman Erickson introduced in Council an ordinance appropriating $25,000 from the city lighting department depreciation fund to the municipal street railway bond fund as a temporary loan. In the words of the ordinance, which was referred to the finance and city utilities committees, "there are insufficient money in the municipal street railway bond fund to carry on work heretofore authorized, and to be authorized in the improvement of the city street railway system, and in the purchase and installation of equipment necessary for the proper and economical operation of such system."

The Council has passed an ordinance appropriating $25,-000 for the purchase of eight one-man cars.

A. H. Dimock, city engineer, submitted to the Council a communication estimating the cost of constructing the proposed elevated line at $330,068, provided the construction is of wood. Mr. Dimock estimated the cost of extending Division "A" into Ballard at $27,320, with a number of provisos.

Toronto Strike Settled

Men Out Two Days and a Half—Temporary Increase of Six Cents Pending Arbitration

The strike of the employees of the Toronto (Ont.) Railway, which commenced at midnight on July 10, was settled on the night of July 12. Service was resumed at noon on July 13. The men, who had been receiving 26, 28 and 30 cents for first, second and third year's service respectively, asked the company last April for an increase of 10 cents all around and a closed shop. The men based their demands on the increase in the cost of living since the war began. The committee of the employees commenced negotiations with the company last April in anticipation of completing an arrangement before the agreement between the men and the company expired on June 16. The company voluntarily increased the men's wages last winter 2½ cents all around. It took under consideration the latest request of the men, and a number of conferences were held with the committee of the employees. Finally an offer was made by the company of an increase of 2 cents all around. This offer was considered by the men at a mass meeting on July 7, and was declined. By an almost unanimous vote the union then presented an ultimatum to the company in which it announced that if the company did not grant the request for an increase of 10 cents as demanded the men would go on strike on July 10. The company refused to better its concession beyond 2 cents all around, but offered to leave the wage and all other questions to a board of arbitration. This proposal was rejected by the men in mass meeting on July 10, and the strike commenced at midnight.

The Ontario government brought about a conference between the officials of the company and the men's union, and, as a result, the company made an offer of a temporary increase of 6 cents an hour all around, pending the submission of all matters in dispute to a board of conciliation under the Lemieux act. This offer was accepted on July 12 by the men, and service was resumed at noon on July 13.

In accordance with the settlement arrived at, the employees' committee selected as their representative on the board of conciliation, D. A. Carey, president of the Labor Temple Company and a well-known labor man throughout Canada. The directors of the railway, at a meeting on July 16, appointed Duncan McDonald, formerly manager of the Montreal Tramways, to represent the company. These two will follow the usual practice and select a third member. In case of their failure to agree upon a suitable person, the Minister of Labor has the power under the act to appoint the third member of the tribunal.

The following table shows how the new temporary wages compare with the old scales:

	1912, Old Agreement, Cents	Rate as Advanced January, 1917, Cents	Men's Demands, Cents	Wages Pending Arbitration, Cents
Motormen and conductors:				
First six months	23½	26	36	32
Second six months	25½	28	38	34
Second year and after	27½	30	40	36
Motor and truck repair men:				
First six months	23½	26	36	32
Second six months	25½	28	38	34
Second year and after	27½	30	40	36
Shedmen	23½	26	36	32
Foremen	27½	30	40	36
Assistants	22½	25	35	31

Cleveland Terminal Defeated

The subway and underground terminal ordinance of Mayor Davis of Cleveland, Ohio, was defeated by the City Council on the evening of July 16 by a vote of fifteen to ten. The street railway committee reported adversely on the ordinance. An analysis of its reasons brought out two points. One was that the ordinance would place the whole matter in the hands of an independent committee and the other that it would remove the work from political consideration.

The vote was strictly on party lines, although one Democrat, Councilman Damm, voted with the Republicans for the ordinance. He said he felt that he had no right to deny his constituents the right to an expression on the subway proposition.

Councilman Gahn announced that initiative petitions would be circulated at once and that the question would be placed before the voters at the November election, whether or not the majority of Councilmen thought well of it. The Mayor told the Council that this movement would have his support.

The ordinance called for the construction of a subway from the terminus of the underground bridge approach on Superior Avenue to the Public Square, an underground terminal station for all lines at the Public Square, a bond issue of $3,500,000 to pay for the construction and a street railway commission to supervise the work. The plan is similar to the one now in operation in Cincinnati. The whole issue would have been submitted to the voters at the fall election.

Preparing for Operation of New Dallas Franchises

With the understanding that the new franchises will soon become effective in Dallas, Tex., under which the electric railways are to be consolidated and operated under a service-at-cost franchise with city supervision, preparations are being made for the change. The franchise as adopted by the city provides for a supervisor of public utilities appointed by the Mayor. A. C. Scott, C. H. Chamberlain, Sloan Simpson and James M. Terrell have applied to the Mayor for the appointment.

New Interurban Line for Ohio

Electric Line Between Youngstown and Niles to Be Constructed at Once

Construction of a new interurban electric railway between Youngstown and Niles will be begun immediately by the Youngstown & Niles Railway. The contract for building the line, which will be 7½ miles in length, has been let to the Republic Railway & Light Company, Engineering Department, and this company has given sub-contracts to J W. Garland, Inc., for the grading, and to the S. R. Smyth Company, Inc., Pittsburgh, Pa. for the bridge and culvert work.

The line will be built on private right-of-way throughout and will traverse the center of the new town of McDonald, which is being built by the Carnegie Steel Company. The private way is of double-track width throughout, but the line will be single track at first with the one-track laid in double-track position so that the road may be double-tracked in part or throughout as the traffic demands.

The road will connect both in Youngstown and in Niles with the lines of the Mahoning & Shenango Railway & Light Company, which will operate the new line, supplying both equipment and power. Power will be fed in at both the Youngstown and Niles ends of the lines. Eighty-pound A. S. C. E. T-rail will be laid on oak ties with slag ballast. The overhead work will be of the bracket type carried on cedar poles and 4/0 trolley wire will be used. Track circuit block signals will be installed, each block being approximately 1 mile long.

The operating officials of the Mahoning & Shenango Railway & Light Company, which will operate the new line, are R. P. Stevens, president; R. T. Sullivan, general manager, and R. N. Graham, manager of railways.

Increase in Wages in San Francisco

The United Railroads, San Francisco, Cal., recently announced an increase in the wages of its platform men beginning July 1. The motormen and conductors are to have an increase of 1 and 2 cents an hour as follows:

Duration of Service	Present Pay Per Hour	Future Pay Per Hour
First six months	27 cents	29 cents
Second six months	28 cents	30 cents
Second year	29 cents	30 cents
Third year	30 cents	31 cents
Fourth year	31 cents	32 cents
Fifth year	32 cents	33 cents
Sixth year	33 cents	34 cents
Seventh year	34 cents	35 cents
Eighth year	35 cents	36 cents
Ninth year and over	36 cents	37 cents

Schenectady Labor Matters Settled.—It has been agreed in conference between officials of the Schenectady (N. Y.) Railway and the representatives of the employees that overtime work in all branches of the service will hereafter be paid for at the rate of time and a half. Nine hours will constitute a day's work.

Increase in Wages in Tampa.—An increase of 2 cents an hour was made on July 1 in the pay of all motormen and conductors employed by the Tampa (Fla.) Electric Company. The reason for the increase is the increasing cost of the necessities of life, according to the announcement of the company. The present scale of wages is from 21 to 28 cents an hour, according to class of service and length of time employed. The new wage scale is from 23 to 30 cents an hour.

Battery Car Operation Considered.—L. J. Cooper, president of the Waycross Savings & Trust Company, Waycross, Ga., who purchased the property of the Waycross Street & Suburban Railway under foreclosure recently, hopes to continue to operate the line. The company bought power in the past. It has been suggested now that the line be converted for storage battery car operation, the local power company having agreed to charge only 1 cent per kw.-hr. for energy after 11 p. m.

Pittsburgh Experts Named.—The Council of Pittsburgh, Pa., has affirmed resolutions providing for the retention of experts in connection with the contests of the city with the Pittsburgh Railways, Duquesne Light Company, Equitable Gas Company and other concerns. The following engineers will be engaged: For the electric railway investigation, Bion J. Arnold and staff of Chicago; for light rate investigation, F. W. Ballard & Company, Cleveland; C. W. Pike, Philadelphia; E. M. Bemis, Chicago, and W. E. Reed, Pittsburgh; for gas cases, Mr. Bemis.

Increase in Wages in Washington.—The Washington Railway & Electric Company, Washington, D. C., has increased the wages of its motormen and conductors 2 cents an hour. The official announcement as posted by the company on July 1 was as follows: "The company has adopted an increased wage scale for motormen and conductors to become effective July 4, as follows: Less than one year, 26 cents an hour; second year, 27 cents an hour; third year, 28 cents an hour; fourth and fifth years, 29 cents an hour; sixth and seventh years, 30 cents an hour; eighth, ninth and tenth years, 31 cents an hour; more than ten years, 32 cents an hour."

Hearing on New Philadelphia Applications on Aug. 2.—Transit Director Twining of Philadelphia, Pa., was informed recently by the Public Service Commission that a hearing would be held on Aug. 2 on the applications of the city for authority to construct the Chestnut Street subway. The commission announced the date of the hearing immediately after receiving from Mr. Twining the requests and the plans and specifications which accompanied them. The applications were made in accordance with the new transit program which the Mayor decided upon, following the defeat of the Salus bill in the Legislature.

Missouri Road to Be Sold.—It is stated that the Southern Traction System, extending from St. Louis to Belleville, Ill., and points south, which never has been operated, will probably be sold to the Michigan Central Railroad. The road originally was intended for passenger and freight service. but was thrown into the hands of receivers shortly after the tracks were laid. The property could be used by the Michigan Central Railroad to transport coal from the Murphy, Lattmann-Reeb, New National, Schramm and White Rose mines to St. Louis and northern Illinois points.

Tentative Wage Schedule for Providence.—It is understood that the Rhode Island Company and the union officials have tentatively agreed upon a new wage schedule under which platform men will receive a maximum of 34½ cents an hour with a minimum guarantee of 6½ hours. This is an increase of 4½ cents an hour. In addition, the guarantee of a minimum is new, the company having refused any guarantee in the last agreement. The conferences between the two sides are said to be rapidly drawing to a close, and it is believed that the union will call a meeting soon to receive the report of its representatives.

Conditions for Suspending Service in Lincoln.—In connection with the plan to municipalize the railway at Lincoln, Ill., referred to in the ELECTRIC RAILWAY JOURNAL of July 7, page 32, it was stated that "the property lost money as a private venture and after disagreement with the Council of Lincoln the State Public Utilities Commission authorized the company to suspend operations." This statement was correct only in part, as the order of the commission in this case was to the effect that the company could discontinue operation upon receiving the consent of the duly authorized representatives of the city of Lincoln.

Milwaukee Electric Divisions to Consolidate.—According to reports, the two electric divisions of the Chicago, Milwaukee & St. Paul Railway are to be consolidated into one division, with Deer Lodge, Mont., as division headquarters. The territory extends from Avery, Idaho, on the west to Harlowton on the east. The division will be under the superintendency of J. J. Murphy, Deer Lodge. At present, Three Forks, Mont., is the headquarters of the eastern division and Missoula, Mont., of the western division. E. H. Barrett, assistant general superintendent of the road, states the move is being made as a matter of economy and will result in better operation of the road.

City Sues Railway for Part of Bridge Costs.—The City Council of Seattle, Wash., recently passed a resolution concurring in the action of Mayor H. C. Gill instructing Corporation Counsel Hugh M. Caldwell to bring suit against the Puget Sound Traction, Light & Power Company for $60,917, the company's share of the cost of construction of the Fremont Bridge across the Lake Washington government canal recently thrown open for use. Corporation Counsel Caldwell has also been instructed to compel the company to pay $133 per month as its share of the maintenance and operation cost of the bridge, and to buy from the city at the rate of 1 cent per kw.-hr. the current used by the cars in crossing the bridge.

Court Sustains City Demurrers.—In a memorandum decision rendered by Judge J. T. Ronald of the King County Superior Court at Seattle, Wash., recently, he sustained demurrers by Corporation Counsel Hugh M. Caldwell to two defenses of the Puget Sound Traction, Light & Power Company against the payment to the city of Seattle of 2 per cent of the gross earnings of the company during 1916. The city sued the company for $64,876, said to represent 2 per cent of the gross earnings during that year. The company refused to pay it on two grounds, first, the passage by the Public Service Commission of a law stating that it is against public policy to regulate the company, and, second, the passage of an ordinance compelling the company to sell commutation tickets on the cars, causing the company to lose the sum of approximately $70,000.

Baltimore Holds Out for Pennsylvania Electrification.—City Solicitor Field has submitted to the Board of Estimate of Baltimore, Md., the administration amendments to the Pennsylvania Railroad ordinances providing for terminal changes in that city. The amendments are regarded as the minimum that the city will accept for the franchises that the railroad company desires from the city, which include the building of new tunnels so as to give the company a four-track line through Baltimore and extensive freight-yard facilities in the heart of the city. As originally drawn the ordinances contained conditions which the railroad thought to be reasonable. The amendments contain what the Board of Estimate think the city and the public ought to have. One of the most important things demanded by the amendments is the electrification of the tunnels and terminals of the company in the city within three years after the war with Germany shall have ended.

Railway Opposed to Busses.—The Public Service Commission for the First District of New York has voted unanimously to dismiss the application of the Fifth Avenue Coach Company for permission to continue temporary operation of its motor buses from 135th Street north to Broadway and 169th Street, on the ground that the action of the Board of Estimate and Apportionment was not such as would enable the commission legally to approve the application. The Board of Estimate granted temporary permission to operate and the last permit extends the privilege until Oct. 15. The commission holds to the view that the form of temporary consent is not such as would enable it to grant its approval under Section 53 of the Public Service Commissions law, governing related matters. The decision, however, does not stop the operation. The company may continue the service until stopped by court proceedings. The Third Avenue Railway is opposed to the service of the bus company being continued, but no statement has been made as to whether or not it will appeal to the courts.

Stenographers Needed by the Government.—The United States Government needs both men and women stenographers and typewriters for service in the departments at Washington, D. C., and in Federal offices outside of Washington. The supply of qualified persons on the lists of the United States Civil Service Commission, Washington, D. C., of which John A. McIlhenny is president, for this class of work is not anything like equal to the demand, and the commission urges as a patriotic duty that citizens with this special knowledge apply for examination for the government service. At present all who pass the examination for the departmental service are certified for appointment. Examination papers are rated without delay. Examinations for the departmental service in Washington, D. C., for both men and women, are held every Tuesday in 400 of the principal cities. Examinations for positions outside of Washington, D. C., are held frequently. The usual entrance salary ranges from $900 to $1,200 a year. Advancement of capable employees is reasonably rapid. Applicants must have reached their eighteenth birthday on the date of the examination. Full information and application blanks will be mailed to persons interested upon application to the United States Civil Service Commission, Washington, D. C.

Program of Association Meeting

New England Street Railway Club

The annual men's outing of the New England Street Railway Club will be held at Portland, Me., on July 26, 27 and 28. The members of the club will be entertained as the guests of the Cumberland County Power & Light Company. The committee in charge includes Messrs. Hale, Brush, Belling, Gordon and McCray. It is proposed to leave Boston on the Eastern Steamship Company's boat from the Central Wharf, Atlantic Avenue, on July 26 at 6 p. m., arriving in Portland at 4.30 a. m. on July 27. At 7 a. m. cars of the Cumberland County Power & Light Company will take the party to Riverton Park for breakfast. After breakfast a ball game is proposed for the prize of a silver-mounted bat last won by Captain Hale's sluggers. It is also proposed to take those who desire to play golf to the country club, returning at noon. A special golf prize will be offered. In the meantime there will be a performance at the theater. In this will be included a few acts by club talent. At 12 o'clock, after a short ride around the city, the party will be taken to Cape Cottage, where dinner will be served at the casino. Following the dinner a steamer will take the members of the party for a ride around Portland Harbor. At 7.30 p. m. the return trip to Boston will be begun by boat. The rates by steamer from Boston to Portland are $1 and $1.50 for inside rooms and $2 and $3 for outside rooms. The official notice of the meeting requested that reservations for tickets and staterooms on boats between Boston and Portland be in the hands of the outing committee by July 20 at the latest.

Financial and Corporate

Regulation of Industry in War

Owing to Existence of Regulation in Utility Field, No Sudden or Drastic Readjustment Is Expected

An optimistic view of the effect of prospective increased government regulation of industries resultant upon war conditions in so far as it might bear on public utilities is taken by L. P. Hammond, Bonbright & Company, New York, N. Y. In a recent statement Mr. Hammond said, in part:

"If it becomes necessary for our government to regulate our industries, the question facing the investor, of course, is whether the procedure will involve any radical readjustment of the business situation, particularly with respect to earnings. Under these circumstances, the investor in public utility securities finds great satisfaction in the fact that the industry is and for some time has been upon a regulated basis.

"The public utility corporations have themselves learned a great deal from the commissions, and correspondingly the commissions have learned a great deal from the corporations. There is no longer any mystery about the affairs of a public utility corporation. Nor does there exist on the part of governmental authority ignorance of the affairs of public utility corporations, with consequent danger of drastic and radical legislation hastily designed in misapprehension of true conditions and in suspicion of the good faith of the corporations.

"The holder of public utility securities can therefore look forward confidently to the future. He can rest assured that no sudden or drastic readjustment of corporate activities of the utility will ensue from regulation of its affairs. He knows that the methods of valuation which have finally been worked out are generally fair alike to the utilities and to the communities served. He knows that in most cases earnings are those which have been found sufficient to pay the necessary operating expenses of the utility, to provide for the maintenance of its physical property intact and in good operating condition, and to afford—all things considered—a fair return upon the fair value of the property.

"He is assured that the industry will not be subjected to unwise or unfair regulations and practices through the inexperience or prejudices of those who undertake its regulation, since the existing regulation is the result of deliberate, intelligent action based upon the experience of many years and governed by a mass of commission and court precedents flowing out of carefully considered contest and argument."

Railway Wins Earnings Tax Case

The State Supreme Court of Washington at Olympia on June 20 affirmed the decision of Judge Frater of the King County Superior Court holding that the city of Seattle was not entitled to collect a 2 per cent gross earning tax from the Seattle, Renton & Southern Railway, subsequent to the passage of the ordinance revoking the company's franchise. The suit was entitled "William R. Crawford vs. the Seattle, Renton & Southern Railway." Mr. Crawford was the plaintiff in the action for a receiver in 1912.

Hugh M. Caldwell, corporation counsel, states that this is the only matter not settled in the agreement reached recently between the city and the Seattle, Renton & Southern Railway, and that this was not taken up because it was on appeal at the time. Mr. Caldwell said the company had renewed payments after the court had held that the city could not revoke the franchise. He expressed the opinion that there was nothing in the decision that would have any bearing upon the difference between the city of Seattle and the Puget Sound Traction, Light & Power Company, which is suing to be relieved of paying a 2 per cent gross earning tax. Mr. Crawford states that the question at issue was merely whether the city could collect a percentage of the gross earnings of the company under a provision of a franchise which it was contended was invalid.

Annual Reports

Denver Tramway System

The comparative consolidated income statement of the Denver (Col.) Tramway System for the years ended Dec. 31, 1915 and 1916, follows:

	1916		1915	
	Amount	Per Cent	Amount	Per Cent
Gross earnings	$3,275,876	100.0	$3,141,906	100.0
Operating expenses (including partial depreciation):				
Maintenance	$317,301	9.7	$366,157	11.7
Operation	1,026,268	31.3	995,054	31.7
General	271,206	8.3	255,240	8.1
Total	$1,614,775	49.3	$1,616,451	51.5
Net earnings	$1,661,101	50.7	$1,525,455	48.5
Taxes and franchise payments	276,440	8.4	280,731	8.9
Operating income	$1,384,661	42.3	$1,244,724	39.6
Other income	21,233	0.6	22,709	0.7
Gross income	$1,405,894	42.9	$1,267,433	40.3
Deductions from income:				
Interest on funded debt	$980,488	29.9	$992,253	31.6
Interest on notes and accounts payable	674	0.0	929	0.0
Total	$981,162	29.9	$993,182	31.6
Net income	$424,733	13.0	$274,251	8.7

The gross earnings of the system in 1916 showed an increase of $133,970 or 4.26 per cent. In the opinion of the management, this, together with the largely improved business conditions in Denver and in Colorado, would justify optimistic expectations of continued increase of tramway revenues, unless the exigencies of the international situation should exert adverse influence.

Despite the increase of business, operating expenses decreased $1,675. This, it is said, was accomplished through the introduction of some practical scientific management methods resulting in more efficient and more economical operation. The operating expenses increased $31,214 or 3.1 per cent, and the general expenses $15,966 or 6.2 per cent, while maintenance expenses decreased $48,856 or 13.3 per cent.

As a result of the increased revenues and decreased operating expenses, the net earnings gained $135,646 or 8.8 per cent. Taxes and franchise payments also decreased, as well as interest charges, so that the net income showed an increase of $150,482 or almost 55 per cent. The surplus as of Dec. 31, 1916, amounted to $761,123, as compared to a surplus figure of $387,999 shown at the close of the preceding calendar year.

No dividends have been paid since June, 1915. In 1916 the bonded indebtedness of the company was reduced $267,650 by sinking funds and maturities. During the year the expenditures for betterments aggregated $156,195. The increase of 1 cent an hour granted to employees of the transportation and mechanical departments, effective on Jan. 1, 1917, will mean the expenditure by the company of $25,000 a year.

The following table presents some miscellaneous statistics for passenger traffic and earnings on the city and the interurban lines of the system:

	1916	1915
Passengers carried:		
City lines	75,133,046	72,222,850
Interurban lines	1,065,451	900,395
Total	76,198,497	73,123.245
Passenger earnings per car mile (cents):		
City lines	25.86	25.61
Interurban lines	29.30	27.28
Passenger earnings per car hour:		
City lines	$2.49	$2.42
Interurban lines	4.89	4.47
Car miles operated, passenger:		
City lines	11,427,964	11,125,869
Interurban lines	389,726	366,970
Total	11,817,690	11,492,839
Car hours operated, passenger:		
City lines	1,184,588.2	1,175,853.6
Interurban lines	23,351.2	22,393.8
Total	1,207,939.4	1,198,247.4

Illinois Traction System

The comparative income statement of the Illinois Traction System, Peoria, Ill., for the calendar years 1915 and 1916 follows:

	1916		1915	
	Amount	Per Cent	Amount	Per Cent
Interurban lines	$3,993,836	31.8	$3,559,028	31.8
City lines	3,110,811	24.7	2,871,035	25.6
Gas	923,642	7.4	905,702	8.0
Electric	3,689,851	29.4	3,325,410	29.7
Heat	341,379	2.7	317,579	3.8
Water	14,476	0.1	14,215	0.1
Miscellaneous	492,450	3.9	195,022	1.7
Total gross earnings	$12,566,447	100.0	$11,187,994	100.0
Operating expenses and taxes	7,489,797	59.6	6,657,569	59.5
Gross income	$5,076,649	40.4	$4,530,425	40.5
Interest on bonds	3,603,417	28.7	3,268,607	29.2
Net income available for depreciation, dividends, etc.	$1,473,232	11.7	$1,261,818	11.3

According to the annual report, the gross and the net earnings from all departments showed normal increases. The main increases in gross were $444,808 or 12.5 per cent for the interurban lines, $239,776 or 8.4 per cent for the city lines and $364,441 or 10.9 per cent for the electric department. The total gross earnings gained $1,378,453 or 12.2 per cent.

The report does not give any details of operating expenses, which as a whole increased $832,228 or 12.5 per cent. The gross income increased $546,224 or 12.0 per cent, but this gain was cut into by the rise of $334,810 or 10.2 per cent in interest charges. The net result was an increase of $211,414 or 16.7 per cent in net income. After deducting $505,565 for depreciation and $65,282 for bond discount, the company had a surplus of $902,384 for the year.

This result from operation, it is said, was especially gratifying because of the extraordinarily high prices which prevailed throughout the year on substantially all materials. In particular the supplying of fuel for the electric generating stations was a matter of concern. Moreover, all skilled and common labor demanded constantly increasing wages, and it was advisable in some instances to meet this condition in order that the company's permanent organization should not become disrupted. These deterrent influences, however, were partly offset by the operating efficiency and persistent solicitation for new business.

The activity in industrial lines as the result of an abnormal demand for manufactured products at home and abroad contributed to a condition of prosperity in the territory served by the company which had a direct bearing on the gross earnings, especially from transportation and electric power. The street railways benefited from nearly the total disappearance of "jitney" competition and the fact that the effect of privately owned automobiles is not so apparent, although still a considerable detriment.

During the last year new freight equipment for the interurban lines was ordered, as follows: 100 box cars, 80,000 lb. capacity; 60 hopper bottom cars, 100,000 lb. capacity, and 40 flat-bottom gondola cars, 80,000 lb. capacity. Enlargement and extensions of the facilities for handling interurban freight traffic were effected, new connections with grain elevators, manufacturing industries and coal mines were completed, and working agreements were entered into with additional steam railroads.

Extension of Organization for Selling Securities to Consumers

The bond department of Henry L. Doherty & Company, New York, N. Y., has opened a branch office in Toledo, in charge of Walter J. Young, formerly power salesman of the new-business department of the Toledo Railways & Light Company. This new office is the third step in a comprehensive plan for selling securities to consumers of Doherty service. The plan was inaugurated at Massillon, Ohio, in 1914, by the sale of the preferred stock of the Massillon Electric & Gas Company to the public. Last February a more elaborate campaign was carried on in Denver, where the firm of Barker & Smith was organized to deal in the securities of companies operated by H. L. Doherty & Company. The bond department hopes, in time, to have either a special representative in every Doherty community, or to conduct an organized security selling campaign under the direction of the local general manager.

American Water Works & Electric Company, New York, N. Y.—The stockholders of the American Water Works & Electric Company have voted to increase the capital stock of the company from $25,000,000 to $30,000,000. The additional capitalization is to be issued in the form of first preferred stock and will increase the amount of that issue from $5,000,000 to $10,000,000. It is proposed to fund the 21 per cent accumulated dividends on the present outstanding issue. The plan to liquidate the dividend is as follows: $150,000 or 3 per cent, in cash forthwith; $450,000 or 9 per cent, in first preferred stock at par, and $450,000 or 9 per cent in common stock at 22½, or $2,000,000 par value of common stock.

Boise (Idaho) Railroad, Ltd.—The Boise Railroad, consisting of city lines and the Natatorium, a famous natural hot-water resort, were bid in recently in the Federal Court by David Miller and W. E. Pierce for $100,000. Judge Frank S. Dietrich of the federal court has confirmed the sale. H. E. Dalton, former manager, conducted the sale as receiver. Only one other bid was offered, that of J. W. Cunningham for $60,000. The sale was brought about on account of foreclosure proceedings instituted by the Germantown (Pa.) Trust Company.

Calgary (Alta.) Municipal Railway.—Thomas H. McCauley, superintendent of the Calgary Municipal Railway, recently wrote A. G. Graves, street railway commissioner of the city, that the line would face a deficit of $22,000 on July 1. Mr. McCauley said: "I beg to submit to you herewith reports covering April, and four months to April 30, showing a deficit of $16,741, to which must be added that of May, estimated at $2,500; uniforms and caps, $3,550. so that I estimate we will face a deficit of $22,000 July 1. A portion of this amount is made up of materials for the year's operations, car wheels, air brakes, electrical equipment for repairs, and stock that had to be purchased for replacements at very much increased cost, also car reconstruction expenses. From the daily reports you will notice that we are still operating 250 car hours per day, with two men. or 74 cents an hour. One man on these cars would save $60 a day. By July 15 I will have fully equipped with all safety devices cars sufficient to operate the lines, and would recommend that same be approved that, if possible, we may recover the losses before the end of the year."

Cape May, Delaware Bay & Sewell's Point Railway, Cape May, N. J.—The West Jersey & Seashore Railroad and the Atlantic City & Shore Railroad are said to have presented to the New Jersey Board of Public Utilities Commissioners a joint proposal to operate the Delaware Bay & Sewell's Point Railway at Cape May to help the government in the construction of the naval base there. The road was sold in the spring under foreclosure to Wilson & Carr, attorneys of Camden, for $55,000, and is said to have been disposed of since by them to the Walker-James Company, which contemplated dismantling the property.

Carolina Power & Light Company, Raleigh, N. C.—Warner, Tucker & Company, Boston, Mass., announce that there has become effective a plan calling for the exchange of the preferred and common stocks of the Carolina Gas & Electric Company for the common and preferred stocks of the Carolina Power & Light Company. The holdings of stock, constituting more than a majority in interest, of Warner, Tucker & Company and associates will be so exchanged, and the minority holders of Carolina Gas & Electric Company are to be accorded the same privilege. With the exchange of stock the control of the Carolina Gas & Electric Company is to be acquired by the Yadkin River Power Company, a subsidiary of the Carolina Power & Light Company, which does a general lighting, power and gas business and operates 13.65 miles of electric railway.

Charlottesville & Albemarle Railway, Charlottesville, Va.—The Charlottesville & Albemarle Railway has recently paid a semi-annual dividend of 3½ per cent on its preferred stock and a 2½ per cent semi-annual dividend on its common stock.

Cincinnati (Ohio) Traction Company.—An application has been filed with the Ohio Public Utilities Commission by the Cincinnati Traction Company for permission to purchase 100 double-truck, steel, pay-within cars, and to pay for them with $550,000 of 6 per cent equipment trust certificates, the remainder to be paid in cash.

Jefferson County Traction Company, Beaumont, Tex.—The taxpayers of Port Arthur and Beaumont have authorized by referendum vote the merging of the properties of the Jefferson County Traction Company, the Beaumont Traction Company, the Beaumont Electric Light & Power Company and the Port Arthur Light & Power Company, all controlled by the Eastern Texas Electric Company, a Stone & Webster property. The merger is in the interest of intercorporate simplicity.

Kentucky Securities Corporation, Lexington, Ky.—The holders of the common and the preferred stocks of the Kentucky Securities Corporation have the right to subscribe to 8.2 per cent of their holdings in new preferred stock of the corporation. The subscription price of the new preferred stock has been fixed at 82½ per cent of par value, plus accrued dividend at rate of 6 per cent from July 1, 1917. Payment is to be made at the Philadelphia offices in full on or before Aug. 15 or on a partial payment plan.

Mahoning & Shenango Railway & Light Company, Youngstown, Ohio.—The Ohio Public Utilities Commission issued a formal order on July 12, approving the merger of the Youngstown & Sharon Railway, the Mahoning Valley Railway, the Youngstown Park & Falls Railway, the Poland Street Railway and the Mahoning Valley Southeastern Railway with the Mahoning & Shenango Railway & Light Company in the interest of economy and centralized management.

New York (N. Y.) Railways.—The stockholders of the Bleecker Street & Fulton Ferry Railroad, which has been taken over by the New York Railways, will vote on July 25 on a declaration of abandonment of routes adopted by the directors on June 8 last.

Ohio Electric Railway, Cincinnati, Ohio.—The Ohio Public Utilities Commission has approved the application of the Ohio Electric Railway for authority to purchase rolling stock equipment to the value of $130,000, paying therefor in cash $30,000 and issuing $100.000 of equipment trust certificates to secure the rest of the funds. The company contemplates the purchase of four motor express cars, sixteen flat trail cars and sixteen box trail cars.

Orleans-Kenner Electric Railway, New Orleans, La.—Leigh Carroll has been appointed receiver of the Orleans-Kenner Electric Railway as a result of the application made by J. D. Purcell, trustee, representing certain of the security holders. The affairs of the company have been reviewed briefly several times recently in the ELECTRIC RAILWAY JOURNAL. The receivership proceedings are understood to have been of a friendly nature and are said to have been decided upon as offering perhaps the best means to a speedy and satisfactory readjustment of the affairs of the company.

Philadelphia (Pa.) Rapid Transit Company.—A semi-annual dividend of 2½ per cent, or $1.25 a share, has been declared out of the surplus earnings of the Philadelphia Rapid Transit Company for the fiscal year ended June 30 upon the capital stock of the company, payable on July 31 to shareholders of record of July 23. This is the second semi-annual dividend of the company, 2½ per cent having been paid in January, 1917. In October, 1916, $1 was paid on the stock, being the first disbursement since the company was formed in 1902.

Quebec Railway, Light, Heat & Power Company, Quebec, Que.—The Quebec Railway, Light, Heat & Power Company will be awarded $275,000 for property known as the Quebec Gas Company's land belonging to the Quebec Railway, which has been appropriated by the federal authorities, according to a decision of the Exchequer Court. The government offered the Quebec Railway some time ago $125,000, or at the rate of $2 per foot for the land, but the court made the award $5 a foot, or $270,000. To this is added $30,000 already decided upon by mutual agreement, as a sort of bonus, which makes a total of $305,000. The crown also will have to pay the cost of the proceedings.

San Antonio (Tex.) Public Service Company.—The San Antonio Public Service Company has been incorporated in Texas with a capital stock of $4,700,000 for the purpose of taking over and operating the properties of the San Antonio Gas & Electric Company and the San Antonio Traction Company, both controlled by the American Light & Traction Company. The new company is also authorized in its charter to construct a system of interurban electric railways out of San Antonio, and it is reported will build a line between San Antonio and Austin, a distance of about 85 miles. The San Antonio & Austin Traction Company has been promoting the construction of this proposed road for some time past. The San Antonio Public Service Company is headed by Emerson McMillin, New York, who is chairman of the board of directors of the American Light & Traction Company.

Toledo Traction, Light & Power Company, Toledo, Ohio.—Harris, Forbes & Company, New York, N. Y., Harris, Forbes & Company, Inc., Boston, Mass., and the Harris Trust & Savings Bank, Chicago, Ill., have sold at 100 and interest a block of $486,000 of first lien 6 per cent five-year bonds of 1913 of the Toledo Traction, Light & Power Company, making the total outstanding of this issue $7,499,000.

Dividends Declared

Bangor Railway & Electric Company, Bangor, Me., quarterly, one-half of 1 per cent, common.

Carolina Power & Light Company, Raleigh, N. C., quarterly, one-half of 1 per cent, common.

East St. Louis & Suburban Company, East St. Louis, Ill., quarterly three-fourths of 1 per cent, preferred.

Milwaukee Electric Railway & Light Company, Milwaukee, Wis., quarterly, 1½ per cent, preferred.

New Hampshire Electric Railways, Haverhill, Mass., 1 per cent, preferred.

Public Service Investment Company, Boston, Mass., quarterly, 1½ per cent, preferred.

Trinidad Electric Company, Ltd., Port-of-Spain, Trinidad, quarterly, 1¼ per cent.

Electric Railway Monthly Earnings

ATLANTIC SHORE RAILWAY, SANFORD, ME.

Period		Operating Revenue	Operating Expenses	Operating Income	Fixed Charges	Net Income
1m., June,	'17	$16,495	$11,634	$4,861	$430	$4,431
1 " "	'16	28,422	26,571	1,851	650	1,200

BATON ROUGE (LA.) ELECTRIC COMPANY

Period		Operating Revenue	Operating Expenses	Operating Income	Fixed Charges	Net Income
1m., May,	'17	$17,792	*$10,383	$7,409	$3,498	$3,911
1 " "	'16	17,765	*8,267	9,498	3,469	6,029
12 " "	'17	221,329	*106,159	115,170	42,274	72,896
12 " "	'16	201,669	*105,681	95,988	33,610	62,378

BROCKTON & PLYMOUTH STREET RAILWAY, PLYMOUTH, MASS.

Period		Operating Revenue	Operating Expenses	Operating Income	Fixed Charges	Net Income
1m., May,	'17	$9,586	*$10,916	†$1,330	$1,222	†$2,552
1 " "	'16	10,076	*9,663	413	1,101	†688
12 " "	'17	125,193	*116,962	8,231	13,653	†5,422
12 " "	'16	118,566	*99,623	18,943	13,338	5,605

CAPE BRETON ELECTRIC COMPANY, LTD., SYDNEY, N. S.

Period		Operating Revenue	Operating Expenses	Operating Income	Fixed Charges	Net Income
1m., May,	'17	$36,029	*$25,167	$10,862	$6,683	$4,179
1 " "	'16	30,278	*20,036	10,242	6,548	3,694
12 " "	'17	419,412	*245,679	173,733	78,741	94,992
12 " "	'16	378,587	*222,213	156,374	78,654	77,720

CLEVELAND, PAINESVILLE & EASTERN RAILROAD, CLEVELAND, OHIO.

Period		Operating Revenue	Operating Expenses	Operating Income	Fixed Charges	Net Income
1m., May,	'17	$43,746	*$29,011	$14,735	$12,176	$2,559
1 " "	'16	39,296	*22,451	16,845	12,074	4,770
5 " "	'17	195,889	*120,928	74,961	58,953	16,008
5 " "	'16	167,088	*99,043	68,045	56,695	11,850

COLUMBUS (GA.) ELECTRIC COMPANY

Period		Operating Revenue	Operating Expenses	Operating Income	Fixed Charges	Net Income
1m., May,	'17	$84,410	*$33,300	$51,110	$28,444	$22,866
1 " "	'16	66,694	*28,710	37,984	28,647	9,337
12 " "	'17	973,048	*369,711	603,337	341,975	261,362
12 " "	'16	771,037	*331,591	439,496	344,173	95,323

DALLAS (TEX.) ELECTRIC COMPANY

Period		Operating Revenue	Operating Expenses	Operating Income	Fixed Charges	Net Income
1m., May,	'17	$170,225	*$109,371	$60,854	$41,262	$19,592
1 " "	'16	151,437	*100,925	50,512	36,695	‡15,817
12 " "	'17	2,102,289	*1,271,735	830,554	472,195	‡366,501
12 " "	'16	1,887,791	*1,166,867	720,924	420,957	‡311,167

EASTERN TEXAS ELECTRIC COMPANY, BEAUMONT, TEX.

Period		Operating Revenue	Operating Expenses	Operating Income	Fixed Charges	Net Income
1m., May,	'17	$74,232	*$43,957	$30,275	$11,674	‡$20,333
1 " "	'16	65,334	*36,738	28,596	8,870	19,726
12 " "	'17	883,414	*477,162	406,252	115,991	‡293,491
12 " "	'16	781,095	*407,974	373,121	105,923	267,198

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*Includes taxes. †Deficit. ‡Includes non-operating income.

Traffic and Transportation

Decision in Connecticut Service Case

Public Utilities Commission Holds That Connecticut Company Should Not Be Required to Procure Any Specific Number of New Cars

The Public Utilities Commission of Connecticut on July 3 handed down its decision in the matter of the inquiry by it into the question of the adequacy of the service of the Connecticut Company. The commission is of the opinion that no order should issue at this time requiring the company to procure any specific number of passenger cars. It says, however, that the absence of a positive order is not intended to relieve the company from its obligations to furnish adequate service nor from the exercise and mandate of good judgment to anticipate future traffic needs and reasonably to provide for the same. This decision by the commission was reached after consideration of the facts that were brought out at the hearings in the case, including the information filed by the company in answer to inquiries made of it by the commission, and having in mind the present unsettled industrial conditions and the effect of these conditions upon electric railway requirements.

INDEPENDENT INQUIRY BY COMMISSION

Under date of March 6 the commission sent a letter to the company in which it said it had noted that the service of the company had been unsatisfactory. The commission attempted on its own initiative through conferences with representatives of the company and the traveling public and by independent investigations to discover the underlying causes of the alleged unsatisfactory service and to assist in remedying such of these cases as were manifest. The commission concluded after the hearings that while inadequacy of track facilities in some places contributed largely to the defects in the service, the chief cause was a general shortage of cars. In its finding the commission referred to its inquiry during 1915 and 1916 and quoted the statement of L. S. Storrs, president of the company, on March 28, 1916, that in his opinion 100 to 150 new cars would take care of traffic during the winter of 1916-1917 unless extraordinary demands were experienced. On June 21, 1916, the commission approved plans for 100 new convertible type cars, delivery to be made on Oct. 1, 1916. None of these cars, however, were delivered before Feb. 1, 1917, and only four were received by the company prior to March 1, 1917.

The commission expressed the conclusion that adequate service could be secured only by preparation made long in advance. In view of the foregoing the company was directed and required to appear before the commission on March 15 and show cause why an order should not issue directing it to procure additional cars. As a result of the hearing on March 15 the commission formulated a list of questions which it asked the company to answer before March 30, to which date the hearing was continued. The commission required the company among other things to furnish it with a list of passenger cars designated by operating divisions and giving the various types of cars. It also required a statement of the general service conditions of the passenger cars by divisions, an estimate of the number and kind of passenger cars expected to be retired from service from each division during 1917, the total number and kind of passenger cars retired from service in each division during each of the last three calendar years, an estimate of the number and kind of additional passenger cars necessary to render adequate service on each division during the coming summer and the winter of 1917 and 1918. It further required from the company a statement of the number of passengers carried on each division during each of the last five calendar years, the net average and total seating capacity of cars in service on each division during each of the last five calendar years, the latest available count of traffic during rush hours on certain of the lines, what the proposed distribution was of the 100 cars ordered in 1916 and a statement of the redistribution of the existing cars to the various lines of other divisions. It also asked about the power supply and the shop facilities.

COMPANY FILES WRITTEN REPLY

On March 30 Mr. Storrs, counsel, and the entire board of trustees of the company filed written answers to the questions and submitted a statement regarding the financial condition of the company and other matters relevant to the inquiry. It was the commission's original impression that the complaints regarding the service were based upon inadequacy of the company's rolling stock and that the remedy was the acquisition of more cars. The representatives of the company admitted overcrowding during the rush hour, but stated that this was due to the failure to receive on time the cars ordered in the spring of 1916 and promised for delivery in the fall of the same year. Traffic in 1916 ran far ahead of that for any of the five years preceding, and for 1917 had been materially greater than for the corresponding period of 1916. It was asserted at the hearing that in the company's opinion the peak of passenger traffic had been reached, and unless all indications should prove false there would be no increase in the immediate future beyond the year 1916, while a slight decrease could normally be expected.

DECREASE IN BUSINESS LIKELY

The commission expressed the opinion that the electric railway situation viewed in connection with the present war conditions may possibly bear out the company's conclusion that while the demands in certain localities will be somewhat increased, they will be at least proportionately decreased in other localities, and the net result will leave the requirements upon the company at no higher level than they have been for the past year. The commission considered that the important question was the adequacy of the company's equipment for handling winter traffic. It said that it was apparently adequately equipped to handle summer traffic. The commission concluded its findings in part as follows:

"The figures showing the increase in passengers carried in 1915-1916 are without question explained by the unusual conditions in the larger cities incident to the production of war materials. This sudden increase in business could not reasonably have been anticipated, and on account of the uncertainty of its continuance the company was reluctant immediately to acquire additional equipment, at constantly rising prices, in order to meet what might be only a temporary demand. There is a possible analogy between the conditions confronting the railway in this sudden state of industrial activity and the conditions existing universally in large cities during the rush-hour periods of the day. It is commonly conceded that no electric railway should be required to furnish seating accommodation for every passenger during such rush-hour periods in large industrial centers, because if this were done the company would be required to maintain a large amount of idle equipment during the portions of the day when traffic is lighter. For the same reason there may be some justice in excusing the company from at once acquiring sufficient equipment to give wholly satisfactory service during the period of unusual industrial activity because of the possibility that upon the cessation of the period of activity the company would have on its hands a surplus of equipment acquired at abnormal prices. The problem confronting the electric railway managers is to forecast the normal future demands upon transportation companies.

"The same conditions which are throwing an unusual burden upon the electric railways operate also to increase the cost of new equipment. The double-truck convertible pay-as-you-enter cars purchased by the Connectcut Company in 1915 are reported by that company to have cost approximately $5,575 each. Similar cars, according to estimates furnished by car builders, would now cost in the neighborhood of $8,700 each and the time of delivery would be very indefinite.

PRESENT EQUIPMENT PROBABLY ADEQUATE

"While conditions during the last winter in the larger cities were unsatisfactory, there is good reason to believe that the use during the coming winter of the 100 cars which are now being delivered will give material relief except in the unexpected event that the demands should be in excess of those during the past winter."

Washington Jitney Men Win

Secure an Injunction Against Their Prosecution by the Puget Sound Traction, Light & Power Company on Criminal Warrants

Judge J. T. Ronald in the King County Superior Court at Seattle, Wash., recently filed a memorandum decision granting the injunction sought by twenty-five jitney-bus drivers to restrain the officials and agents of the Puget Sound Traction, Light & Power Company from prosecuting them on criminal warrants charging violations of provisions of the State law requiring jitney-bus drivers to file bonds and procure permits from the Secretary of State for the operation of jitneys. Attorneys for the jitney men ask that the railway be restrained from prosecuting upon the grounds that the company had chosen a court of equity as its forum and should not be permitted to enter a criminal court at the same time.

In the original suit for a temporary injunction which was tried before Judge Ben Sheets of Grays Harbor County twenty-five defendants were named, but the company later came into court with an amended complaint increasing the number of defendants to 195. After Judge Sheets had refused to grant a temporary injunction, holding that the railway was not in need of immediate relief, the traction company dismissed its cause of action as to all of the defendants except the original twenty-five, on the ground that they had not been served with a copy of the complaint. The defendants who were dropped from the original cause, in the Superior Court, were afterward made defendants in an application for an injunction brought by the company in the federal court, and this case is now awaiting a decision by Judge Neterer, on a question of jurisdiction.

The basis of the decision appears to be that the railway, having elected to pursue the remedy of injunction, and having failed to obtain relief in a court of equity, it is now estopped from attempting to achieve the same end by criminal prosecution. Unless the other jitney drivers now charged with criminal violations are brought within the protection of Judge Ronald's decision their cases will be tried.

Increase for Small Idaho Roads

The Public Utilities Commission of Idaho has denied the application of the large railroads operating in the State for a 15 per cent horizontal rate increase. The thirteen railroads operating in Idaho applied for the increase in rates and filed tariffs with the commission effective July 1. These tariffs the commission suspends as to most of the roads. It makes a few exceptions as to the smaller railroads where the evidence showed that on their receipts they were not paying operating and other expenses. They are the Caldwell Traction Company, Pacific & Idaho Northern, Lewiston, Nez Perce & Eastern, Camas Prairie and the Boise Valley Traction companies. The carriers denied the right to increase their rates are the Oregon Short Line Railway, Oregon-Washington Railroad & Navigation Company, Great Northern, Northern Pacific, Chicago, Milwaukee & St. Paul, Spokane & Inland Empire, Spokane International and the Ogden, Logan & Idaho.

In deciding against the larger carriers the commission says in its order and opinion:

"The commission feels that the world-wide phenomenon of rising prices is by this time no novelty. Since 1906 prices have been rapidly rising. This has mirrored itself in the increased cost of living. This advance in the price level must eventually be reckoned with in railroading. For a time its effect may be overcome by increases in the volume of traffic and economies practiced by the railroads. In justice to the petitioners in this case, we believe that there are some commodities that could rightly stand a reasonable increase without causing any hardship or injustice to the public. The railroads must be maintained at the highest possible standard of efficiency in order to take care of the demands made upon them. Many industrial enterprises are making enormous returns and unless railroad returns bear some reasonable relationship to the returns from these other enterprises, it will be very difficult to secure capital for railroad investment."

Rate Question in Missouri

Members of the Missouri Association of Public Utilities Being Canvassed in Regard to General Application to Missouri Commission for Relief

The Missouri Association of Public Utilities is considering the advisability of having its member companies apply to the Missouri Public Service Commission for permission to make a general rate increase. The rates committee of the association, of which Hugh Wurdeck, president of the Light & Development Company, St. Louis, is chairman, is asking members of the association for their views on the matter. It is understood that the majority of the gas, water and electric interests are in favor of an appeal to the commission for relief, but that the electric railways are undecided upon action on an application for increased fares. If the companies decide to go before the commission that body will probably be asked to grant the increase as an emergency measure, retaining the right to cancel the concession as soon as it is satisfied that there has been a return to conditions similar to those that existed before the war. Up to July 19 no general application had been made to the commission by any of the classes of utilities.

Hearing on Baltimore Skip Stops

The skip-stop plan of operation having had more than two months' trial on two lines of the United Railways & Electric Company, Baltimore, Md., and the commission having received a number of communications relative thereto, including letters condemning as well as commending the system, it was decided by the commission to hold a hearing with a view to determining whether that body should sanction the continuance of the system and its extension to other lines. To lay a tangible foundation for a hearing the commission formulated a specific complaint against the railway, embodying an epitomization of all the charges against the skip-stop in the letters received from dissenters. In this formal complaint it is contended that the skip-stop is unjust and unreasonable and productive of inadequate service and creates a much larger measure of public inconvenience, discomfort and hardship than any it removes. The company's answer is about to be filed. The commission will then fix a date for a public hearing. Of the persons opposed to the skip-stop only a small percentage is antagonistic to the principle of operation. The others oppose the skipping of specific points. The hearing will be upon the general principle, but the commission may be expected to pass upon the reasonableness of the selection of skipped points by the company. The answer of the company to the commission's complaint will take issue with each contention made in that complaint, and will be supported by charts and statistics in substantiation of its position.

Increase in Fare in Pennsylvania.—The Cumberland Railway, Carlisle, Pa., operating between Carlisle, Mount Holly and Newville, has increased the fare from Carlisle to Mount Holly from 10 cents to 14 cents and from Carlisle to Newville from 20 cents to 28 cents.

Increase in Zone Fares Authorized.—The Board of Public Utility Commissioners of New Jersey has granted permission to the Northampton, Easton & Washington Traction Company, Easton, Pa., to add 1 cent to each of the seven zones on its line between Phillipsburg and Port Murray, N. J.

Suburban Fare Case at Kansas City Closed.—The arguments in the proceedings concerning suburban and interurban fares on Kansas City (Mo.) Railways were heard in Jefferson City, Mo., on July 12, by the Public Utilities Commission. Decision will probably not be rendered before September.

Claim Adjuster Injured.—While adjusting claims on July 11 due to a recent wreck on the road, Fred J. Zink, claim agent of the Toledo & Indiana Railroad, Toledo, Ohio, was seriously injured when the automobile in which he was riding was struck by a car on his own road. Attorney R. L. Starr, who was aiding him, and the Rev. J. A. Jayne, who was driving the automobile, were killed.

Another Maine Road Increases Its Fares.—In order to meet the rapidly increasing advances in operating expenses which all the electric railways throughout the country are now experiencing, the Lewiston, Augusta & Waterville Street Railway, Portland, Me., has raised the fare between Lewiston and Bath, a distance of 28.3 miles, from 35 cents to 50 cents, making ten 5-cent zones in the place of seven. The company has also discontinued the use of reduced rate tickets, formerly sold in strips of eleven for 50 cents. Both of these changes became effective on July 1.

New Fare Tariff Filed.—The Plattsburg (N. Y.) Traction Company has filed with the Public Service Commission for the Second District of New York the following tariff changes: Local fares for strip tickets good for six 5-cent rides, 25 cents; strip tickets good for ten 10-cent rides between Plattsburg and Bluff Point, 50 cents; and book tickets good for fifty 5-cent rides, $2; also fares for children five years of age and under twelve, 3 cents where 5-cent fare prevails and 6 cents where 10-cent fare prevails. The changes are to become effective on Aug. 1, 1917.

California Commission to Investigate Jitneys.—The Railroad Commission of California has instituted an investigation into rates, rules and regulations of the jitneys and auto truck lines subject to its jurisdiction. The first hearing will be held in Los Angeles before the commission en banc on July 25 and this will be followed by a hearing in San Francisco on Aug. 8. The purpose will be to secure information and suggestions from auto bus men and all interested parties upon which the commission may formulate rules for the regulation of these carriers. The rules will cover quality of service, schedules, filing of bonds, etc.

Three Accidents in Ohio.—There were three serious accidents during the week ended July 7 on the interurban electric railways in Ohio. Two of the accidents occurred on July 4. One caused the death of three persons, the result of a rear-end collision at night on the Toledo & Indiana Railway near Stryker. Another death resulted from an accident at Youngstown, when an interurban car entering the city left the track and struck a telephone pole. Fifteen others were injured in this accident. In a head-on collision between two cars on the Cleveland, Painesville & Eastern Railway at Stop 67 on July 5 eleven people were slightly injured.

Independent Jitney Men in Portland Suspend Operation.—The Portland Trackless Car Company recently filed acceptance with the City Council of Portland, Ore., of the four jitney franchises which were granted by the voters of that city at the recent municipal election. It is understood that Stephen Carver, head of the Portland Trackless Car Company, is preparing to operate lines of jitney buses prescribed in the franchises. Scores of independent jitney men are going out of business in Portland, since they have found it impossible to secure the $2,500 bonds made necessary by the ordinance which was passed by the voters at the election. Jitneys and "for hire" cars have until Aug. 1 to produce the $2,500 bond which each is required to deposit with the city under the jitney bonding ordinance. If the bond is not filed by Aug. 1 the license will be revoked. The bonding provision applies to all autos in the city which operate for hire.

One Auto for Every Twenty-nine Persons.—Iowa led the United States in 1916 in the number of motor cars registered in proportion to population. In that State there was one car for every eleven persons. California was a close second with one car to every twelve inhabitants. Nebraska and South Dakota had one for every thirteen. Arkansas could show but one for every 116. The average for the United States is one car for every twenty-nine persons, according to figures presented by the Office of Public Roads, United States Department of Agriculture, in Circular 73, "Automobile Registrations, Licenses and Revenues in the United States, 1916." The New England States were more uniformly supplied with motor cars than any other section. They averaged one car to about every twenty-seven persons. The prosperous corn belt states also showed a fairly uniform distribution of cars. The South, where the roads are not so good, had relatively fewer cars in proportion to population.

Personal Mention

E. L. Howell has been made claim agent for the Salt Lake & Utah Railroad, Salt Lake City, Utah, to succeed E. H. Craddock.

J. M. Pogue, formerly assistant secretary and assistant treasurer of the Ohio Electric Railway, Springfield, Ohio, has been appointed purchasing agent of the company, succeeding George L. Mayer, resigned. Mr. Pogue has been with the company for many years.

George L. Mayer, purchasing agent of the Ohio Electric Railway, Springfield, Ohio, has resigned to take charge of the Chicago office of Joseph Joseph & Brothers Company, Cincinnati, Ohio, scrap dealers. Mr. Mayer has been with the Ohio Electric Railway as storekeeper and purchasing agent for more than ten years.

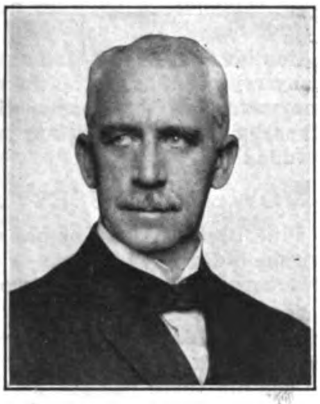
R. J. Byrum, office manager of the Wheeling (W. Va.) Traction Company, has resigned from the company to become connected with the contracting firm of R. L. Byrum & Sons, Wheeling. Mr. Byrum was connected with the company for twelve years and for two years had been principal assistant to George O. Nagle, formerly vice-president and general manager of the company.

Clyde Taylor, general counsel for the Kansas City (Mo.) Railways, has been elected vice-president of the company and will act as president during the absence of Col. P. J. Kealy, president of the company, at camp and in the war. Chester C. Smith, assistant to the president, will take Colonel Kealy's place on the board of control, and will perform certain other duties that formerly devolved upon the president. Colonel Kealy has been granted a leave of absence for an indefinite period, dating from July 14, 1917.

William Kingdon, for the last ten years assistant superintendent of the lines of the Connecticut Company at Stamford, has been promoted to the position of superintendent there to succeed J. B. Potter, who, as noted in the ELECTRIC RAILWAY JOURNAL for June 30. has become connected with Sanderson & Porter. Mr. Kingdon has been engaged in electric railway work for twenty-three years. He was with the Worcester (Mass.) Consolidated Street Railway for thirteen years before he accepted the appointment to the Connecticut Company at Stamford.

Karl D. Klemm, president of the Kansas City, Kaw Valley & Western Railway, Bonner Springs, Kan., has been elected colonel of the Second Missouri Field Artillery, a new regiment which he has recently assisted in organizing to war strength of six batteries. Colonel Klemm was promoted from captain to major of one of the batteries only a week before he was elected colonel. He has had a long experience, however, in military work. He was graduated from West Point in 1905, and has served in the Philippines, where during a part of his stay he held the civil office of president of a district. He was also stationed at Fort Snelling, Minn., for some time. He has had considerable cavalry experience. His service in the regular army ceased in 1911. Mr. Klemm then went to Kansas City. He has since devoted his time to building the interurban railway which was completed and put in operation three years ago between Kansas City and Bonner Springs, and is now operating to Lawrence, Kan. It is likely that Colonel Klemm will be ordered to concentration camp with his regiment about Aug. 4.

M. G. Stratton, whose appointment as general manager of the Shore Line Electric Railway, Norwich, Conn., was noted in the ELECTRIC RAILWAY JOURNAL of July 7, has been connected since 1913 with Sanderson & Porter, New York, N. Y., for whom he was engaged on valuation reports and the management of public utility properties. including the New England Investment & Security Company at Springfield and Worcester, Mass. Mr. Stratton is forty-seven years of age. He took the electrical engineering course at Cornell University as a member of the class of 1891. In 1891 and 1892 he was connected with the New York Edison Company in charge of the operation of the Twenty-sixth Street station and on outside construction. For four years following this he was superintendent of the electric department of the Lawrence (Mass.) Gas Company, and from 1896 to 1900 was superintendent of the meter department and assistant to the electrical engineer of the Narragansett Electric Lighting Company at Providence, R. I. For one year following this he was superintendent of the Mobile Light & Railway Company, Mobile, Ala., and from 1901 to 1903 was superintendent of the meter department of the Lachine Rapids Hydraulic Company at Montreal, Que. From 1903 to 1906 Mr. Stratton was connected with the Bay State Street Railway, Boston, Mass., as assistant to the electrical engineer in charge of the rehabilitation of the power houses of the Boston & Northern Street Railway and the construction of the Quincy power house and the substation and transmission lines of the Old Colony Street Railway. From 1906 to 1908 he was engineer with the Stone & Webster Engineering Corporation at Boston, Mass. During 1908 and 1909 he was engaged in a special investigation and on a report for the Buffalo (N. Y.) General Electric Company. From 1909 to 1911 he also investigated special engineering matters for the Bay State Street Railway. From 1911 to 1913 Mr. Stratton was general manager of the Northumberland County Gas & Electric Company at Sunbury, Pa. Following this began his connection with Sanderson & Porter, from which firm he has gone to the Shore Line Electric Railway.



G. H. HARRIES

George H. Harries, for years prominent as a public utility executive, has received a leave of absence from the various corporations with which he is connected in order to resume military service. He is now in command of the Nebraska National Guard, at Fort Crook, having been commissioned brigadier general by Governor Neville, as of June 25, and will be recommended by the War Department for similar rank in the regular army. Governor Neville in selecting General Harries to lead the three Nebraska regiments expressed the hope that when they become a part of the regular army on Aug. 5, by application of the draft, General Harries would continue to command the brigade. The Nebraska troops will be trained and brought to war strength at Deming, N. M. Since 1912 General Harries has been a vice-president of H. M. Byllesby & Company. He is also president of the Louisville Gas & Electric Company, the Omaha Electric Light & Power Company, the Arkansas Valley Railway, Light & Power Company and an officer in a number of other large utility organizations. During the past several months General Harries has been engaged in work for the Council of National Defense and War Department, having placed himself at the disposal of the government when war was declared on Germany. The son of an officer in the British army, born in Wales in 1860, General Harries came to the United States when a boy and served as a scout under Generals Miles and Crook in frontier wars with the Indians. He was a member of the government's commission settling the grievances of the Sioux Indians in 1891. In 1888 he went to Washington, D. C., as a newspaper reporter, later becoming president of the Metropolitan Railroad in that city. From 1897 to 1917 he was brigadier general in command of the military and naval forces of the District of Columbia, retiring as major general May 26 of the latter year. During the Spanish-American War he served as colonel of the First District of Columbia Infantry, United States Volunteers, participating in the siege of Santiago, Cuba. He has been a member of the War Department board on the promotion of rifle practice since organization. He has been president of the Association of Edison Illuminating Companies, president of the American Electric Railway Association and national commander of the Order of Indian Wars, composed of army officers.

Construction News

Construction News Notes are classified under each heading alphabetically by States.

An asterisk (*) indicates a project not previously reported.

RECENT INCORPORATIONS

Boise (Idaho) Railway.—Incorporated as successor to the Boise Railroad Company, Ltd. Capital stock, $200,000. Officers: David Miller, president; W. E. Pierce, vice-president, and Thomas R. Hamer, secretary and treasurer.

***Iowa & Omaha Interurban Railway, Council Bluffs, Ia.**—Articles of incorporation have been filed by the Iowa & Omaha Interurban Railway to construct and operate electric or steam railroads, furnish electricity or steam for power purposes and to control telephone and telegraph lines in connection with the road. Capital stock, $25,000. Officers: E. A. Wickham, president; J. P. Greenshields, vice-president; E. F. Danahey, secretary, and J. J. Wickham, treasurer.

***San Antonio (Tex.) Public Service Company.**—Incorporated in Texas to take over and operate the properties of the San Antonio Traction Company and the San Antonio Gas & Electric Company, both controlled by the American Light & Traction Company. Capital stock, $4,700,000. The new company is also authorized in its charter to construct a system of interurban electric railways out of San Antonio, and it is reported will build a line between San Antonio and Austin, about 85 miles. The San Antonio & Austin Traction Company has been promoting the construction of this proposed road for some time past. The directors of the San Antonio Public Service Company are Emerson McMillin, New York, chairman of the board of directors of the American Light & Traction Company; A. P. Lathrop, New York; W. B. Tuttle, R. C. Jones, Walter P. Napier, S. J. Brooks and Howard Templeton, San Antonio.

FRANCHISES

Santa Ana, Cal.—The Pacific Electric Railway has received a fifty-year franchise from the Board of Supervisors of Orange County to construct a line on Lyon Street, Williams Street, Glen Avenue and Sixth Street, from Glen Avenue to the easterly line of D Street or State Highway, Santa Ana.

Syracuse, N. Y.—The improvements of the service extended in Syracuse by the New York State Railways have been made possible through the approval by the Public Service Commission for the Second District of New York of the franchises granted that corporation by the Common Council of Syracuse on April 23, and approved by the Mayor and Board of Estimate and Apportionment of that city. The improvements comprise minor changes in the track system to facilitate the operation of the new single-end cars.

Smithville, Tenn.—The County Court of DeKalb County has granted the Nashville & Eastern Electric Railway a two years' extension of time from Dec. 31, 1917, on its franchise in which to construct its line from Lebanon to Smithville. [Sept. 9, '16.]

Dallas, Tex.—The City Commission of Dallas has granted the Dallas Northwestern Traction Company and the Dallas Southwestern Traction Company three months' extension of time on their franchise in which to begin construction on their proposed lines from Dallas to Slidell and from Dallas to Cleburne. E. P. Turner, Dallas, president. [July 7, '17.]

El Paso, Tex.—The El Paso Electric Railway has asked the City Council for a franchise to construct an extension on Campbell Street from Hague Street to Kern Place.

Petersburg, Va.—The Petersburg & Appomattox Railway has asked the City Council of Petersburg for a franchise to construct an extension from the present main line at the eastern limits of the city along East Bank, East and Bollingbrook Streets to Second Street.

TRACK AND ROADWAY

Northern Alabama Traction Company, Florence, Ala.—Surveys are being made of this company's proposed line from Florence to Huntsville, with a branch line to Lexington, and it is expected that construction work will be begun about Sept. 1. The Central Construction Company of Indianapolis, Ind., has the contract to build the road and agrees to have it completed and ready for operation by October, 1919. Thurston H. Allen, Huntsville, general manager. [March 17, '17.]

Rockford (Ill.) City Traction Company.—It is reported that this company will construct an extension on Seventh Street from Twenty-third Avenue to Harrison Avenue connecting with the line of the Chicago Milwaukee & Gary Railroad.

Union Traction Company of Indiana, Anderson, Ind.—This company is reconstructing its line on Third Street from Madison Avenue to Sycamore Street, new 80-lb. rail being used.

Gary & Southern Traction Company, Crown Point, Ind.—Work will be begun at once by the Gary & Southern Traction Company on the construction of an extension between Lattaville Junction and Griffith.

Boston (Mass.) Elevated Railway.—The Public Service Commission of Massachusetts has ordered the Boston Elevated Railway to build a double-track surface line in Pleasant Street between Washington Street and the southerly entrance of the Tremont Street subway, in order to provide for faster service between the South Boston district and the retail shopping center of the city.

Duluth (Minn.) Street Railway.—Work has been begun by the Duluth Street Railway reconstructing its tracks on West Third Street between Twenty-first and Twenty-eighth Avenues, the old rails being replaced with a heavier type of rail.

United Railways, St. Louis, Mo.—This company will construct an extension of its Hamilton Avenue line west on Delmar Boulevard to Skinker Avenue, to the north line of Forest Park, and west on the Clayton car tracks to DeMun Avenue.

Brooklyn (N. Y.) Rapid Transit Company.—Work has been begun by the Brooklyn Rapid Transit Company on the construction of an extension on Metropolitan Avenue and Dry Harbor Road, Middle Village, to Jamaica Avenue, Richmond Hill.

Buffalo & Lake Erie Traction Company, Buffalo, N. Y.—Permission has been granted to the Buffalo & Lake Erie Traction Company by the City Council of Dunkirk to tear up a portion of the lines of the Dunkirk Street Railway, a subsidiary line, which holds the franchise for the system known as the belt line in Dunkirk. The company will continue to operate the line in East Lake Road to the city line.

Cincinnati (Ohio) Traction Company.—At a special meeting on July 13 the City Council of Cincinnati, Ohio, ordered extensions to four of the Cincinnati Traction Company's lines. Their construction will mean the expenditure of more than $250,000 before the end of the year. They are as follows: Warsaw Avenue line from the present terminus out Glenway Pike to Covedale; Sixth Street across the Hopple Street viaduct; McMicken to Dysmuth Avenue, and North Norwood to Pleasant Ridge and Kennedy Heights.

Ohio Electric Railway, Springfield, Ohio.—The line of the Ohio Electric Railway between Springfield and Dayton runs directly through the ground which has been selected for the Wilbur Wright Aviation Field. The section of the electric line within the camp is to be removed and 3½ miles of new track laid around the border of the camp. This construction work is already well under way, the right-of-way being moved almost a mile at the maximum point and increasing the length of the line about ⅓ mile. The new line is being laid with 70-lb. rail on an 18-ft. gravel ballast roadbed, with concrete culverts and first-class construction throughout.

Mahoning Valley Railway, Youngstown, Ohio.—The New Castle Electric Street Railway and the Mahoning Valley Railway will together pay to Lawrence County 30 per cent of the cost of the construction of the new Mill Street bridge over Neshahannock Creek. Under the terms of the agreement the bridge is to cost not more than $66,000, and of this amount the two companies will pay $19,000. This amount will go into the construction of the bridge and will be exclusive of the trolleys, tracks and extra equipment for the use of the company. The bridge will be 54 ft. wide, with allowance for a double-track system.

Ardmore (Okla.) Railway.—Plans are being developed by the Ardmore Railway for the construction of a system of electric interurban lines covering the entire Healdton, Fox and other producing oil fields. It is proposed to have the lines center at the new town of Healdtown. The plan contemplates the inauguration of both freight and passenger service on these lines.

Johnstown (Pa.) Traction Company.—Work will soon be begun by this company double-tracking its line on Baumer Street.

Wisconsin Interurban System, Madison, Wis.—It is reported that negotiations are under way with the receiver of the Janesville & Madison Traction Company for the purchase by the Wisconsin Interurban System of the 2½ miles of track between Fair Oaks and the town hall of Blooming Grove. J. E. Jones, Madison, president. [July 14, '17.]

SHOPS AND BUILDINGS

Public Service Railway, Newark, N. J.—This company has filed plans for the construction of four one-story carhouses at the Passaic Wharf, each about 50 ft. x 145 ft., to cost $23,600.

Northern Ohio Traction & Light Company, Akron, Ohio.—This company is building a new freight house in Tuscarawas Street W., just west of the company's carhouse.

Southern Cambria Railway, Johnstown, Pa.—This company reports that within the next three months it will place contracts for the construction of a small carhouse at Ebensburg to accommodate lay-over cars at the Ebensburg terminal.

POWER HOUSES AND SUBSTATIONS

Pine Bluff (Ark.) Company.—This company reports that within the next six weeks it expects to purchase one 2500-kw. turbo-generator and two 600-hp. boilers.

Havana Electric Railway, Light & Power Company, Havana, Cuba.—This company reports that it is erecting a new substation to contain two 1000-kw. rotaries and another to contain three 500-kw. rotaries. The purchase of a new 25,000-kw. turbine generator for the power plant has been authorized.

Georgia Railway & Power Company, Atlanta, Ga.—Plans are being prepared by the Georgia Railway & Power Company for the construction of a sixth unit at the Tallulah Falls hydroelectric plant, increasing the output by 12,000 kw., at a cost of about $330,000.

Washington, Baltimore & Annapolis Electric Railway, Baltimore, Md.—Plans are under way by this company for an electric transformer station, from which will be furnished electric light and power for the military encampment at Admiral.

Vicksburg Light & Traction Company, Vicksburg, Miss.—A report from the Vicksburg Light & Traction Company states that the company is installing a 1250-kw. G.E. turbine and an Alberger condenser in its power plant.

Morris County Traction Company, Morristown, N. J.—Rotaries and other equipment are being installed by the Morris County Traction Company in its new substation at Mine Hill. The New Jersey Power & Light Company furnishes the service at high voltage for step-down and distribution by the traction company.

Monongahela Valley Traction Company, Fairmont, W. Va.—Construction will soon be begun by the Monongahela Valley Traction Company of a new power plant at Rivesville. Contracts for the equipment and the bulk of the construction have been let.

Wisconsin Traction, Light, Heat & Power Company, Appleton, Wis.—The power house of the Wisconsin Traction, Light, Heat & Power Company was recently damaged by fire, caused by lightning, to the extent of about $5,000.

Manufactures and Markets

Discussions of Market and Trade Conditions for the Manufacturer, Salesman and Purchasing Agent

Rolling Stock Purchases Market Quotations Business Announcements

Difficulties of the Railway Supply Man

Business to Be Had if Railways Were Able to Buy—Relief Expected from Railways Near Army Cantonments

"The business is there if the railways had the wherewithal to buy" are the words which an Eastern railway supply man used in summing up the present situation as regards the accessory business. Continuing, he said: "The dollars which they use in making purchases have been cut in two, but the nickels which they receive for fares have remained the same. At the present time many railways are petitioning for higher fares, and in case these are granted the railways will immediately be in a position to purchase much-needed supplies." As one railway man expressed it, "We are not buying anything beyond that which is absolutely necessary," and this holds true in a good many instances. However, thirty-two army cantonments for the regular army and the National Guard are being constructed in different parts of the United States, and the railways in cities near these camps are in the market or will be in the market for additional equipment. Some of the railways are buying new cars, while others are rebuilding or remodeling old cars, and this, of course, makes a market for a number of accessories. The following suggestions are made by a well-known agent of accessories who is well qualified to comment on this matter:

RAILWAY OFFICIALS OFTEN WASTE SALESMEN'S TIME

If anything at all can be done to help reduce selling costs it can be done by many railway officials, and the railways will be the ones to benefit. Very often the officials actually want to do business, but instead they simply waste a lot of time. On a certain deal, three days were spent on the railway property by a manufacturer's agent where much less time would have been sufficient. After thoroughly convincing the master mechanic during the first day that the equipment was just what was needed, the matter was put up to the general manager, who was not able for various reasons to give time enough to make a decision or to hear the recommendations of the master mechanic. The deal was finally closed on the third day, when the general manager approached the master mechanic and, calling him by his first name, said, "Well, is this the stuff you need and is it O. K.?" To this the master mechanic answered, "Yes." The general manager then said, "All right, go ahead," or words to that effect, and the deal was closed accordingly.

This is given as an example of many incidents similar in nature which eat into the meager profits of the accessory manufacturer. It is true that the railway men generally mean well, but they often get tied up with other matters and keep the traveling man waiting on account of not realizing the value of the salesman's time. However, when a salesman visits a property, if the railway man and the salesman would get right down to business and finish it, that would be a different matter. With the exception of some parts of the East, traveling expenses have just about doubled for salesmen of most supplies, and delays of the kind mentioned are very discouraging.

It is often the case that a railway supply man representing several lines of equipment will visit a property to talk about a specific order. The salesman may or may not get the order, but any attempts at missionary work on the other lines of accessories are usually frowned upon. The railway executive likes to take up a certain definite proposition and does not care to spend time on any others. If, however, the same official wants information within three or four weeks regarding another accessory, he does not hesitate to tell the railway supply man so, and this may mean another trip out to the property which he had visited probably within a month. In these days of high prices and poor deliveries, the railway executive should be forehanded, and one way of doing this is to get inquiries and delivery quotations while the railway supply man is on the property on every product that he is liable to be interested in within six months.

With a very few exceptions, there is little money to be made in handling repair parts at the present time. It is not uncommon for a railway to write in for perhaps a half dozen repair parts where formerly ten or twelve dozen were ordered. To make up small orders such as the above, it is necessary to set up a machine, and this operation probably will cost more than will be obtained from the whole order.

Exporters' Contracts Are to Specify Shipping Clauses

Manufacturers Should Quote Delivered Prices—Catalogs with Cable Addresses Needed—Electrical Exports Increasing

In view of the fact that public necessity may in the future require the requisition of vessels by the government, and as this may be done quickly with but little time for adjustment, the Bureau of Foreign and Domestic Commerce has advised that exporters, in making contracts for export, should state in the contracts that shipment is to be contingent on their obtaining shipping space. The bureau also suggests that exporters will save themselves much annoyance and possible claim for damages if a clause is inserted in bills for sale stating that the sale is made subject to the seller's ability to secure an export permit, if such permit is required.

Foreign agents, commercial attachés and consular agents are urging upon American manufacturers the importance of being able to quote delivered prices at the nearest port to which supplies are shipped. It is difficult to imagine the position of the foreign buyer when he attempts to find out what the goods will cost him laid down at some particular port. In almost every case he has few facilities for finding out this information as compared with American firms. Rising freight rates, of course, make this a difficult matter, but there is no question that this information would be of immense value in competing with European firms which have heretofore had the advantage over American salesmen on account of knowing just what goods cost at their destination. Communications recently received assert that a number of directories of American manufacturers have been received, but in no case is the cable address given. It would be useful for the foreign user to know the cable address of manufacturers and merchants, as inquiries are often made by cable.

ELECTRICAL EXPORTS SHOW LARGE INCREASES

Figures which have been taken from a report compiled by the Bureau of Foreign and Domestic Commerce show that exports of electrical supplies for the month of April, 1917, amounted to $4,740,995, as compared with $2,630,169 in April of the previous year. Added to the figures for the three preceding months, the April exports bring the total for the first four months of 1917 up to $18,379,351, or at an annual rate of over $55,000,000. During the ten months ended April last the exports of electrical merchandise amounted to $41,733,199, as compared with $23,666,267 for the ten months ended April, 1916, and $15,922,467 for the ten months ended April, 1915.

Materials Continue to Soar

Analysis of Costs of Supplies by the Reading Transit & Light Company Shows the Problems Railways Are Facing

This company recently called attention to the great advance in prices of some of the materials necessary in the operation of electric power and railway systems. The latest statement by this company contains a summary of increases in the price of materials used. It follows: "We mentioned coal costing $200,000 more this year than last and increases of $80,000 in the annual payrolls of our employees and an advance of 44 per cent in the price of steel rails. But we were merely scratching the surface. Copper wire, electrical machinery and a multitude of other things used in constructing, renewing, repairing, operating and keeping our properties up to the high standard of efficiency which the public demands are costing a whole lot more than they did two years ago. It is also necessary to face the handicap of being compelled to place orders for materials from three months to two years ahead of time of delivery. Some materials can scarcely be procured at any price. Steel car wheels, for instance, have practically disappeared from the market. They were last heard of at $18 apiece, but for some time it has been impossible to get anybody to quote a price on them. Cast-iron wheels are selling at $1.80 per 100 lb. on big contracts, compared with $1.45 two years ago, an advance of about 25 per cent."

PRICES PAID FOR MATERIALS AS SHOWN BY FILES

This company has taken figures at random, from its purchasing department, showing the sharp advance in prices of some materials to-day, compared with two years ago. Rails have increased 100 per cent over normal prices. To-day they are quoted at $55 a ton for delivery a year hence, and for short-time delivery the price is $75 a ton. Two years ago steel rails were selling at $38.20, so that what is regarded as the normal price to-day is an advance of 44 per cent. There is an even greater advance in special track work, which means curves, switches and the like, the increase in these materials being fully 200 per cent. Copper that is required in large quantities for repairs to trolley and electric equipment has nearly trebled its normal price. Copper trolley wire is now quoted at 38 cents a pound compared with 17 cents in 1915. Copper feeder cable has advanced from 18 cents to 34¼ cents a pound in the same period.

Motor equipment has advanced over 50 per cent, and following are some of the other advances:

	1915	1917
Track spikes, per 100 lb.	$2.15	$4.00
Steel trolley poles, each	1.10	2.10
Track plates, per pound	0.02½	0.10
Steel and iron bars, per pound	0.01¾	0.04¾
Cotton waste, per pound	0.09	0.13
Chestnut ties, each	0.40	0.60
Cement, per bbl.	1.29	2.09
Gravel, per ton	1.25	2.00
Crushed stone, per ton	0.50	1.00

Largest Ball-Bearing Car Order

141 One-Man Cars for Stone & Webster Will Have Ball Bearings in Both Motors and Main Journals

In working out the designs for the light-weight one-man cars to be used on a number of its properties, the Stone & Webster Management Association has been consistent in taking advantage of every opportunity to reduce the power consumption and increase the reliability of operation of the cars. As a part of this policy it was decided to equip both the motors and the main journals of these cars with Gurney ball bearings. This type of bearing was chosen because of its great load capacity, and in the case of the journal bearings because it makes special provision for taking care of the thrust loads that are occasioned by going around curves.

This is undoubtedly the largest order ever placed for anti-friction bearings for electric railway service. Another recent large order received by the same company is from the J. G. Brill Company, Philadelphia, Pa., for fifty-four cars for stock.

Copper Market Quiet

Owing to the uncertainty of the government's action in regard to the price to be paid for the 60,000,000 lb. of copper tentatively arranged for with the copper producers at 25 cents a pound, copper has declined slightly, and is still in a waiting stage. The government has now agreed to pay 75 per cent of the 25 cents a pound as a preliminary settlement, leaving the balance to be adjusted by an investigating committee of the Federal Trade Commission. The copper producers, however, have not accepted the government's offer, and as a result buyers who are known to be in the market for large quantities are still holding off pending a settlement between the producers and the government in order to determine whether the price named will apply to other users of copper. Large producers are not making quotations and it is probable that the market will continue dull until some definite price has been arranged for between the government and the producers.

Swiss Railways to Purchase Supplies

In connection with the electrification of the Swiss Federal Railways, the government has created a special department, known as Direktion für die Einführung der elektrischen Zugförderung der Schweizerischen Bundesbahnen, Berne, Switzerland. This department, according to a recent report of the Bureau of Foreign and Domestic Commerce, announces that it is prepared to consider proposals for sale and delivery of such electrical material as may be necessary for equipment in connection with this work, and that bids will be received from all countries. A statement by the management shows that large orders for copper wire already have been placed with certain firms in the United States, and that British and German firms are applying for details in order that they may submit offers for supplies and equipment.

Old Material Prices Drop

With the exception of the drop in copper, influenced largely by the action of the government in regard to the price to be paid for that material, the principal feature of the past week was the heavy decline in old materials. The heaviest reduction was in heavy steel scrap, which dropped from $40 to $32 a ton. Railroad wrought iron fell off $7 a ton, steel car axles $4, old car wheels $2, scrap steel rails $5, and machine shop turnings $1. As old materials play an important part in steel manufacturing costs, the reaction is not unlikely to have an effect on finished prices. The railways are showing no disposition to sell on account of the present weakness of the market, and there has been very little buying reported.

Big Demand for Spraying Equipment

According to the Spray Engineering Company, Boston, Mass., sales of its equipment for the month of June were the best in the history of the organization. Inquiries are being received from foreign countries, and recent sales include cooling ponds or equipment for China, Ecuador and Cuba.

In addition to many large domestic orders placed by the steel mills coal companies and other allied industries it has received orders for the following: Minneapolis (Minn.) General Electric Company air washer, capacity 60,000 cu. ft. per minute; United Gas & Electric Company, New Orleans, La., one air washer, capacity 50,000 cu. ft. per minute, and for the Consolidated Gas & Electric Company, Baltimore, Md., the largest washer the company has so far built, having a capacity of 125,000 cu. ft. of air per minute. At the Waterbury (Conn.) station of the Housatonic Power Company a fifty-thousand-dollar spray cooling installation is to be completed within six weeks, and a novel feature of this installation will be the supporting of the spray nozzles by Archbold-Brady structural steel frames 50 ft. over the river edge without supporting piers in the water. This construction was determined upon to avoid difficulties from ice in the neighborhood of foundations.

NEW YORK METAL MARKET PRICES

	July 12	July 19
Prime Lake, cents per lb	30¾	26½
Electrolytic, cents per lb	30¾	26½
Copper wire base, cents per lb	36	36
Lead, cents per lb	11⅛	10½
Nickel, cents per lb	50	50
Spelter, cents per lb	9⅛	8⅞
Tin, Straits, cents per lb	63	62½
Aluminum, 98 to 99 per cent, cents per lb	58	55

OLD METAL PRICES

	July 12	July 19
Heavy copper, cents per lb	27	26½
Light copper, cents per lb	24½	23½
Red brass, cents per lb	20	19½
Yellow brass, cents per lb	18	17½
Lead, heavy, cents per lb	9¼	9
Zinc, cents per lb	7	6¼
Steel car axles, Chicago, per net ton	$50.00	$46.50
Old car wheels, Chicago, per gross ton	$38.00	$36.00
Steel rails (scrap), Chicago, per gross ton	$48.00	$43.00
Steel rails (relaying), Chicago, per gross ton	$59.50	$59.50
Machine shop turnings, Chicago, per net ton	$20.00	$19.00

CURRENT PRICES FOR MATERIALS

	July 12	July 19
Rubber-covered wire base, New York, cents per lb.	36½	36½
No. 0000 feeder cable (bare), New York, cents per lb.	36½	36½
No. 0000 feeder cable stranded, New York, cents per lb.	33¾	33¾
No. 6 copper wire (insulated), New York, cents per lb.	33	33
No. 6 copper wire (bare), New York, cents per lb.	36	36
Rails, heavy, Bessemer, Pittsburgh	$38.00	$38.00
Rails, heavy, O. H., Pittsburgh, per gross ton	$40.00	$40.00
Wire nails, Pittsburgh, per 100 lb	$4.00	$4.00
Railroad spikes, 9/16 in., Pittsburgh, per 100 lb.	$5.00	$5.00
Steel bars, Pittsburgh, per 100 lb	$500	$4.50
Sheet iron, black (24 gage), Pittsburgh, per 100 lb.	$8.35	$8.35
Sheet iron, galvanized (24 gage), Pittsburgh, per 100 lb.	$9.55	$9.55
Galvanized barbed wire, Pittsburgh, cents per lb.	$4.85	$4.85
Galvanized wire, ordinary, Pittsburgh, cents per lb.	$4.65	$4.65
Cement (carload lots), New York, per bbl	$2.22	$2.22
Cement (carload lots), Chicago, per bbl	$2.31	$2.31
Cement (carload lots), Seattle, per bbl	$2.60	$2.60
Linseed oil (raw, 5 bbl. lots), New York, per gal.	$1.13	$1.13
Linseed oil (boiled, 5 bbl. lots), New York, per gal.	$1.14	$1.14
White lead (100 lb. keg), New York, cents per lb.	12¾	12¾
Turpentine (bbl. lots), New York, cents per gal..	41½	40

ROLLING STOCK

Adrian (Mich.) Street Railway is reported to have placed an order for twelve light-weight safety cars.

Cleveland, Southwestern & Columbus Railway, Cleveland, Ohio, is planning to build four new freight trailers.

Long Island Railroad, New York, N. Y., is reported to be in the market for forty motor and twenty-five trailer cars.

Hocking-Sunday Creek Traction Company, Athens, Ohio, has been authorized by the Public Service Commission to purchase two cars.

Pine Bluff Company, Pine Bluff, Ark., is in the market for one 2500-kw. turbo-generator, two 600-hp. boilers and eight small railway motors.

Scioto Valley Traction Company, Columbus, Ohio, is in the market for several second-hand passenger trailers for use in connection with the traffic expected from the military training camp now under construction at Chillicothe, Ohio.

Mason City & Clear Lake Railroad, Mason City, Iowa, noted in the May 19 issue as placing an order for five one-man safety cars with the American Car Company, has specified the following details for this equipment:

Number 5
Date of order......June 18, 1917
Date of delivery......Oct. 3, 1917
Builder........American Car Co.
Type.......Light weight safety
Seating capacity...............28
Over bumpers.....30 ft. 9½ in.
Over vestibule......29 ft. 9½ in.
Width over all.........8 ft. 0 in.
Rail to trolley base....9 ft. 9 in.
Body ....All steel
Interior trim..........¼ in. oak
Headlining ....Agasote
Roof ....Arch
Air brakes.......Westinghouse
Axles ....Hammered steel
Control ....Type K 10-Q
Curtain fixtures...............Rex
Curtain material......Pantascte
Dest. signs..........E. S. S. Co.
Door mechanism.................. Safety Car Devices
Fare boxes.........International

Fenders ....Tri-City
Gears and pinions........West.
Hand brakes............Peacock
Heaters....Peter Smith Electric
Headlights ....Golden Glow
Journal boxes, Gurney ball bearing
Lightning arresters.......West.
Motors.....2 West. 506A., inside hung
Paint.......Chicago Varnish Co.
Sanders..............Ohio brass
Sash fixtures....O. M. Edwards
Seats, style..Hale & Kilburn 199-A
Seating material.........Rattan
Step treads............Feralum
Trolley catchers or retrievers, Ohio Brass
Trucks, type..........Brill 78M1
Ventilators ....Automatic
Wheels ....24 in.

City of Seattle, Wash., is in the market for eight one-man cars for use on the present municipal railway. The council recently passed an ordinance appropriating $25,000 toward this order.

Kankakee & Urbana Traction Company, Urbana, Ill., has purchased two interurban cars, one motor and one trailer, from the Wilkes-Barre & Hazleton Railway. Each car is 52 ft. long and has a capacity of 100 passengers.

Washington, Baltimore & Annapolis Electric Railroad, Baltimore, Md., noted in the July 14 issue as being in the market for 100 day coaches for handling troop movements in and out of the government's camp at Annapolis Junction, Md., has purchased fifty-four passenger coaches from the Long Island Railroad for immediate delivery. The company will expend about $350,000 in extensions, including the grading and laying out of two miles of double track, and the construction of a transformer station for furnishing electric light and power.

Rockford & Interurban Railway, Rockford, Ill., has specified the following details for thirteen vestibuled pay-within cars which are being built for this company by the St. Louis Car Company.

Number of cars ordered.....13
Name....Rockford & Interurban
Builder...........St. Louis Car
Type.....Vestibuled pay-within
Seating capacity.............40
Weight (total)........36,840 lb.
Truck centers, length..19 ft. 0 in.
Length over bumpers.41 ft. 4 in.
Length over vestibule.40 ft. 4 in.
Width over posts......8 ft., 2 in.
Height, floor to ceiling.7 ft. 6 in.
Sill to trolley base...8 ft. 5¼ in.
Body..Steel sides with wooden superstructure
Interior trim.......Honduras mahogany
Headlining.....3/16 in. Agasote
Roof...............Turtle deck
Underframe ....Steel
Air brakes........Westinghouse
Axles ....St. Louis Car
Bumpers.....Rico anti-climbers
Cable.............St. Louis Car
Car trimmings..........Bronze
Conduits..........St. Louis Car
Couplers ....St. Louis Car
Curtain fixtures.Forsyth No. 88
Curtain material....Pantasote No. 77
Door ....Hand operated St. Louis Car

Designation signs............ Illuminated, St. Louis Car Co.'s box, E. S. S. Co. mechanism
Fenders ......Railway's design
Gongs..12 in. bronze pneumatic
Hand brakes............Ackley
Hand straps......Rico sanitary
Heaters....Peter Smith No. P-2
Headlights ....Crouse-Hinds
Journal boxes.....St. Louis Car
Lightning arresters.......... Westinghouse
Motors..........West. 532-B, outside hung
Paint............Murphy ABC.
Registers......International R-5
Sandbox with Reliance sand trap valve
Sash fixtures....O. M. Edwards
Seats....Cross and longitudinal, Hale & Kilburn
Seating material........Rattan
Springs..Pittsburgh Steel Spring
Step treads ....Mason
Trucks, type....St. Louis Car Co.'s 106 A maximum traction
Ventilators ....Automatic
Wheels....32 in. driver, 21 in. pony, cast-iron
Special devices.Faraday buzzers

TRADE NOTES

Cutler-Hammer Manufacturing Company, Milwaukee, Wis., announces the removal of its New Haven office to 962 Chapel Street.

Blaw Steel Construction Company, Pittsburgh, Pa., and the Knox Pressed & Welded Steel Company have consolidated under the name of the Blaw-Knox Company. The personnel of the two organizations will remain unchanged.

Robert E. Rae, for many years with the Western Electric Company, and for the past four years sales manager for Stanley & Patterson, New York, manufacturers of electric signal apparatus and lighting specialties, has resigned from the latter concern.

Anaconda Copper Company, Butte, Mont., has already started construction on a wire and rod mill at Great Falls, Mont., to cost between $500,000 and $1,000,000. It will have a capacity of 200,000 lb. of copper rods daily, and about 100,000 lb. of copper wire.

Ray D. Lillibridge, Inc., New York, N. Y., announces that the entire firm are going to "vacation" from Aug. 11 to Aug. 27, except one clerk, who will remain to explain the situation to any one who may call. This plan was followed last year and proved satisfactory to all concerned.

Duquesne Electric & Manufacturing Company, Pittsburgh, Pa., dealer in new and used electrical apparatus and power equipment, has opened a branch office in the Marshall Building, Cleveland, Ohio. William L. Moorehead, vice-president of the company, is in charge of the Cleveland office.

S. G. Swigert, consulting engineer, has reopened an office in Akron, Ohio, having closed his office in Missoula, Mont. Mr. Swigert located and built several of the early suburban electric railways near Akron, Ohio. Recently he has been engaged in consulting civil and hydraulic engineering in the West. From 1912 to 1916 he was irrigation manager of the Flathead project, United States Reclamation Service.

Walter A. Zelnicker Supply Company, St. Louis, Mo., and affiliated companies are now represented in the Birmingham district by Thomas A. Hamilton, who for the past fourteen years has been connected with Crane Company, prior to which he was superintendent of the East St. Louis plant of the Zelnicker car shops. Mr. Hamilton will be stationed at 1018 Woodward Building, Birmingham, Ala., and will have charge of both buying and selling in the Southeastern district.

General Electric Company, Schenectady, N. Y., announces that it has closed a contract for one 10,000-kw. turbo-generator for the Rochester Railway & Light Company. It is also in receipt of an order for two 2500-kw., 600-volt rotary converters complete with transformers, etc., for the New York Central Railroad Company's electrified division. One of the rotaries will be installed in the Fiftieth Street substation, while the other one has been ordered for the Ossining substation.

Western Electric Company, Chicago, Ill., announces several changes in its sales and warehouse organization. W. H. Quirk has been appointed manager of the company's house at Cincinnati, Ohio. W. L. Sioussat will succeed Mr. Quirk as stores manager in the company's Cleveland house. S. Greenfield of the Philadelphia house will head the sales force of the new Baltimore branch at 425 East Oliver Street. The company will be represented in Charlotte by a warehouse and a sales office at 238 West First Street, with R. H. Bouligny in charge. An office and warehouse has also been opened in New Haven by Tyler L. Holmes at 135 Wood Street.

Richard Russell, manufacturer of the well-known trigger-lock reversible controller fingers, has recently moved into a new factory at Niagara Falls, N. Y. The building is constructed of steel and concrete on a plot 102 ft. x 60 ft. Large storage fireproof vaults for bar copper and finished goods are included in the construction of the building. These are conveniently located for handling raw bar copper for the machine shop and for shipping the finished goods. The machine shop is equipped with the latest automatic machinery for economical and efficient production. Trigger lock reversible controller fingers are now standard on more than 200 electric railways in the United States.

F. H. Tackaberry, the general agent of the American Steel Export Company, sailed from New York City on Saturday, July 7, on the Lamport & Holt steamer Vestris for South America. Mr. Tackaberry will cover a large portion of the Latin-American countries, visiting the following important cities: Rio de Janeiro, Sao Paulo, Buenos Aires, Montevideo, La Plata, Rosario, Valparaiso, Santiago, etc. Primarily, the reason of Mr. Tackaberry's trip will be to collaborate with the company's various agents throughout South America, lending every possible aid and acquainting them more thoroughly with the facilities available at the home office, and also with the market conditions in this country for iron and steel and engineering and contracting.

Chester F. Gailor has been elected president of the Atlantic Welding Company (formerly the Atlantic Welding Corporation), 30 Church Street, New York City. Mr. Gailor has been associated with this company for several years past since he resigned as assistant chief engineer of the United Railways & Electric Company of Baltimore. Previous to his work at Baltimore he was roadmaster of the Connecticut Company at Hartford and prior to that he held positions in other railway companies and with rail welding interests. Mr. Gailor therefore has an unusually well-rounded experience for developing the class of business in which he is now engaged. E. Walter Jansen has been elected treasurer of the company. He has been connected with this company ever since its organization in 1914. Previous to the commercial exploitation of this company's product he spent a considerable period in this country and abroad in laboratory research work involving metallurgical, thermodynamic and static problems entering into rail welding and other metallurgical work.

NEW ADVERTISING LITERATURE

Corliss Carbon Company, Bradford, Pa., has issued a discount sheet applying to its catalog No. 4.

Laclede-Christy Clay Products Company, St. Louis, Mo.: A wall card warning, "Look Out" for your future delivery inquiries.

V. V. Fittings Company, Philadelphia, Pa.: A bulletin descriptive of four types of safety switches, each containing a high grade slate base and an air-break knife switch.

Westinghouse, Church, Kerr & Company, New York, N. Y.: A bulletin, "A Floor Every Six Days," descriptive of the progress made on a recent building containing a 6000-hp. boiler plant. This reinforced concrete building of the flat slab type of construction was formed and poured at the rate of a floor every six working days.

American Steel Foundries, Chicago, Ill.: A calendar containing a large illustration at the top of each page, depicting the several branches of the steel industry. The arrangement of the calendar is convenient, the current month being in the center of the sheet, while the preceding month is shown above and the succeeding month below.

Oakley Chemical Company, New York, N. Y.: Bulletin No. 8 on Oakite Platers' Cleaner. Contains a description of this company's product which represents a new principle in cleaning by emulsifying oils and greases, thus destroying their adhesive nature by means of a purely physical action. Methods of cleaning, plating, lacquering and tinning are given.

General Electric Company, Schenectady, N. Y.: Bulletin No. 48,900, on CR-9500 automatic solenoid brakes and CR-9500 solenoids, contains interesting data for both a.c. and d.c. solenoid brakes possessing automatic or self-adjusting features. Each brake is a self-contained unit and is usually mounted on the driving shaft or bolted to the floor.

Gold Car Heating & Lighting Company, New York, N. Y.: A booklet on electric thermostatic control of steam heating for all passenger train cars. Describes and illustrates this company's equipment and explains the system of maintaining a predetermined uniform temperature in cars. Also contains diagrams and test data showing the even temperature obtained and the saving effected by application of this equipment.

Railway Utility Company, Chicago, Ill.: A forty-eight-page booklet, "The Solution of the Problem," which is the story of the events which led up to the awarding of a $200,000 contract by the Chicago Surface Lines to the Railway Utility Company for equipping its cars with this company's "Exhaust" type ventilators. The story of the summary of the problem, its solution attempted, the ventilating problem solved and how tests were made are subjects which will be of interest to all railway equipment men. The last half of this booklet is devoted to the Utility compensating system of natural ventilation and Utility control for street, elevated and interurban cars.

New Publications

Principles of Economics. By Edward R. A. Seligman, LL.D. Longmans, Green & Company, New York, N. Y. 711 pages. Cloth, $2.50 net.

This is the seventh edition of a book published originally as recently as 1905. In addition to the seven editions in English, the work has been translated into Russian, Japanese and French. In the present edition the introductory matter has been rewritten. In the body of the book chapters have been added on the control of trusts, labor legislation and labor insurance. Room has also been found for treatment of the federal reserve act. In other respects the discussion and references have been brought down to date. The work has been deservedly popular, and the reading of it in the light of the trend of present-day events should be distinctly profitable, for very important changes in our economic structure would appear to be inevitable. Sections of Professor Seligman's work that particularly deserve the attention of railway men are "International Trade," "Transportation," "Principle of Railway Charges," "Discrimination," "Railway Regulation" and "Socialism and Public Ownership."

Electric Railway Journal

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This Is as It Should Be

UNDER the caption "An Unreasonable Request" a prominent New Haven paper a few days since devoted an editorial to a defense of the Connecticut Company as to its refusal to carry free the soldiers encamped at the Yale Field. With the usual willingness of public bodies and individuals to spend other people's money, the Board of Aldermen had petitioned the company to carry the soldiers free, but the management did not feel justified in thus further reducing the already meager profit from its operation. The writer of the editorial in question explained that the company had already done more things of a patriotic nature than most people realized and gave examples to prove it. By way of analogy he said that, much as the newspaper would have liked to supply the soldiers with free copies, it was out of the question to do so. The answer to the free transportation suggestion, the writer continued, is a fair wage for the soldiers and their prompt payment. In these trying times no corporation or individual enjoys being put in the position of appearing to be unpatriotic. The public press has an excellent opportunity to prevent misunderstanding when such a condition comes about inadvertently, and the public as well as the vindicated will appreciate its courtesy in so doing.

Scheduling the Work of the Way Department

TIME studies of work to be performed in industrial shops have been a striking feature of the progress made by American manufacturers during the past few years, but there is nothing inherent in the method which limits it to industrial plants. It is equally adapted to electric railway repair shops, as shown in the articles on the Portland (Ore.) shops published in our Maintenance Issues of 1916 and '17. The same general principles have now been applied in Denver to track work, and the results, as given in the leading article this week, seem eminently satisfactory. No work is begun until the principal details connected with it have been scheduled in advance by a planning board. The duration of the undertaking, the hours of work, the date of the receipt of materials, etc., are all determined so that the theoretical lost time is reduced to a minimum. The work then becomes one of dispatching the men and materials to the point of use, just as cars are dispatched in transportation service to pass at determined meeting points. Those who read the article on the Denver system will recognize many points of resemblance to the various systems of shop planning with which mechanical engineers are familiar in shop applications. There is the central authority or bureau, the checking of estimates, the routine following of the work through and the records of work completed and to be performed. In Denver the method described is not confined to the way department but applies to all engineering work, although most of the examples cited in the article this week relate to outside construction. Altogether the article is one which we believe will prove most helpful to railways in the economical conduct of their engineering departments.

Efficiency Awards to All Employees

A GREAT deal of hard thinking has been applied to methods of rewarding motormen for better work. In the past many of these have been based on plans which have singled out only the highly skilled few, leaving the large majority discouraged over the prospect of ever attaining a "triple A" class. For instance, where awards are made on the basis of records shown by energy-checking devices, it is not uncommon for the awards to go only to the top-notchers, whereas men who are several points lower, often because of conditions beyond their control, get nothing—and nothing in any event is also the reward which the majority receive. Quite a different method has been pursued by some railways in dividing accident savings among all the men, either by an equal division or on some seniority or wage basis. It is this plan, rather than individual bonuses, which has worked out successfully on a property equipped with coasting recorders. When these devices were installed, the management frankly told the men that certain savings could be accomplished if the men would help. No promise of any kind of award was offered, but when a year's operation had shown a most gratifying saving, the wages of every man were voluntarily advanced 1 cent an hour. The men were advised that this increase had been made possible only through their co-operation. The result was an immediate jump in coasting efficiency and some plain talk to the low coasters by their fellow-motormen. The way the men on this road encouraged one another to coast speaks volumes for their loyalty to the management. While the example just quoted may appear unique of its kind, it shows that more may often be gained by interesting and rewarding the men as a whole than by restricting the bonuses to the few. The greatest gains to the railway must come from a high general average rather than from a few star performances and many poor ones. If all are to be interested, all should be rewarded.

What Publicity Does to the Employees

THE head of a large electric railway system received a real mental jolt one day when a publicity man told him that an aggressive publicity policy would show its first and some of its best results in his own organization. He hadn't thought of publicity in that light. In fact, all the thinking he had done on the subject had been in connection with the probable effect of the printed word upon the car-riding public. He had overlooked the fact that it is just as important for the employees of a public utility to have a clear and honest understanding of the company's attitude on service and public relations as it is to establish that understanding with the people served. Without such mutual understanding trouble is inevitable. But, by the same token, once a company makes an honest effort to educate both its employees and the public to an appreciation of the kind of service it wants to give, good results are certain.

An incident that illustrates this point occurred recently in one of the big Eastern States. A certain traction company was the object of an attack by the newspapers. Among certain things it was charged that the cars were dirty, the windows gummy around the edges, etc. It was also alleged that the platform men were uncivil to passengers, that the officials could not be seen, and that their policy was of the "public-be-damned" sort.

Some of these things were true. But the managers were not of the "public-be-damned" type. They were keen in their sense of duty to the public and of the public's right. But their conductors and motormen were often uncivil, and their cars were not so clean as they should have been—a too economical carhouse man had been saving money.

When the charges were made the company placed cards in its cars saying: "This company intends to make a reputation for clean cars. We want your help."

Another card bore this inscription: "The life of a street car conductor is no bed of roses. He is human, but he is aware of his duty to be courteous to our passengers. Help him."

Now, what happened? The company put on some cleaners to keep the windows and cars clean. They had to live up to that notice. The windows of those cars glistened, as one of the officers of that company said, "like the Kimberley diamond."

Moreover, the publicity reacted on the men. With that "courtesy" car card staring him in the face, it was not so easy for the conductor or the motorman to be "short" with passengers. Unconsciously they began to absorb some of the company officials' spirit, and complaints concerning incivility declined with most pleasing speed. All of which points a simple but useful moral:

Your car cards, your bulletins and all your literature should be brought to the notice of all your men. They are a part of the company. It is their publicity as well as yours. Incidentally, the office boy, the chief clerk or the superintendent's office sometimes makes as many enemies for a company as the platform men. Let them see your publicity, too.

There is sometimes a feeling on the part of managers that the adoption of a publicity policy will cause too much attention to be focused on them. They do not want to get in the limelight. One manager once said he didn't want his name signed to car cards because "people would get sick of seeing it around so much." He was told that the very object was to make his name and his personality synonymous with good service and consideration for the public's rights. It put the subject to him in a new light.

Publicity, intelligently and persistently followed, increases the efficiency of a company to a marked extent. Every man in its employ knows that what he does is part of the company's public record. He is only human when he wants to have a good record. A company with enough employees imbued with this spirit can stand the full glare of the limelight, and publicity will inculcate this spirit.

Publicity itself is the most human thing in the world. If it is not human it is not worth anything. It must represent the real policies—they should be human—of the management of a company. When it does, and the public becomes acquainted with these policies, the company will get a fair and square deal. For the public really wants and means to be fair, and will be if it has an honest chance.

Large Pinions on City Cars Not Only Useless but Costly

NOW that the search for economies in the electric railway field is so thoroughly under way, it might be well to call attention again to two well-known but somewhat neglected principles governing gear ratios for cars in city service. The first of these is that capacity for high maximum speed does not necessarily produce high schedule speed; in other words, a city car's ability to run fast is usually worthless as a time saver. The other principle is that the only effect of a low gear ratio, or the use of large pinions, is to provide high maximum speed, which has no value in city service, and that it provides this high speed at the expense of energy consumption and schedule speed, which have great value.

That these very definite laws governing gear ratios for city service should be disregarded to the extent that companies retain the numerous sixteen-tooth and seventeen-tooth pinions that are in operation to-day under congested traffic conditions may perhaps be due to the complication arising from the common custom of considering both distance and time elements in connection with the subject of city car movement. However, consideration of only the time element is quite feasible. Thus it may be said that the reason why high maximum speed is worthless in city service is that the stops come at intervals of only about forty seconds, or some other figure of that order. If a six-second stop is assumed, the net time interval devoted to movement of the car between stops becomes thirty-four seconds, and even with straight-line acceleration and braking at a rate of 1.5 m.p.h.p.s. the maximum speed that the car could attain would be 25.5 m.p.h. In other words, with thirty-four seconds devoted to car movement, only seventeen seconds could be allowed for acceleration, the remainder having to be reserved for braking in order to make the next stop. Even if the car was geared to make 30 m.p.h. and had motors large enough to accelerate at 1.5 m.p.h.p.s. with that gearing, it would be impossible to attain the 30-mile speed.

It is of interest now to consider, under the more or less academic assumption of straight-line acceleration, the effect of limiting the maximum running speed of the above assumed equipment by changing the gear ratio. If a pinion small enough to reduce the maximum speed from 30 m.p.h. to 22.5 m.p.h. should be installed, the rate of acceleration would obviously be increased to about 2 m.p.h.p.s. With a braking rate of 1.5 m.p.h.p.s., as before, and the same number of stops (which, it may be said, works out to about eight per mile), two alternatives are presented to the operator. Of these, one is that of retaining the same schedule speed and devoting the whole advantage gained by the smaller pinion to saving energy. In this case power may be shut off after 9.75 seconds of acceleration, allowing the car to coast for 12.25 seconds, and then applying brakes for twelve seconds to complete the run in the same time interval as before. The saving in energy will be 43 per cent, because of the greatly reduced time during which power is applied.

The alternative procedure is to carry acceleration up to 22.5 m.p.h., the limit set by the reduced pinion size, and then to coast. In this case the acceleration will last for 11.25 seconds, the coasting for about seven seconds and the braking for about 14.25 seconds, making the duration of the run 32.5 seconds instead of thirty-four seconds obtained with the large pinion. There will be a 34 per cent saving in energy under these conditions, but the major result is the saving of time, which amounts to an increase of about 4 per cent in schedule speed.

Here is a case where a decrease in a car's ability to run fast actually brings a faster schedule. Admittedly it is a highly special example, but the conditions required in practice to parallel it involve merely a frequency of stops sufficient to limit the average time for acceleration beyond resistance to four or five seconds—a not abnormal situation with congested traffic. This is reflected by the number of new cars that now are being fitted with fourteen-tooth and fifteen-tooth pinions when they are built, the latter pinion size being set by some engineers as an arbitrary minimum on the grounds of tooth strength.

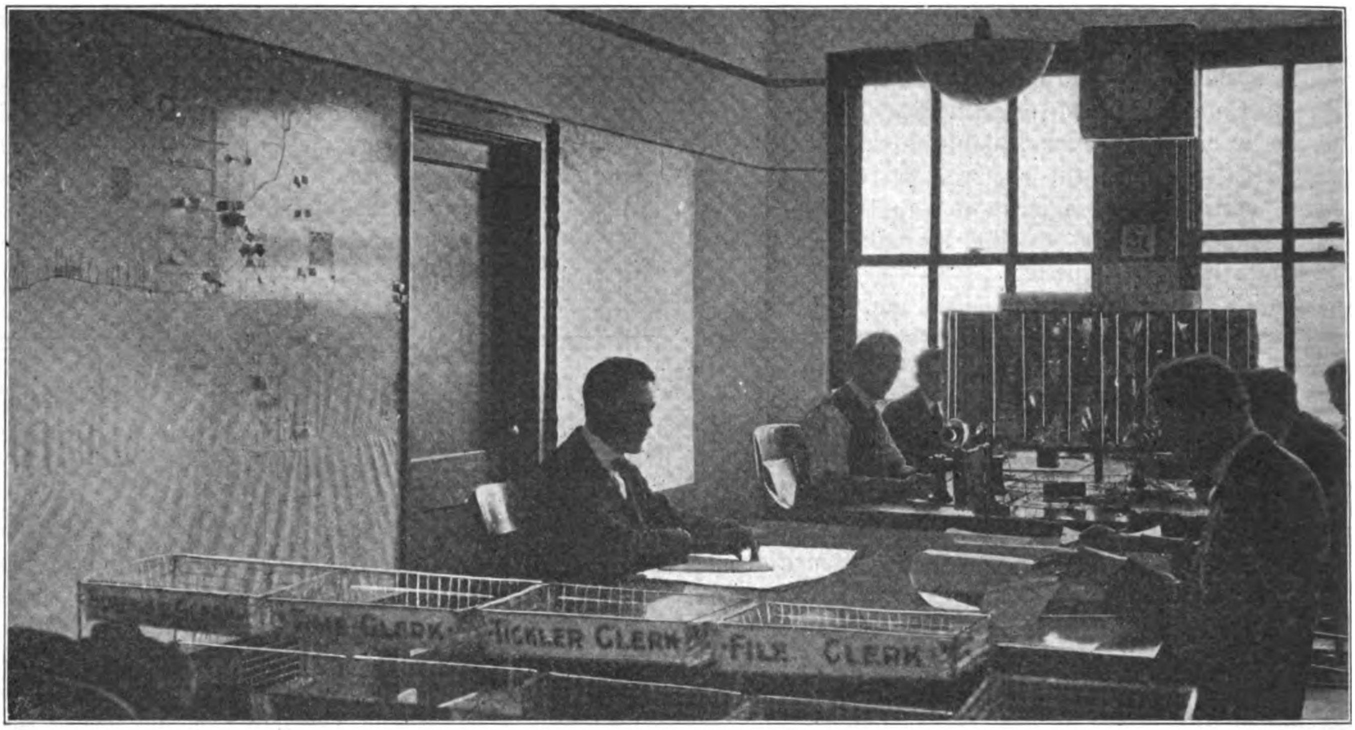
However, the point that we wish particularly to emphasize is that of the desirability (in cases where stops are reasonably frequent) of changing over old city cars now fitted with pinions having sixteen or more pinion teeth. Under such circumstances no generalizations can be made in regard to the concrete results attained because of the many different factors involved, but a rough guide at least is afforded by consideration of the resistance losses during acceleration. The change, for example, even from a sixteen-tooth pinion to a fifteen-tooth pinion involves about 6 per cent less time spent on resistance, and this alone during the course of a year means a saving of about $20 per car. The capital expense involved is, of course, nothing at all, provided the change is made at the time when worn-out gears are being replaced. This is so near an approach to getting something for nothing that the industry can hardly afford to neglect it.

Pay for Rainy Days Might Help to Hold Track Labor

GENERAL difficulty is being found in keeping a sufficient force of track laborers to carry on planned construction and maintenance work at anywhere near schedule. One Middle West road has been compelled to hire approximately 7000 laborers in the past year to maintain a force of 2000 to 2500. Whenever a rainy day occurs, and especially when two or three such days follow in succession, the next good-weather day usually finds the force depleted by two or three or a dozen men, depending on the size of the gang employed. This is a condition following rather naturally the abnormal nature of the times. There is too great a demand for labor for a workman to be content to sit idle for a day or two and lose his wage. The rule of "no work, no pay" among the laborers is a time-honored custom which many managers are loath to break; but would it not be to their best interests to give full or at least half pay for the rainy days, as an additional inducement in holding the men?

In canvassing the practices of a number of companies relative to their track labor, we find that it has become the custom on some properties to pay one hour's or two hours' time to the men on a completely rainy day for reporting on the job in the morning. This is to induce them to come out on the chance that by the time they reach the job the rain may have ceased. One company pays its laborers full time if a shower forces them off the work for an hour or two during the day but states that on a full rainy day the men do not as a rule report in the morning. Three of the companies canvassed pay their track men full time on completely rainy days, believing that this helps to keep the men on the job. Where this is done an effort is made to put the men at inside work and thus consume at least part of this rainy-day time.

As an alternative one way engineer suggests that it would do more good to increase the rate per hour than to allow the men time for idleness. The relative value of the two plans is hard to estimate, but we believe that to allow as near straight time as possible regardless of weather conditions will sound better to the average outdoor laborer than a few cents an hour additional pay. However, one or the other of these inducements is almost imperative. The railways cannot expect to pay materially lower wages than the contractors in competition with them for labor, and at the same time dock for bad weather as the latter do, and still keep any labor worth having.



THE PLANNING BUREAU AT WORK, WITH FLAG MAP AT LEFT

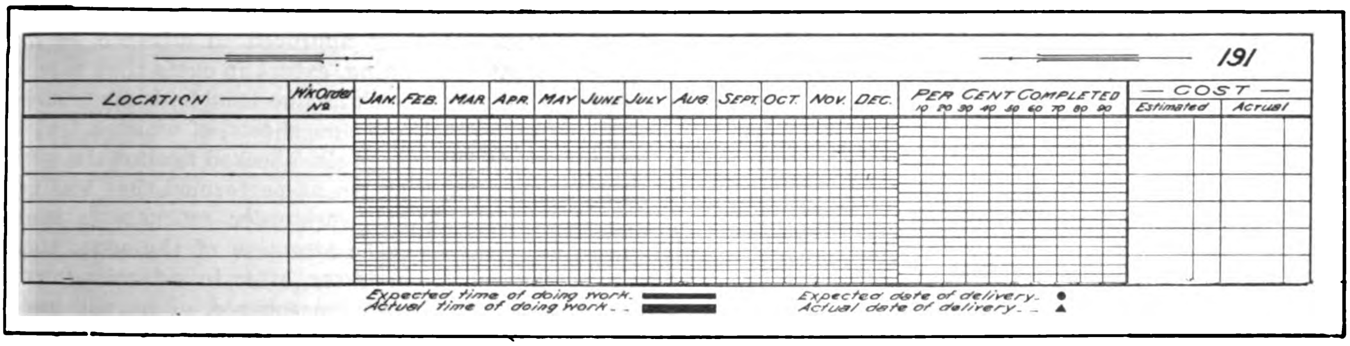
Dispatching Work of Engineering Department

System of Planning All Details, Timing Operations and Making a Central Bureau Responsible for All Work Gives Better Control of Men, Makes Possible Handling of Large Volume of Work and Releases Chief Engineer from All Minor Responsibility

WHAT IN EFFECT is a complete dispatching system for the work of every branch of the engineering department has been placed in operation by the Denver Tramway Company, of which Edward A. West is chief engineer. In brief, this system consists of a concentration of all the preliminary work and detail routine connected with every job with a small group of men centrally located. It substitutes a system which permits of definite and thoroughgoing supervision of every piece of work for the haphazard control so frequently found and relieves the foremen on the job of all the details of material delivery, tool provision, etc., so that they may devote their entire attention to getting the work of the job itself done. All work is scheduled in advance. The assignment of tools and materials, the movement of them to the job, the instructions as to what is to be done, who is to do it, how it is to be done, etc.—all are preplanned and timed, and this central group of men in control, called the planning bureau, acts as the dispatcher. The system thus eliminates lost time and duplication of work and gives the same control over all work, no matter what the volume in progress at one time may be. The big feature that stands out prominently is the fact that all work is started and carried on under written instructions.

PRELIMINARY to an understanding of the workings of the planning bureau of the Denver Tramway Company, it is interesting to point out the organization plan of the engineering department of the company. This is so constituted as to facilitate the systematic handling of any work in progress and to concentrate all routine and detail work of all the divisions of the department in this one planning bureau. The general supervision of work is administered by a committee of control of which the chief engineer is chairman and the four division heads, the superintendents of track, overhead and bonding, bridges and buildings, and power, are the other members. Directly responsible to the chief engineer and these four department heads is the planning bureau, at the head of which is the superintendent of planning, who is the ranking officer of the department in the absence of the chief engineer. The seven men in the planning bureau report to the superintendent of planning, and various other employees in the engineering department report to the division heads. One of the features of the organization is that there is always a man in training for every position and prepared to fill the vacancy in the next higher job.

A very large part of the work of the purchasing agent being closely allied to that of the engineering department, his office is located in the engineering department, although he reports to the general manager. For the same reason a group of clerks, who are responsible for the cost accounting and estimates and balance of stores records, etc., are located in the engineering department in order that they may be in close contact with it and facilitate the handing of work back and forth, although they report direct to the auditor


191
LOCATION
Wk.Order No.
JAN. FEB. MAR. APR. MAY JUNE JULY AUG. SEPT. OCT. NOV. DEC.
PER CENT COMPLETED
10 20 30 40 50 60 70 80 90
COST
Estimated
Actual
Expected time of doing work.
Actual time of doing work.
Expected date of delivery.
Actual date of delivery.

DISPATCHING ENGINEERING DEPARTMENT WORK—FIG. 1—RECORD FORM ON TRACING CLOTH FOR KEEPING TRACK OF ANNUAL BUDGET WORK

on another floor. This office arrangement brings into close association those employees whose work requires frequent intercommunication and thus generally facilitates the interworking of the departments.

PLANNING BUREAU ORGANIZATION AND FUNCTIONS

The planning bureau has as its main functions the routing and scheduling of men, material, tools and conveyances to all jobs under way and projected. The central bureau, in addition to the superintendent of planning, includes a route clerk, an order-of-work clerk, a material clerk, a time-card clerk and a tickler clerk, who together constitute the planning board. These five clerks have the duties of analyzing, distributing, routing and following up all work which may be placed under their direction from the chief engineer's office in the case of large maintenance and construction work, from the division heads in case of routine repairs, operating jobs or emergencies, or from outside sources such as the tramway dispatcher, city officials or even the public in cases requiring emergency measures. These men are grouped around a large table, which supports a large bull wheel with numerous sections and pockets in which the various work-in-progress and work-ahead orders and all instructions or reports pertaining to them are filed. Upon this planning board the smooth working and complete preparation and following through of all work depend. All the routine and handling of details for the various work is assumed by this board, thus relieving the division heads and the chief engineer of everything but the general supervision work. Their duties considered separately are given later in this article, but all the positions are interdependent and each clerk is sufficiently familiar with the duties of the others so that the work of directing the men in the field will go on without interruption or delay despite the temporary absence of any. A summarization of their duties serves to picture the work controlled by the planning bureau and the scheme of supervision and preplanning of details.

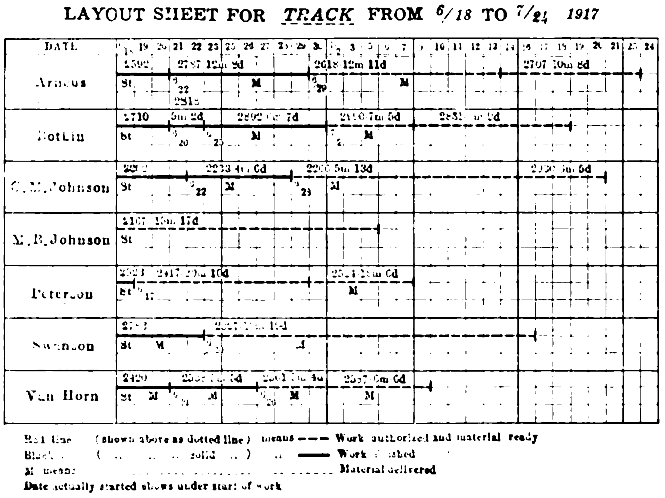
SCHEDULE AND ROUTE CLERK

The schedule and route clerk is the member of the planning bureau who comes most frequently in contact with the men in the field. He is equipped with full information of all the correlated workings of the whole department and is thereby able to give most efficient directions to the men as they call in. He keeps in accurate touch with all work under way and is prepared from the information at his command to make an up-to-the-minute record of any job in progress. It is his particular function so to time various jobs and the various operations in each job that nothing will drag for want of the completion of some preliminary step. During each day he is in touch with all foremen at least once, learns the manner in which work is progressing and takes particular pains to see that delays are not being caused through lack of material, tools or work cars. He keeps a chart showing the location of each piece of utility equipment, such as motor cars, flat cars, dump cars, concrete mixers, air tampers, arc welders, bonding machines, track grinders, portable rock crushers, etc. He assigns the company automobiles to the various employees entitled to their use and keeps a record of this and the approximate time of the return of the car. He maintains a record on certain work schedule sheets which cover the principal jobs being done by the company and those done under contract, and these, with cost data which appear on the sheets, are brought up to date each week and blueprints are struck off for the information respectively of the general manager, chief engineer and division head. This form is shown in Fig. 1, but is shortened in the illustration to save space.

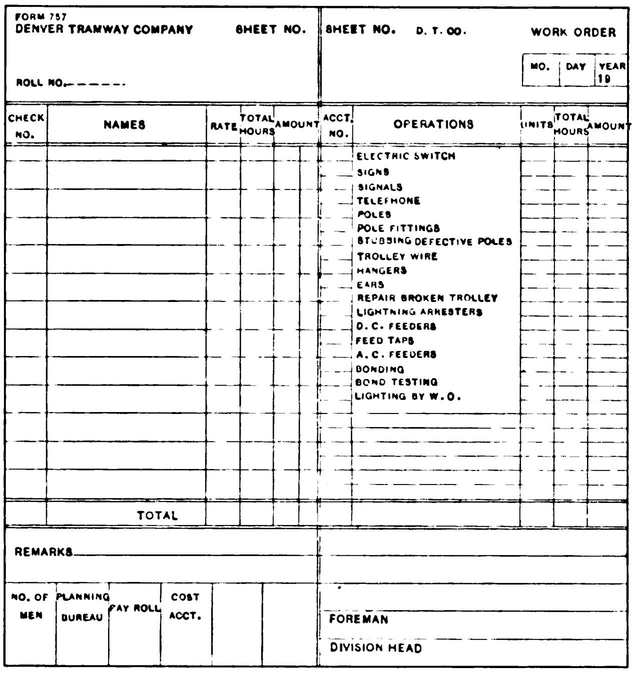
LAYOUT SHEET

The schedule clerk also keeps the layout sheet, which consists of a large blank, Fig. 2, with a horizontal row for each foreman. The sheet is divided vertically into working days, Sundays and holidays being omitted, so that working time is represented by horizontal distance.

When the original work order is made up, the time



DISPATCHING ENGINEERING DEPARTMENT WORK—FIG. 2—LAYOUT SHEET OF DENVER PLANNING BUREAU



FORM 757
DENVER TRAMWAY COMPANY SHEET NO.
ROLL NO.______

SHEET NO. D. T. CO. WORK ORDER
MO. DAY YEAR 19

CHECK NO.	NAMES	RATE	TOTAL HOURS	AMOUNT	ACCT. NO.	OPERATIONS	UNITS	TOTAL HOURS	AMOUNT
						ELECTRIC SWITCH			
						SIGNS			
						SIGNALS			
						TELEPHONE			
						POLES			
						POLE FITTINGS			
						STUBBING DEFECTIVE POLES			
						TROLLEY WIRE			
						HANGERS			
						EARS			
						REPAIR BROKEN TROLLEY			
						LIGHTNING ARRESTERS			
						D. C. FEEDERS			
						FEED TAPS			
						A. C. FEEDERS			
						BONDING			
						BOND TESTING			
						LIGHTING BY W. O.			
	TOTAL								

REMARKS______

NO. OF MEN	PLANNING BUREAU	PAY ROLL	COST ACCT.		

FOREMAN
DIVISION HEAD

DISPATCHING ENGINEERING DEPARTMENT WORK—FIG. 3—TIME SHEET FILLED OUT BY TIME CLERK AS TRACK FOREMEN CALL IN

which this work will take is estimated in days. The schedule clerk then lays out the work order for a particular foreman by a horizontal red line (shown dotted in the reproduction), the length of which is the number of days which that work order will take. In this way no foreman is called upon to do two work orders at the same time. When the material is ready and taken to the job, the schedule clerk marks the layout for that job with a rubber stamp, "Mat. Del." (material delivered). At the completion of that work order the schedule clerk stamps "Comp." (complete) over the layout line. When the job is finished he draws a black line over the red line.

Briefly, then, the layout sheet shows all unfinished work by red lines. It also shows when a work order is ready for the foreman, when the foreman is through with his work, and when the job is finished, so that no further attention need be paid to it. If the estimate made of time required is low, this condition is shown by the black line falling behind the scheduled date; if too large, the black line gets ahead of the date.

All instruction sheets to the various members of the organization pass through the hands of the schedule and route clerk, as do also any requisitions for material in addition to that called for by work-order estimates or any change that may affect methods. By these means, his schedule shows a record of any interruptions and their frequency, due to alterations and additions not covered in original work order estimates. In brief, his position is that of a train dispatcher except that he is dispatching men, material and work instead of trains.

The Time Clerk's Duties

The time clerk of the planning bureau makes up the time record of all employees of the engineering department, thus relieving the various foremen of this detail work. The foremen simply call in each morning and give the work-order number on which they are assigned and the number of men working. The time clerk then carefully checks over this information to see that no time is turned in for any work not covered by an instruction sheet properly approved in advance by the superintendent of planning, except in cases that require emergency measures, such as line trouble, track trouble, fires, wrecks, etc. These time sheets, of which a typical one is shown in Fig. 3, are also checked against the work order, and any work shown as performed that was not covered in the original work-order estimate is questioned and brought to the attention of the superintendent of planning. The latter, after investigating, may approve it, if it is of no consequence, or he will probably request a revised work order to cover this additional work.

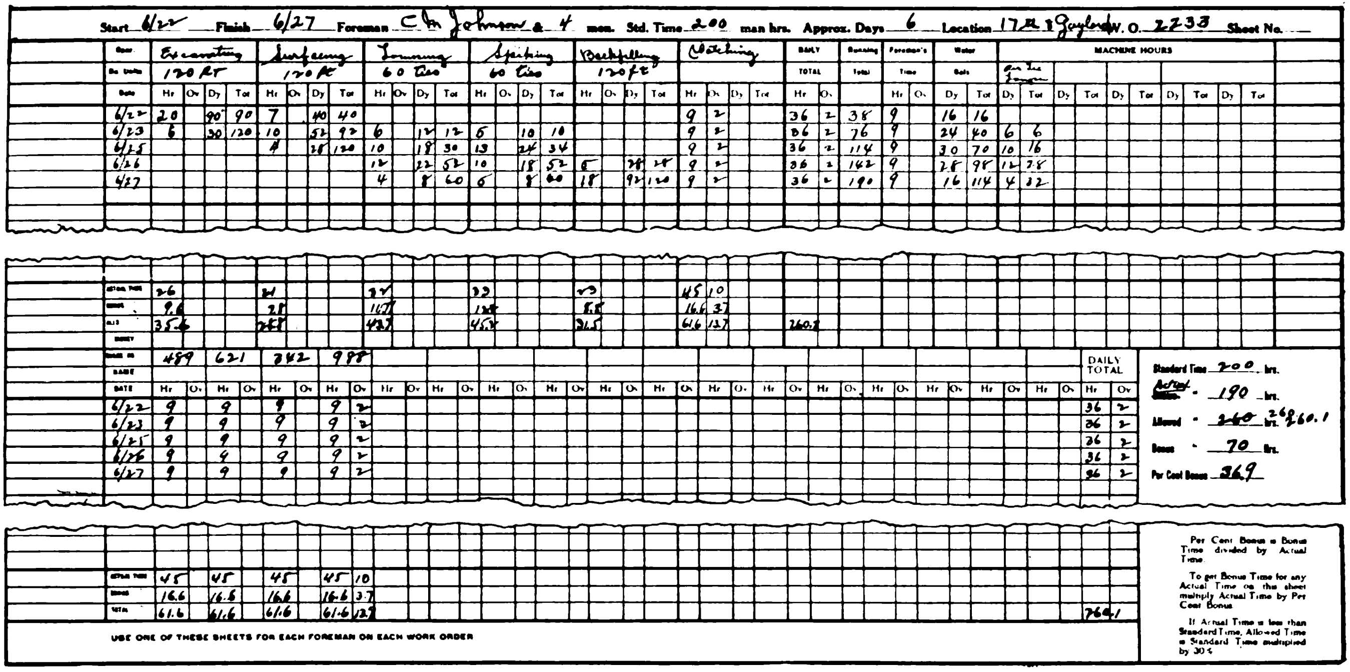
The time clerk and his assistants are also responsible for the proper distribution of labor charges. This requires careful attention and handling in order that the labor may be charged to the proper work order with proper distribution. Instances where more men are being worked on a job than the estimate calls for are caught in this check by the time clerks, and the matter of overtime charges is also carefully checked and a list of these made up daily for the chief engineer, showing all work requiring overtime and the amount, together with the reason for this overtime.

A separate time sheet is made out for each foreman for each work order (Fig. 4). This time sheet has a row for each day worked, and a red line (shown solid black in the reproduction) is drawn below the day when the work should be completed. If time is turned in below the red line, it automatically calls attention to the fact that that work order is taking too long. The upper part of the sheet shows the distribution of time to various operations on the work order, the lower part shows the total time for each man who worked on that work order. The upper part shows the cumulative total of amounts finished on each operation and the time which special equipment was used. Hours only are carried on the time sheet.

Each man's time is posted daily on the pay-roll sheet. At the completion of a pay period the labor distribution is extended at a gang rate for each class of labor and sent in to the cost department. At the completion of the work order a bonus time allowance is figured, and distributed among the various operations and among the men, proportionately to the actual time worked.

Order-of-Work Clerk's Duties

The order-of-work clerk of the planning bureau assigns the "next" job to be done by the various gangs and workmen. This involves the necessity for a very close observation of the information which the schedule and route clerk has as to the progress of work. If the chief engineer has no particular knowledge which fixes a date for the completion of certain work, then the order-of-work clerk arranges for such a date, taking into consideration the various items which enter into this as elements. Through his constant contact with the progress of work and from time studies which are constantly being made, this clerk is able to determine approximately the length of time required to do any certain job and is therefore able to place a date for the beginning and ending of work on any particular job. With this determined, he fills out instruction sheets for the planning board for each operation involving a separate set of workmen, gangs or conditions. These instruction sheets cover the work order or account num-



Start 6/22 Finish 6/27 Foreman C. M. Johnson & 4 men. Std. Time 200 man hrs. Approx. Days 6 Location 17th & Gaylord W. O. 2233 Sheet No.

Oper.	Excavating				Surfacing				Tamping				Spiking				Backfilling				Watching				Daily Total		Running Total	Foreman's Time		Water Gals.		Machine Hours: Air Tie Tamper	
No. Units	120 ft				120 ft				60 ties				60 ties				120 ft																
Date	Hr	Ov	Dy	Tot	Hr	Ov	Dy	Tot	Hr	Ov	Dy	Tot	Hr	Ov	Dy	Tot	Hr	Ov	Dy	Tot	Hr	Ov	Dy	Tot	Hr	Ov		Hr	Ov	Dy	Tot	Dy	Tot
6/22	20		90	90	7		40	40													9	2			36	2	38	9		16	16		
6/23	6		30	120	10		52	92	6		12	12	6		10	10					9	2			36	2	76	9		24	40	6	6
6/25					4		28	120	10		18	30	13		24	34					9	2			36	2	114	9		30	70	10	16
6/26									12		22	52	10		18	52	6		28	28	9	2			36	2	142	9		28	98	12	28
6/27									4		8	60	6		8	60	18		92	120	9	2			36	2	190	9		16	114	4	32
Actual Time	26				21				32				35				23				45	10											
Bonus	9.6				28				11.7				12.8				8.8				16.6	3.7											
Total	35.6				28.8				43.7				45.8				31.5				61.6	13.7			260.1								

Badge No.	489		621		342		988		Daily Total	
Name										
Date	Hr	Ov	Hr	Ov	Hr	Ov	Hr	Ov	Hr	Ov
6/22	9		9		9		9	2	36	2
6/23	9		9		9		9	2	36	2
6/25	9		9		9		9	2	36	2
6/26	9		9		9		9	2	36	2
6/27	9		9		9		9	2	36	2
Actual Time	45		45		45		45	10		
Bonus	16.6		16.6		16.6		16.6	3.7		
Total	61.6		61.6		61.6		61.6	13.7	260.1	

Standard Time 200 hrs.
Actual " 190 hrs.
Allowed " ~~260~~ 260 260.1 hrs.
Bonus " 70 hrs.
Per Cent Bonus 36.9

Per Cent Bonus = Bonus Time divided by Actual Time.

To get Bonus Time for any Actual Time on this sheet multiply Actual Time by Per Cent Bonus.

If Actual Time is less than Standard Time, Allowed Time = Standard Time multiplied by 30%

USE ONE OF THESE SHEETS FOR EACH FOREMAN ON EACH WORK ORDER

DISPATCHING ENGINEERING DEPARTMENT WORK—FIG. 4—FOREMAN'S TIME SHEET SHOWING DISTRIBUTION OF TIME

ber and location of the job, the foreman's name and the number of workmen who are to do the particular operation involved as shown in the work order estimate, the date the order for work was received, the time the operation is scheduled to start and, finally, the time in hours or days estimated for the gangs to complete each operation.

These completed instruction sheets are filed in the bull wheel pictured in Fig. 5 in the tier of pockets assigned to the particular foremen who will perform that work, and these instruction slips are filed in the order of the date received. In the case of rush jobs, the instruction sheets are, of course, placed on the board ahead of the regular jobs. At least to the extent of 20 per cent more than the various gangs of workmen can handle, jobs are kept scheduled ahead. With such work as requires an instruction sheet to go out periodically, these sheets are hektographed and a number of them placed in the tickler file to come out two days before the date wanted. This applies to such matters as bi-monthly cleaning and sweeping out of stations and waiting rooms on interurban lines, etc.

MATERIAL-ORDER CLERK'S DUTIES

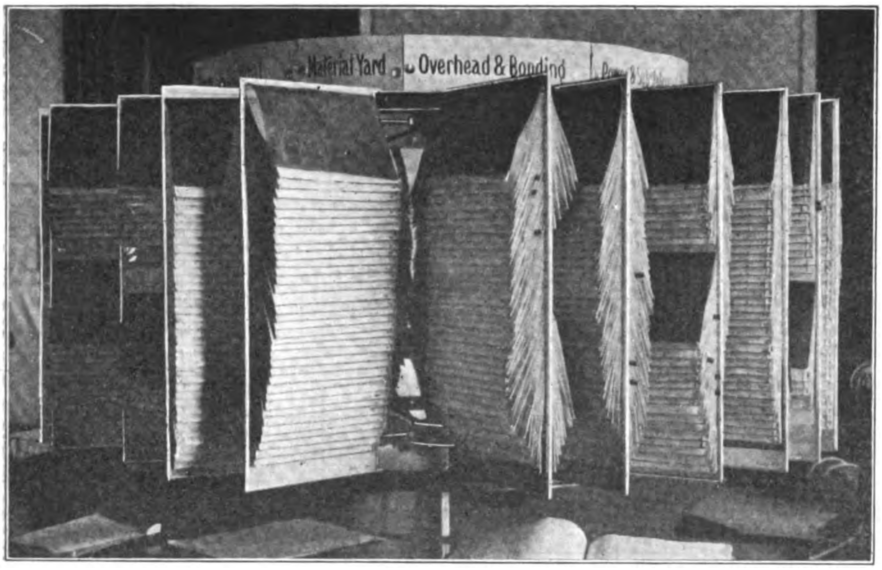
The material-order clerk of the planning bureau makes up the material requisitions for all divisions of the engineering department. With the detail work orders before him on the bull wheel and the dates on which work is to begin plainly in evidence, he assigns the necessary material and tools to the job and has them there by the end of the day previous to the beginning of work. This may require a number of instruction sheets issued to several of the traffic men who collect the material from perhaps several places on the company's property. But the specific duty of this clerk is to see that the material is delivered on the job and ready for use when required. This function, of course, makes it necessary for the clerk in charge to be familiar with the amount of material of the various varieties on hand at any time and the status of orders for additional material for delivery at such time as will provide for the need. Material for all jobs is made ready in advance of the time it is called for by the material transit men, and the prearrangement for this, of course, falls to the material-order clerk to do. This clerk also is charged with crediting various jobs with material removed and any material left over. Before marking any job complete, he checks it over for unused and removed material and compares his information with that of the cost clerk and balance-of-stores clerk to make sure that credit memoranda have been put through showing proper debit and credit.

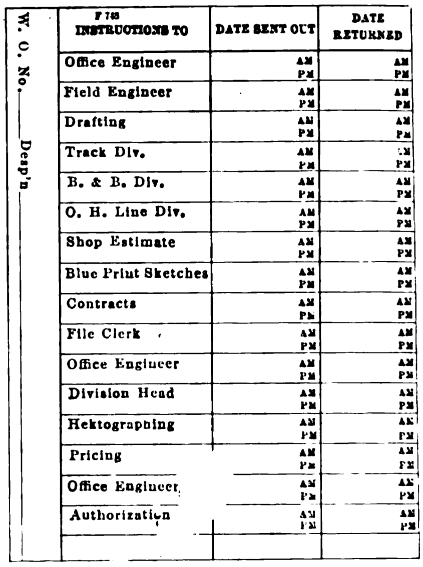
A copy of all requisitions for material comes back through the planning bureau and is checked by the material clerk. If requisitions for material in addition to that originally assigned to any job come through in sufficient number to have any significance individually or because of the large number of them, the material clerk sends a notice of this to the superintendent of planning with the notation of the number of requisitions above the original allowance. The latter then passes on these or checks up to find out the cause. This gives an absolute check on materials going into any job and will cause an investigation and bring reasons to the chief engineer when there is any considerable overrun.

The material clerk also keeps a record of all auto and team hire and from this record checks the monthly bills before they are sent to the auditor for payment. He maintains a record of all cases of transfer or switching of materials and supplies and is able to check these bills monthly.

DUTIES OF TICKLER AND OTHER CLERKS

Other employees reporting to the superintendent of planning are a tickler clerk, who is responsible for keeping matters progressing through the hands of the various members of the engineering organization as rapidly as each completes his part and for bringing up all matters at the proper time for consideration; a material yard clerk, the material transit men and the tool foreman. The office engineer, also reporting to the super-




W. O. No.____ Desp'n____

F 748 INSTRUCTIONS TO	DATE SENT OUT	DATE RETURNED
Office Engineer	AM PM	AM PM
Field Engineer	AM PM	AM PM
Drafting	AM PM	AM PM
Track Div.	AM PM	AM PM
B. & B. Div.	AM PM	AM PM
O. H. Line Div.	AM PM	AM PM
Shop Estimate	AM PM	AM PM
Blue Print Sketches	AM PM	AM PM
Contracts	AM PM	AM PM
File Clerk	AM PM	AM PM
Office Engineer	AM PM	AM PM
Division Head	AM PM	AM PM
Hektographing	AM PM	AM PM
Pricing	AM PM	AM PM
Office Engineer	AM PM	AM PM
Authorization	AM PM	AM PM

DISPATCHING ENGINEERING DEPARTMENT WORK—FIG. 5—BULL WHEEL CARRYING INSTRUCTION SHEETS FOR EACH JOB, AND FIG. 6—PINK TICKLER FOLLOW-UP FORM

intendent of planning, sizes up each job as proposed to determine roughly what work will be necessary and then issues instruction sheets to the various men in the departments interested, asking for the detailed information on which to base cost estimates and work-order instructions for the various operations involved.

HOW THE ENGINEERING DEPARTMENT WORKS

All construction or large maintenance jobs to be done by the engineering department are initiated by the chief engineer. This introduction of work may come about through the approval of recommendations made by division heads, through requests for certain work by the management, through inspection by the chief engineer, as the result of inspection reports from the field which may show the necessity for doing certain work, or through work-order estimates made up by the office engineer from the yearly budget. Small maintenance or emergency work is handled through the planning bureau by the issuance of instruction sheets directly to the parties concerned, or in some instances where this seems necessary by the issuance of work orders, which must then be approved by the chief engineer or superintendent of planning.

After any job has been approved by the chief engineer, the order-of-work clerk in the planning bureau takes out a work-order number and places it, together with a brief description of the work to be done, on a pink work-order tickler, Fig. 6. This sheet is then placed in the work-ahead file in the bull wheel where the jobs are arranged numerically, and is used by the tickler clerk in the planning bureau to follow up the various steps necessary before a work-order estimate is written up and authorized. After the work-order estimate is authorized, it takes the place of the pink work-order tickler in the bull-wheel pocket.

The order-of-work clerk issues instruction sheets to the office engineer to make up a work order, and this is followed up daily by the pink work-order tickler. The work involved in a particular job may require information from several divisions in order to make up the estimate. To secure this the office engineer then writes instruction sheets requesting field or drafting work, and these sheets are routed to the division heads or individuals performing the work by the order-of-work clerk in the planning bureau.

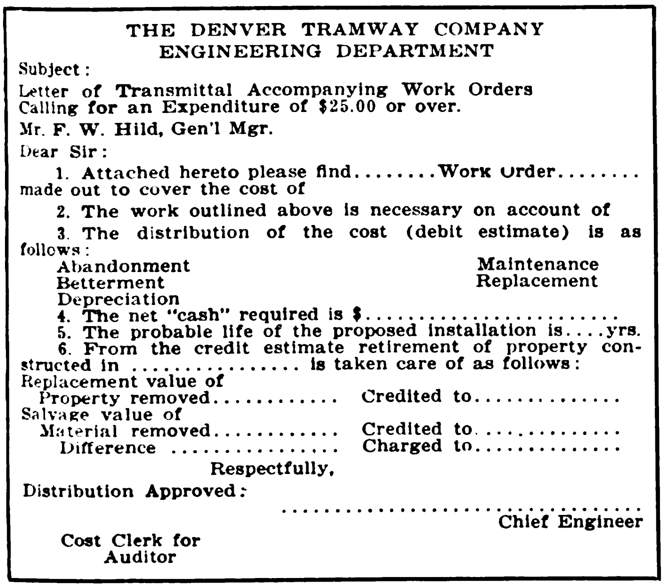
When all data, including necessary sketches and blueprints, have been received by the office engineer in reply to his instruction sheets, he proceeds to make up a preliminary work-order estimate, Fig. 8. All labor items are priced, and on the back of a sheet giving instructions to the planning board the first and second choice of foremen to do that work is indicated. The board is also told the number of men to be used and the estimated time required to do the job. The office engineer designates the number of copies of the work order which will be required, including a copy for each foreman involved and a copy for the storekeeper. This preliminary work order is then checked with the division heads concerned. On all work orders a credit estimate to take care of the original installation value of the material estimated to come out is also included. When everything is ready for typing, the office engineer initials the order and places it in his outgoing mail drawer.

The tickler clerk, collecting the interplanning bureau mail, notes the signature of the office engineer on the preliminary copy, retains the pink sheet on top and passes the work order to the file clerk for typing. At the same time he files any sketches or blueprints attached to the preliminary work order in the tickler blueprint drawer assigned to that job. After being typed, the preliminary copy is clipped to the typed copy and both are sent back to the tickler clerk's basket and thence to the office engineer's incoming drawer. The latter checks and initials the typed copy in the upper part of the "estimated by" space, fills in the date wanted and returns it to the planning board.

When properly signed by the division head the work is forwarded to the auditing department for hektographing. Upon its return to the planning bureau it is sent to the balance-of-stores clerk, who adds the prices of the material items. With the labor and material estimated costs totaled, the balance-of-stores clerk returns it to the planning bureau, where the sketches or blueprints which were held in the tickler blueprint drawer are attached, and the whole file is sent to the office engineer. With the completion of each step in the formulation of a proper work order as noted above, the matter is returned to the tickler clerk in the planning bureau, who immediately charges it out to the next person concerned and delivers it to him. Thus by referring to the pink slip, Fig. 6, it is possible to see at any time exactly how far along the work order is and in whose possession it is at that moment.

Each work order for $25 or more, together with a letter of transmittal, Fig. 7, written by the office engineer showing the title of the work order and the nature of the work covered, the reasons why the work is necessary and a distribution of the total expense, is forwarded to the general manager. The letter of transmittal also contains a statement made up by the office engineer in conjunction with the auditor, covering the retirement of property and how that retirement is to be taken care of on the books. If the work covered was included in the annual budget, this is mentioned. When completed, the tickler clerk passes the work order, together with the letter of transmittal, sketches, blueprints, etc.. attached, to the chief engineer, who approves it and forwards it to the general manager for authorization, except for such work as the chief engineer has final jurisdiction over.

After authorization the work order is returned to the planning bureau and the tickler clerk places it in the incoming mail drawer of the superintendent of planning. When the latter has taken note of it he places it in the tickler clerk's basket again, and the latter passes it on to the schedule clerk, who lifts the pink tickler copy and gives proper distribution to the various copies of the work order. The order-of-work clerk stamps the planning bureau's copy of the work order with the time stamp and writes instruction sheets covering each operation called for in the work order. These operations may involve the necessity for instructions to the surveyors, the material yard foreman, the tool and equipment foreman, the work-car crews, the grading crews and teams, etc. In addition, instructions arrange for the assignment of men and gangs, the prompt cleaning up of the job, the return of all unused and removed material, the final inspection of work, advice to the statistician who has a copy of the work order that the work is completed, and for a final checking of quantities by the field engineer.


THE DENVER TRAMWAY COMPANY
ENGINEERING DEPARTMENT

Subject:

Letter of Transmittal Accompanying Work Orders Calling for an Expenditure of $25.00 or over.

Mr. F. W. Hild, Gen'l Mgr.

Dear Sir:

1. Attached hereto please find........Work Order........ made out to cover the cost of

2. The work outlined above is necessary on account of

3. The distribution of the cost (debit estimate) is as follows:

Abandonment
Betterment
Depreciation
Maintenance
Replacement

4. The net "cash" required is $........................

5. The probable life of the proposed installation is....yrs.

6. From the credit estimate retirement of property constructed in .... is taken care of as follows:

Replacement value of Property removed............ Credited to..............
Salvage value of Material removed............ Credited to..............
Difference .... Charged to..............

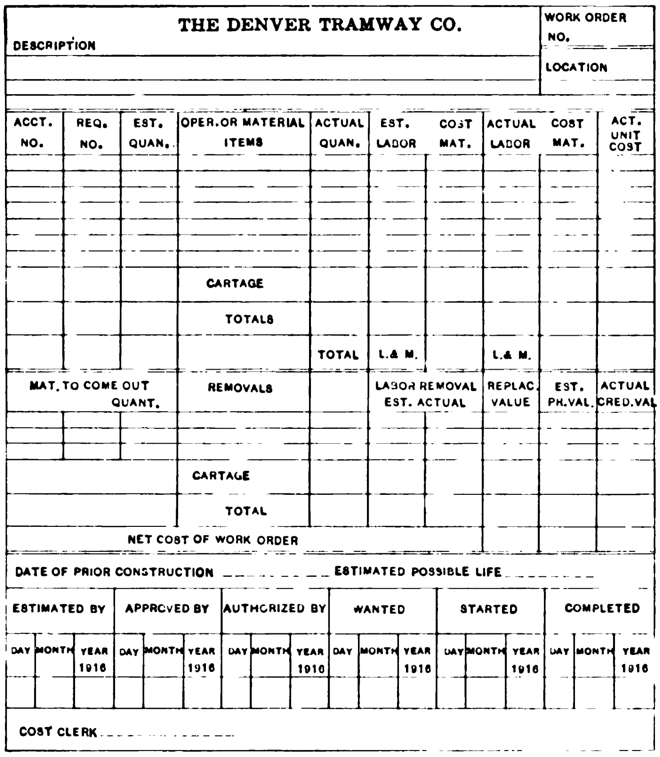
Respectfully,

Distribution Approved:

....
Chief Engineer

Cost Clerk for
Auditor

DISPATCHING ENGINEERING DEPARTMENT WORK—FIG. 7—STANDARD LETTER OF TRANSMITTAL OF WORK ORDER TO GENERAL MANAGER FOR AUTHORIZATION


THE DENVER TRAMWAY CO.

DESCRIPTION

WORK ORDER NO.

LOCATION

ACCT. NO. | REQ. NO. | EST. QUAN. | OPER. OR MATERIAL ITEMS | ACTUAL QUAN. | EST. LABOR | COST MAT. | ACTUAL LABOR | COST MAT. | ACT. UNIT COST

CARTAGE

TOTALS

TOTAL | L.& M. | L.& M.

MAT. TO COME OUT QUANT. | REMOVALS | LABOR REMOVAL EST. ACTUAL | REPLAC. VALUE | EST. PH. VAL. | ACTUAL CRED. VAL.

CARTAGE

TOTAL

NET COST OF WORK ORDER

DATE OF PRIOR CONSTRUCTION ________ ESTIMATED POSSIBLE LIFE ________

ESTIMATED BY | APPROVED BY | AUTHORIZED BY | WANTED | STARTED | COMPLETED

DAY MONTH YEAR 1916 | DAY MONTH YEAR 1916 | DAY MONTH YEAR 1916 | DAY MONTH YEAR 1916 | DAY MONTH YEAR 1916 | DAY MONTH YEAR 1916

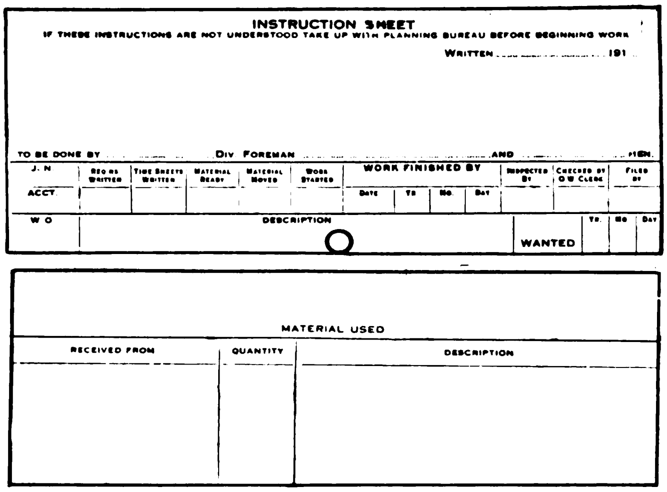
COST CLERK ____________

DISPATCHING ENGINEERING DEPARTMENT WORK—FIG. 8—WORK ORDER ESTIMATE MADE UP BY OFFICE ENGINEER. SPACE ON BACK IS LAID OUT FOR SKETCH OF JOB AND SPECIAL INSTRUCTIONS TO PLANNING BUREAU AND FOREMEN

When the instruction sheets have been written up and this has been noted on the work order, the order-of-work clerk passes the work order on to the material clerk in the planning bureau, who immediately orders and assembles the necessary material for that job. No work is started until the planning bureau has a properly authorized work order made out in sufficient detail so that it can intelligently order the necessary material and arrange for the best scheduling of work cars, crews, gangs, tools, etc. Then, the day in advance of the time work is scheduled to begin on a certain job, the instruction sheets for the various operations involved in the actual work are sent out in proper sequence and the work goes on with one dependent operation following another or with independent operations going on simultaneously when this is advantageous. In other words, all tools and materials reach the job just when they are needed, just as a train arrives at a passing point or the various units of a train arrive at the make-up point—a matter of dispatching.

GRAPHICAL RECORD OF WORK IN PROGRESS

As a means of picturing at a glance all the information contained in the bull wheel as to what jobs are in progress and where, the work is plotted out on a large map in the planning bureau office shown at the left in the engraving at the head of this article. Early each morning the construction foremen report to the planning bureau office as to the place they are working, the order number, the number of men working and whatever special equipment they have. This information is



INSTRUCTION SHEET
IF THESE INSTRUCTIONS ARE NOT UNDERSTOOD TAKE UP WITH PLANNING BUREAU BEFORE BEGINNING WORK
WRITTEN 191

TO BE DONE BY .... DIV. FOREMAN .... AND .... MEN.

J. N	Req'ns Written	Time Sheets Written	Material Ready	Material Moved	Work Started	Work Finished By				Inspected By	Checked by O W Clerk	Filed by
ACCT.						Date	Yr.	Mo.	Day			

W O	DESCRIPTION	WANTED	Yr.	Mo.	Day

MATERIAL USED

RECEIVED FROM	QUANTITY	DESCRIPTION

DISPATCHING ENGINEERING DEPARTMENT WORK—FIG. 9—WORK ORDER INSTRUCTION SHEET, FRONT AND BACK. CIRCLE AT BOTTOM OF FRONT INDICATES WORK IN PROGRESS ON THAT JOB

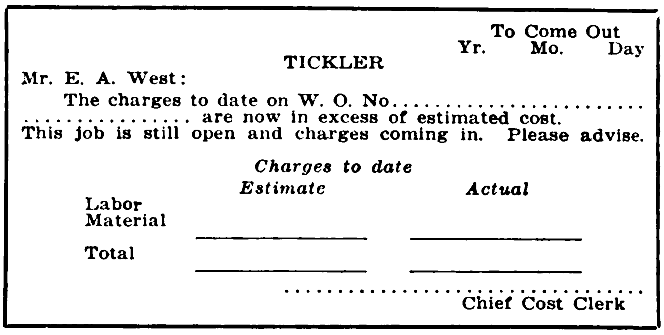
checked by the schedule clerk and taken down on a certain form by the tickler clerk and is later transferred to the map already mentioned and called the flag map. This map shows all lines of the tramway system as well as all buildings, substations, power plants, carhouses, sidings on the interurban lines, etc. When flags are placed on this map at the location a gang is working, it is possible to see at a glance approximately how much work is going on at any one time, its nature and where it is being done. The flags are of different colors to indicate different types of work. For instance, green indicates track work; red, overhead work; yellow, carpenter or bridge and building work, and purple, material yard work. The name of the foreman is written on the tag, together with the work order number and the number of men working under him. Whenever any foreman moves from one job to another he calls in to the planning bureau and the tag is then changed on the map. This map is brought up to date each day.

THE PLANNING BUREAU BULL WHEEL

In the center of the large table around which the four clerks of the planning board work is the large bull wheel, Fig. 5, to which frequent reference has been made and on which are placed all the work-ahead and work-in-progress orders. These are divided up among the several departments and again among the several foremen. When complete the work orders are slipped in a little celluloid pocket and thereafter every instruction sheet or notation of any kind pertaining to that work order is placed in this pocket also. The instruction sheets are made out so that the work order number and a brief description, the date work is to begin and be completed, etc., appear at the bottom edge. This narrow strip with a brief description of the job projects below the pocket above on the bull wheel and makes it readily possible for the clerks, looking for any particular job, to glance down the bottoms of the various pockets and quickly pick out the work order sought. When work has been started on any job, the original instruction sheet is taken off and forwarded, leaving the duplicate showing. This blank, Fig. 9, has a red circle printed at the bottom edge, and this circle makes it very simple to pick out the work orders on which work is in progress.

When a work order has been placed in the bull wheel for work ahead and the material clerk has arranged for all material and tools necessary for that particular job and has received notification back that this is all ready, he places a small red flag on the pocket containing this work order. This makes a ready reference to what jobs are all ready to go ahead with among the work-ahead items. On jobs requiring no material, the material clerk puts a green flag on the pockets to indicate this fact.

Among the advantages of the close check of all work in progress which is maintained by the planning bureau clerks is the fact that the cost from day to day is turned in to the cost department and added to the work order estimate, and when this actual cost is approaching or has reached the estimated cost, and the work is not yet near completion, a warning is immediately sent to the chief engineer on the blank shown in Fig. 10. This of course frequently happens where unexpected work is involved in a job, and usually it is taken care of by a revision of the estimate. But through this system it is impossible for any estimate to involve a large overrun without the matter first coming up to the chief engineer and obtaining his approval.



To Come Out
Yr. Mo. Day
TICKLER
Mr. E. A. West:
The charges to date on W. O. No........................
.... are now in excess of estimated cost.
This job is still open and charges coming in. Please advise.

	Charges to date	
	Estimate	*Actual*
Labor		
Material		
Total		

....
Chief Cost Clerk

DISPATCHING ENGINEERING DEPARTMENT WORK—FIG. 10—FORM FOR WARNING CHIEF ENGINEER OF OVER-RUN ON ANY JOB

Higher Fare Publicity

New York Companies Begin to Tell Their Story to the Public in Campaign for 6-Cent Fare

In their campaign for higher fares in New York State, the electric railways in the Second District some time ago appointed a sub-committee on publicity of the committee on ways and means. This sub-committee, of which T. C. Cherry of Syracuse is chairman and B. E. Tilton of Syracuse is secretary, decided that each company should present its own case in the way it should consider best. To assist in this work, however, a series of eight advertisements was prepared. They are set three columns wide and about three-quarters of a column deep in the average newspaper. The typography is simple and dignified, avoiding the flamboyance that often mars advertising of this type.

The text of the first four advertisements is presented herewith. The fifth of the series is devoted to "expenses" and gives figures of the increased cost of labor and materials during the last five years with the decreased rate of income. The sixth is a talk on "taxes" and shows not only that taxes have greatly increased but that the company has to pay certain special taxes, like the paving tax, from which it receives no benefit. The seventh is on "prosperity," and its argument is that cities cannot be prosperous without efficient utilities, and utilities cannot be efficient without prosperity.

THE STREET CAR NICKEL WILL NO LONGER PROVIDE STREET CAR SERVICE

(Letter No. 1—What We Must Prove)

When we petitioned the Public Service Commission to change the street car fare in Syracuse from 5 cents to 6 cents, we knew perfectly well that no such increase would be allowed until the necessity for it had been proved up to the hilt.

The Public Service Commission will demand a *complete show-down* of the economic facts; and they will put—as Public Service Commissions in all states do—the burden of proof absolutely on the street railway companies.

What does that mean—the burden of proof on the companies? It means that nothing is taken for granted in their favor. They must prove everything. In order to get an increase in fares the companies must prove positively:

1. That they are not getting a fair return on the capital "honestly and prudently" invested, as the law phrases it.
2. They must prove that their financial situation is not due to temporary or sudden conditions.
3. They must prove that the management and operation of the business are honest and efficient.
4. They must prove that the increase is just and reasonable, and that no other plan of getting it is better.

The company cannot charge a higher fare in this city to make up losses elsewhere, nor do we propose any such thing.

Every fare question raised by any opponent whomsoever of the increased fare must be satisfactorily answered. The public interest, in short, is thoroughly safeguarded. Now, the companies want nothing in the world but to show the exact facts and get *a fair hearing* and a just verdict. We believe the public wants nothing else, and that both you and the Public Service Commission will give us exactly that.

We are fully aware that a rise in street car fares is not popular. We're asking it because we have to in order to get money to keep up the service which the city *must have or suffer*, and to pay our investors a return that will prevent their going into investments that pay better. That is all there is to it.

No business can be permanently run at a loss, and investors must get a fair return or they will not invest. Without this we cannot make improvements, build new lines, or even keep up the old.

We shall show that in Syraause they are not getting a fair return and have no prospect (unless fares are increased) of such a return. This is due to great increases of cost, running over years in materials, operation and taxes.

THE STREET CAR NICKEL WILL NO LONGER PROVIDE THE BEST STREET CAR SERVICE.

B. E. TILTON, General Manager
New York State Railways (Syracuse Lines).

THE STREET CAR NICKEL WILL NO LONGER PROVIDE STREET CAR SERVICE

(Letter No. 2—On Profits)

"Why isn't a 5-cent street car fare enough in Syracuse?" you ask. A perfectly fair question, entitled to a frank answer. It's because *the street car nickel is shrinking in value.*

It will not supply the best street car service. The reasons are:

1. Expenses have gone up by leaps and bounds, but the rate of income is fixed at a nickel a ride.
2. Investors must have the prospect of a fair return or they will not invest.
3. Street railroads in Syracuse are not getting return enough to attract investors.

Now, let us ask you a fair question. If you have the chance to invest money in street car business at 5 per cent return or in numerous other businesses just as safe at 8 per cent or more, where will you invest it?

Our accounts show that the return to total investment in the street railroad business of Syracuse, on the average for the last ten years, has been under 5 per cent. While our gross income has increased the net income has not increased with it. These figures are from the official accounts prescribed by the Public Service Commission. They are on file at Albany and open to all. When the Public Service Commission takes up this matter it will refuse to allow an increased fare unless we can ourselves absolutely prove:

1. That the return to investors is not a "fair return" under the law.
2. That our management is efficient and honest.
3. That our capital is honestly and prudently invested and is entitled to a return.

We shall also have to show that we are not proposing to make this city pay for losses elsewhere. And we are not making any such proposition.

If we prove all those things, we believe every man in Syracuse is fair enough to say that we should gain our request.

The problem is not peculiar to Syracuse. It's the same all over the United States. Already 67 companies *have had fares increased* in various states, and numerous applications for increased fares are pending.

Everywhere the street railroad companies are suffering for exactly the same causes. *Investors can do better in other businesses.*

B. E. TILTON, General Manager
New York State Railways (Syracuse Lines).

THE STREET CAR NICKEL WILL NO LONGER PROVIDE STREET CAR SERVICE

(Letter No. 3—Depreciation)

Depreciation—Many of the street car troubles of to-day trace right back to depreciation, or wearing out of cars, rails, etc. Street car companies have failed to provide adequately against it, either because they didn't understand the need or because a 5-cent fare doesn't provide enough income.

According to evidence taken in important cases before the Wisconsin and the Massachusetts Public Service Commissions, as well as the general experience of traction companies, plants depreciate (or wear out) on the average about 5 per cent a year. This depreciation must be provided for from current income. The Supreme Court of the United States, and courts generally, have held that an allowance for depreciation in making up fares or rates is not only constitutional *but a duty.*

The public service law of New York provides for it and requires that the companies provide a reserve out of their income for depreciation.

If you don't get enough out of fares to provide for the depreciation you must borrow it. But this method was denounced by the Public Service Commission in these words:

"The consequences of such financing are too obvious to require restatement. An end to *such rottenness of method* when the regulating hand of the law does not interfere finally comes in a dilapidated and useless plant."

Now this is all very fine. But the street railroad companies are between the devil and the deep sea—

The Devil—They are required by law to provide from their income for depreciation.

The Deep Sea—The 5-cent fare doesn't produce enough income.

The Public Service Commission reports having the following facts and figures: in 1915 thirty-two (about half) of the traction companies in the Second District operated at a loss. (The average rate of return of the up-State companies on their total capital *has never been above* 5 *per cent* in the last five years.)

Less than half of the companies could set aside any reserve for depreciation. The amount they did set aside in the last five years fell gradually from 1.49 per cent in 1911 to 0.75 per cent in 1915. In Syracuse we set aside 3.5 per cent. It ought to be fully 5 per cent in order to protect investors in their investment and the public in its service. With a 5-cent fare this is impossible.

This makes a great deal of difference to you and every one interested in the city's prosperity. Here is why and how:

To provide for depreciation by borrowing money to replace a worn-out plant would mean that in time the stock and bonds would exceed the value of the plant. This tendency (to use the language of the Supreme Court of the United States) *"would inevitably lead to disaster,* either to stockholders or to the public or both," and as the New York Public Service Commission phrased it, "bondholders have nothing from which to collect their money, stockholders have lost all they invested, and the public is given a wretched and wholly inadequate service."

WE CANNOT POSSIBLY PROVIDE PROPERLY FOR DEPRECIATION WITHOUT MORE INCOME.

B. E. TILTON, General Manager
New York State Railways (Syracuse Lines).

THE STREET CAR NICKEL WILL NO LONGER PROVIDE STREET CAR SERVICE

(Letter No. 4—Investment)

INVESTORS are fighting shy of street railroads. If this keeps up, the companies cannot improve service, add new lines and better types of cars, or even keep up the quality of the old.

We showed you that the companies are not able to provide for depreciation (wearing out) of plant from current income. The depreciated nickel will no longer provide funds for replacements. Borrowing more money for such a purpose lessens the security the investor has on what he has already loaned.

It has been impossible since 1911, *in New York State, to get more money for street railroads by the sale of stock. The chance for dividends has been too slender.*

But this is not all of it. It's getting more and more difficult to even borrow money (i. e., sell bonds). If in addition to meeting the interest on its bonds a company is paying good dividends and laying aside reserve against depreciation and for surplus, there's a good margin of safety for the bondholder. But when dividends cannot be paid the investor thinks perhaps the interest on bonds may next fail to be paid. The margin of safety is narrower.

The "margin of safety" for bonds has fallen rapidly, and it's away below normal now. The "margin of safety" is the ratio of net income (remaining after paying rentals and interest on bonds) to gross income. A normal margin of safety, as investment bankers figure it, is, say, 40 per cent. In New York street railroads it has fallen gradually each year from 41.1 per cent in 1911 to 9.1 per cent in 1915. SUCH A CONDITION INVITES DISASTER.

If the nickel fare was reasonable ten years ago, it is unreasonable now, because

1. The service rendered is greater and costs more.
2. The value of the nickel is less.

The street car nickel, in short, no longer provides the best street car service.

B. E. TILTON, General Manager
New York State Railways (Syracuse Lines).

Four of Series of Eight Talks to the Public, Used by New York State Railways, Syracuse Lines

The eighth relates to "wages elsewhere." It explains the conditions under which passengers pay a fare of less than 5 cents in Cleveland and the favorable franchise terms there under which the contract with the city guarantees a return on the capital invested in the electric railway system. This, the statement concludes, is all that the railways in New York State want, namely, a fare sufficient to pay the cost of service and a fair return on the capital used in the electric railway service.

In addition to their advertisements, practically all of the companies are using car cards and pamphlets. They all tell tersely the story of fixed nickel fare and rising costs that the nickel will no longer meet. The pamphlets are illustrated.

Cost of Electric Freight Service Discussed at New Haven Hearing

An analysis of the cost of electric freight and express service on the lines of the Connecticut Company was a feature of a recent hearing at New Haven, when the Public Utilities Commission investigated the complaint of various shippers in New Haven, Hartford and Bridgeport that the rates established by the company May 21, 1917, are excessive. Among the representatives of the company who appeared were R. S. Baldwin, chief clerk of the purchasing department; Victor S. Curtis, general traffic agent; J. M. Hamilton, general agent; W. Earl Jones, statistician of the Connecticut Company, and L. H. Kentfield, general freight agent New Haven system. The complainants urged that the company's action in abolishing its second, third and fourth-class freight rates and placing them in class 1, with further upward changes for bulky products, etc., and also in increasing its express rates, was unreasonable. For example, the lower-class electric freight rates from New Haven to Hartford were formerly from 15 to 10 cents per 100 lb. (second to fourth class). The first-class rate is 18 cents. In general, there was a former minimum express rate charge of 15 cents, which has been increased to 25 cents with a flat rate of 50 cents per 100 lb. Various witnesses testified that as a result of the changes their bills for electric express service had increased 30 to 70 per cent.

In the examination of the complainants it was generally conceded by them that the electric express and freight service are far superior to that rendered by the steam lines in the territory. Mr. Kentfield maintained that trolley express rates should be somewhat lower than those of companies like the Adams and American but higher than steam railroad freight rates between the same points. Freight classification, in his opinion, has no place in the electric express field. The trolley line does a freight business only when it handles full car loads of trap rock or similar freight, which is a service by itself, as contrasted with the carrying of general merchandise in competition with automobile express trucks and the regular express companies. Mr. Kentfield said that the Connecticut Company's new tariff provides for double and treble first-class rates on some classes of products, surveyors' instruments, for example, being three times first-class.

Evidence regarding the increased price of materials entering into electric freight and express service was then presented by Mr. Baldwin. Supplementing these data, he presented estimates of the yearly consumption of a number of staple articles by the company.

INCREASES IN PRICES OF MATERIAL ENTERING INTO ELECTRIC EXPRESS AND FREIGHT SERVICE, CONNECTICUT COMPANY

Equipment or Material	Spring of 1916	1917	Per Cent Increase
Gears	$23.52	$32.51	38
Pinions	4.18	6.86	64
Rail bonds	....	....	17
Track spikes, per 100 lb	2.10	4.10	95
Track bolts, per 100 lb	2.85	4.50	58
White lead, per 100 lb	9.55	13.00	36
Ties	0.625	0.70	12
Armature, G.E.-80 motor	25.50	35.05	38
Field coils, G.E.-1000 motor	25.77	35.57	38
Window glass	....	....	43
Trolley poles, 12 ft	1.35	3.00	122
30-ft. steel poles, per lb	2.25	3.75	66
Journal box packing (Perfection)	0.13	0.20	53
Colored thread waste	0.07	0.11	57
Air-brake parts	....	....	25
Wood screws	....	....	110
Cement, per bbl.	2.25	2.65	17
Manila rope, per lb	0.14	0.30	114
Linseed oil, per gal	0.55	1.30	136
Tie rods in track	0.35	0.75	116
Rattan brooms, per doz	4.25	8.75	105
Ink, per doz. qts	7.65	8.50	11
Manila folders, per 100	8.00	20.00	150
Coal at mine, per gross ton	1.30	3.75	188

Mr. Curtis said that the old rates of the company failed to bring a proper return for the freight and express department. In the six months ended May 31, 1917, the earnings of the department were $177,841; the operating expenses were $119,916, and the net was $57,924. Taxes, $8,290; interest on investment, $11,720, and depreciation, $9,766, reduced the net to $28,146. The proportionate interest and depreciation on the total investment of the company less express and freight facilities and equipment came to $39,179, leaving a deficit of $11,032 for the period. The company handled 71,743 tons of merchandise in this period. The company owns forty-six express cars, costing $168,429, and nineteen express stations, representing an investment of $211,485. These ranged in cost from $500 in the case of stations at Westport and Woodmont to $52,000 at New Haven. The total value of the equipment used in the department as of July 9, 1917 (filed since the hearing), was $390,677. Mr. Curtis pointed out that through electric express it is possible for a dealer to carry a smaller stock and thus reduce his overhead charges, even when located a considerable distance from the city. The company uses the telephone in tracing goods, something unknown to steam railroad practice. The cost of cars has increased from about $4,800 to $8,200 within the year. The only difference between the company's express and freight service is that in the cities of Bridgeport, New Haven, Hartford and Waterbury a wagon pick-up and delivery is included for a rate of 50 cents per 100 lb. The witness said that the company hopes to get a 33 1/3 per cent increase in revenue from the new rates.

Mr. Hamilton testified that the wages of messengers have increased 48 per cent and of freight handlers 40 per cent within two years. The pay of clerks and agents has also risen. The company has lost 75 per cent of its short-haul business to motor trucks. About half the cars sent out from the New Haven station return empty. The witness said that canned goods and flour are troublesome classes of merchandise to handle on account of flimsy packing, losses in package lots and the ease with which damages can occur. Dressed beef is far preferable to iron castings from the handling standpoint. It was brought out that 5 per cent was allowed for depreciation and 6 per cent for interest in determining the cost of the service. Counsel for each side agreed to file briefs with the commission, and the hearing was closed.

Tell Your Story Frankly

Experience of Northern Ohio Traction & Light Company Shows That the Public Can Be Led to Understand Railway Problems if a Company Manifests an Honest Desire to Please

PUBLICITY has a wonderful power when focused upon specific points. The public generally likes to be led and is willing to learn. These thoughts form the basis of the new publicity work of the Northern Ohio Traction & Light Company—work which in a few months has met with a favorable public response.

ILL-WILL CONFRONTING THE NEW MANAGEMENT

A short time ago Eastern capitalists bought the property of the Northern Ohio Traction & Light Company, operating interurban lines between Akron and Cleveland, Akron and Canton, Akron and Ravenna, and the city lines of Akron, Canton and Massillon. The transaction involved a huge sum of money. But the physical property was not all that the new owners obtained in the negotiations.

When the new owners took possession of the property, they were confronted with a most unusual condition which had developed. The city of Akron had grown from 60,000 inhabitants to 140,000 in less than two years. This was due to the extension of the rubber industries. Factories had sprung up almost over night, and people had come to Akron in train loads. No public service corporation, gas, telephone, express or railway, could keep up with the procession. In the case of the Northern Ohio Traction & Light Company extensions had been called for on every hand, and increased equipment had become necessary not only in rolling stock but also in power equipment.

The new arrivals had thought that these changes should be wrought over night. When this proved impossible, they began to express their dissatisfaction. This had grown enormously as the traction company, seeking every available means to improve its service, found itself hampered by a scarcity of available material, owing to the over-demand in the market. The situation had soon become acute as far as unfavorable expressions were concerned, the humorist in the papers picking the company for the "goat" and the comedian on the stage brightening his lines with "knocks."

To a certain extent city officials in the past had attacked the railway to clear their own selves from responsibility. In some respects, however, the company was at least partly at fault. Promises made had never been fulfilled, and, even where this might have been excusable, the public had not been made to see that there were extenuating reasons.

DECIDING TO EXPLAIN MATTERS TO THE PUBLIC

The new management realized the company's needs as well as did the general public. The public, however, did not understand the causes as well as did the management. Hence it belabored the company with letters and personal visitations in such number that the time which the new management desired to expend in improving the system was largely consumed in waiting upon complainants.

When, therefore, H. C. Field, an Akron newspaper man with experience in Eastern publicity work, submitted a publicity plan early in 1917, the management, realizing the need of a more direct approach to the public generally, gave immediate consideration to the feasibility of the proposition. No time was wasted in bewailing the past or in criticising the public for its lack of understanding. An unhealthful condition existed, and the only question was—is this proposed plan a good remedy?

"I will give you an answer to-morrow at 4 o'clock," said A. C. Blinn, the general manager of the company. The next day, on the dot, Mr. Blinn did as he had promised. The answer was: "Go ahead." Large orders for advertising space were immediately placed with the newspapers in the cities affected, and the company began to set forth, in simple language, its policy and aims.

OUTLINING THE MANAGEMENT'S POLICY

One of the first of the advertisements emphasized the fact that the policy of the company is to take the public into its confidence, and, by treating it fairly and with the utmost consideration, to obtain its hearty co-operation. The full draft of the company's platform follows:

OUR POLICY WITH THE PUBLIC

We desire at all times to take the people of Akron and vicinity into our confidence, especially on matters which involve the welfare of the street-car service and also the lighting. We are a public service corporation essentially, but even so the people of this city have a right to know just what is being done to improve the traction service.

Since we are mutually interested, we feel that by treating the matters in a mutual sense we can more conscientiously ask the people for their support in our undertakings. We want the people to know at all times just where we stand.

Judgment by intelligent public opinion is all that an honest public service corporation expects or desires.

Sane and honest public opinion is found only where efforts have been made to give the public an intelligent understanding of the actual conditions in connection with public service.

It is our desire that every transaction between this company and an individual shall be satisfactory. If, perchance, it is not, it should be brought to a definite source, the general manager.

Let us co-operate to the end that all will be better satisfied and greater things may be accomplished.

A follow-up advertisement along somewhat the same line stated that the words "service satisfaction" sum up the ultimate attainment for a public service corporation. Continuing, this advertisement said:

When a utility has met the reasonable demands of the public it serves, it has accomplished its prime purpose.

Thereafter its chief aims must be to maintain that service which satisfies its patrons and to extend its facilities to meet natural growth of the service demand.

Service satisfaction means as much to a public utility as it does to the public served.

In the history of public service corporations, satisfactory service has not been attained without co-operation.

> "He must be truly honest who is willing to be always open to inspection by honest men."

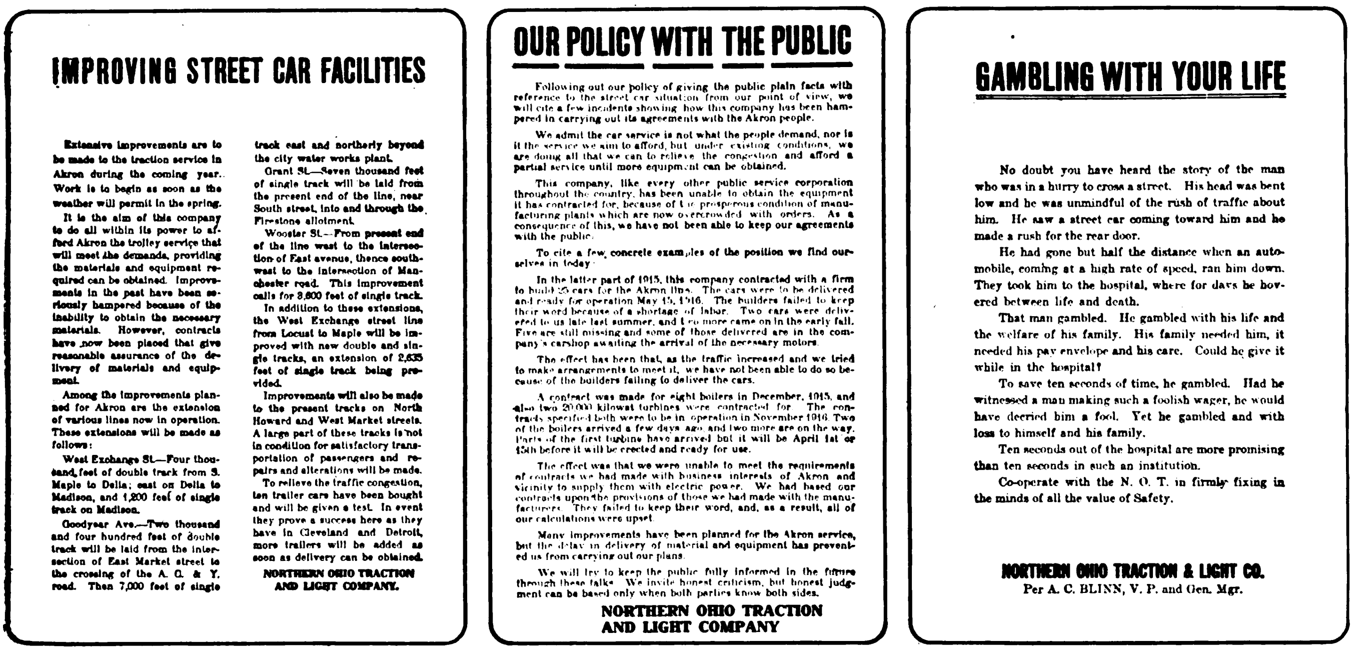
We are willing to be "always open to inspection by honest men."

If matters don't go just as you think they should, we want to know it. With co-operation of the right kind, we can readily afford Akron the street-car service its importance demands.

Let us be fair with each other and by co-operation we can do this.

GIVING FACTS TO THE PUBLIC

Following out its policy of giving the public facts about the street-car situation, the company, for example, cited a few incidents to show how it had been hampered in carrying out its promises to the local people. As shown by the accompanying reproduction of the advertisement in question, the company frankly admitted that the service was not what the people demanded or what the company aimed to offer, but it explained that under existing conditions it was doing all it could to relieve congestion until more equipment could be obtained. The failure of manufacturers to fill orders as promised had upset the company's calculations and prevented it from keeping its agreements with the public. Thereafter, the advertisement said, the public would be kept informed on such matters in order that it might make honest criticisms based on facts.



IMPROVING STREET CAR FACILITIES

Extensive improvements are to be made to the traction service in Akron during the coming year. Work is to begin as soon as the weather will permit in the spring.

It is the aim of this company to do all within its power to afford Akron the trolley service that will meet the demands, providing the materials and equipment required can be obtained. Improvements in the past have been seriously hampered because of the inability to obtain the necessary materials. However, contracts have now been placed that give reasonable assurance of the delivery of materials and equipment.

Among the improvements planned for Akron are the extension of various lines now in operation. These extensions will be made as follows:

West Exchange St.—Four thousand feet of double track from S. Maple to Della; east on Della to Madison, and 1,200 feet of single track on Madison.

Goodyear Ave.—Two thousand and four hundred feet of double track will be laid from the intersection of East Market street to the crossing of the A. C. & Y. road. Then 7,000 feet of single track east and northerly beyond the city water works plant.

Grant St.—Seven thousand feet of single track will be laid from the present end of the line, near South street, into and through the Firestone allotment.

Wooster St.—From present end of the line west to the intersection of East avenue, thence southwest to the intersection of Manchester road. This improvement calls for 3,600 feet of single track.

In addition to these extensions, the West Exchange street line from Locust to Maple will be improved with new double and single tracks, an extension of 2,635 feet of single track being provided.

Improvements will also be made to the present tracks on North Howard and West Market streets. A large part of these tracks is not in condition for satisfactory transportation of passengers and repairs and alterations will be made.

To relieve the traffic congestion, ten trailer cars have been bought and will be given a test. In event they prove a success here as they have in Cleveland and Detroit, more trailers will be added as soon as delivery can be obtained.

NORTHERN OHIO TRACTION AND LIGHT COMPANY.

OUR POLICY WITH THE PUBLIC

Following out our policy of giving the public plain facts with reference to the street car situation from our point of view, we will cite a few incidents showing how this company has been hampered in carrying out its agreements with the Akron people.

We admit the car service is not what the people demand, nor is it the service we aim to afford, but under existing conditions, we are doing all that we can to relieve the congestion and afford a partial service until more equipment can be obtained.

This company, like every other public service corporation throughout the country, has been unable to obtain the equipment it has contracted for, because of the prosperous condition of manufacturing plants which are now overcrowded with orders. As a consequence of this, we have not been able to keep our agreements with the public.

To cite a few concrete examples of the position we find ourselves in today:

In the latter part of 1915, this company contracted with a firm to build 25 cars for the Akron lines. The cars were to be delivered and ready for operation May 15, 1916. The builders failed to keep their word because of a shortage of labor. Two cars were delivered to us late last summer, and two more came on in the early fall. Five are still missing and some of those delivered are in the company's carshop awaiting the arrival of the necessary motors.

The effect has been that, as the traffic increased and we tried to make arrangements to meet it, we have not been able to do so because of the builders failing to deliver the cars.

A contract was made for eight boilers in December, 1915, and also two 20,000 kilowat turbines were contracted for. The contracts specified both were to be in operation in November 1916. Two of the boilers arrived a few days ago, and two more are on the way. Parts of the first turbine have arrived but it will be April 1st or 15th before it will be erected and ready for use.

The effect was that we were unable to meet the requirements of contracts we had made with business interests of Akron and vicinity to supply them with electric power. We had based our contracts upon the provisions of those we had made with the manufacturers. They failed to keep their word, and, as a result, all of our calculations were upset.

Many improvements have been planned for the Akron service, but the delay in delivery of material and equipment has prevented us from carrying out our plans.

We will try to keep the public fully informed in the future through these talks. We invite honest criticism, but honest judgment can be based only when both parties know both sides.

NORTHERN OHIO TRACTION AND LIGHT COMPANY

GAMBLING WITH YOUR LIFE

No doubt you have heard the story of the man who was in a hurry to cross a street. His head was bent low and he was unmindful of the rush of traffic about him. He saw a street car coming toward him and he made a rush for the rear door.

He had gone but half the distance when an automobile, coming at a high rate of speed, ran him down. They took him to the hospital, where for days he hovered between life and death.

That man gambled. He gambled with his life and the welfare of his family. His family needed him, it needed his pay envelope and his care. Could he give it while in the hospital?

To save ten seconds of time, he gambled. Had he witnessed a man making such a foolish wager, he would have decried him a fool. Yet he gambled and with loss to himself and his family.

Ten seconds out of the hospital are more promising than ten seconds in such an institution.

Co-operate with the N. O. T. in firmly fixing in the minds of all the value of Safety.

NORTHERN OHIO TRACTION & LIGHT CO.
Per A. C. BLINN, V. P. and Gen. Mgr.

SPECIMEN ADVERTISEMENTS USED BY NORTHERN OHIO TRACTION & LIGHT COMPANY

OTHER ADVERTISEMENTS USED

Among other advertisements used by the company, some of which are shown in the accompanying illustration, was one telling in detail what the company was doing to provide for more efficient service. It was announced that work would be begun on certain extensions as soon as the spring weather permitted, and that new cars had been bought.

Another advertisement, "Going Back a Few Years," called to mind the old days when the straw on the car floor did not keep the feet warm, when horse power was used and the cost of a ride of only a few miles was 5 cents. The advertisement then showed the much greater advantages of electric railway transportation to-day, all for the same nickel.

Still another advertisement gave facts to show how the company in one year carried 69,000,000 passengers, or more than the population of fifteen of the largest states in the Union. It told of the payment of a million and a half dollars in wages to employees, the major portion of which was diverted into the commercial channels of the various municipalities throughout which the railway operates.

Occasionally an advertisement was inserted setting forth the company's policy relative to the conservation of human life and suggesting methods and means of preventing accidents. These advertisements referred especially to children who, because of crowded residential districts, were forced to play upon the highways.

PUBLIC NOW BETTER UNDERSTANDS COMPANY PROBLEMS

Advertisements of the foregoing sorts have appeared weekly since the beginning of the year. The public has read them and has become better acquainted with conditions as they exist. Instead of censuring the company for negligence, the average citizen is now inclined to say: "The company is certainly up against it, so why kick? It'll do better at the earliest opportunity." Moreover, the average citizen has a better knowledge of what the company means to the community and is less inclined to "bite the hand that's feeding him."

Men high in municipal government have lauded the policies of the company in regard to service and its business dealings generally. Members of the Real Estate Board have expressed themselves as willing to cooperate, and the safety work of the company has been indorsed by the officials of the Automobile Club and the public press.

Only a short time ago a member of the Board of County Commissioners made this significant statement: "From the tone of the company's advertisements and from what I have learned of the management, I feel certain the company aims to give the best service possible. The men at the head of the organization are business men, say what they mean and mean what they say."

While occasionally a kick is heard, it is much more friendly in form than a few months ago. Moreover, it comes not from the men who are in control of municipal and public affairs and the general thinking part of the public, but from the people of less importance.

The good results already secured have been accomplished primarily through the advertisements. An official car bulletin is issued by the company, but it is used in the main for publishing news items about the company, the schedule of limited trains and general entertaining notes about the electric railway industry. Often the bulletin contains matter referring to the policy of the company, but this is used simply as a follow-up and does not as a rule go into such vital details as do the advertisements.

From its experience even thus far the company is firmly convinced that it can successfully use advertising to cultivate closer and more harmonious relations with the communities served. The public has shown itself open to enlightenment regarding utility problems; the company frankly says that service satisfaction is its yet unattained but ultimate goal. When each party thus appreciates the viewpoint of the other, better relations are no longer a dream—they are a reality.

Progress of New York Fare Hearings

Of All Cases Pending in New York City, Only One Is Nearly Closed—Detailed Hearings Just Begun in Albany on Petitions of Three Companies Outside Metropolitan District

ALTHOUGH the case of one company in New York City in support of its petition for financial relief has been practically completed, the other cases before the Public Service Commission for the First District have been postponed for several weeks. Outside of the metropolitan district the Second District Commission at Albany has just begun hearings on three of thirty-one pleas for higher fares. The details of this situation are published below.

New York City Line Closes Case

Evidence of New York & North Shore Traction Company All Presented—Prompt Decision Anticipated

On July 23 and 25 the Public Service Commission for the First District of New York continued hearings on the application of the New York & North Shore Traction Company, Roslyn, N. Y., for an increase in fare from 5 cents to 7 cents on its lines in Queens Borough in New York City. The company and the commission have now completed their cases, and the city has been given until Aug. 3 to present any additional evidence on its side. A decision may be rendered by the commission when it meets on Aug. 15. References to this case and to the recently granted increase in zone rates for the lines under the Second District Commission in Nassau County were made in the ELECTRIC RAILWAY JOURNAL of July 14 and 21 respectively.

ARGUMENT ON JURISDICTION

The city, through its special counsel, E. E. Baldwin, urged a dismissal of the case before the First District Commission on the ground of a lack of power to increase the rates above the 5-cent fare maximum prescribed in the company's franchise. He urged that the question of law involved had been decided in the company's favor only by the Appellate Division and not by the Court of Appeals in New York, and that a final judicial determination should be obtained now in order to save time and money.

William L. Ransom, counsel for the commission, however, pointed out that a decision could not be obtained in less than six months and possibly not for a year. Besides, he said he had a reasonably clear personal conclusion as to what the New York courts would hold on this question, and that is that the Legislature has vested the commission with the power to increase the fare to 6 or 7 cents within the city limits if the facts are shown to require such an increase in order to permit the company to earn a fair return on its used and useful property. Moreover, he stated, the case would be compactly and expeditiously presented, and it might be a good one in which to get the legal question settled, if the city or anyone doubted the commission's power to act, should the facts show need for action.

CITY CHARGES LACK OF FORESIGHT

The commission reserved decision on the motion of dismissal made by Mr. Baldwin. The city attorney then endeavored to show from the company's record of earnings that the railway had been improvidently built. John G. Moran, secretary and general manager of the company, testified that the builders still had faith in the enterprise, in spite of the unforeseen operating burdens that have developed since the days of construction. In reply to a hypothetical query from the commission as to what relief could be granted to a company conceived in error, Mr. Baldwin reserved his answer. He intimated later, however, that all possible means should be used before raising fares.

George W. Kuhn, valuation engineer of the commission, testified that on the basis of his table of lives (somewhat shorter in some cases than the lives set by the company) the total accrued depreciation in fixed assets up to June 30, 1917, was $577,048. The total expended for repairs and renewals was $152,426, leaving a balance of $424,622 that should be in a depreciation reserve or, if not, should be deducted from the fixed assets for rate-making purposes. The company's exhibits showed fixed assets of $1,612,008, including $1,100 of unused property.

DISCUSSION REGARDING ZONE SYSTEM

In view of the future rapid-transit competition for a 5-cent fare in the company's territory, the commission asked whether a zone system would not be desirable in Queens Borough instead of a 7-cent fare. In a statement to the commission the company averred that the 7-cent fare would solve its financial problems, at least temporarily, and would permit the laying aside of some surplus to meet better the situation that will arise when the rapid transit lines become operative. Even if the company were to charge a 5-cent or even smaller fare, it would still lose the riders having the choice of either system. Moreover, the Long Island Railroad, through its comparatively small fares and its book trip system, already has the bulk of the riders that will use the rapid-transit system. The present trolley passengers are mostly those who are convenienced by being left at their doorsteps.

Taking up the zone question, the company stated that the paramount difficulty in such a system arises from the fact that probably 65 per cent of its riding in New York City is through riding between Flushing and Whitestone, and Flushing and Bayside. This would be likely to result under a zone plan in an equivalent of the 7-cent fare. Besides, because of the comparatively small distance the company operates within Whitestone and Bayside, the result of dividing either place by a fare point would probably mean that many passengers would walk rather than pay the extra zone fare.

The company asked, therefore, that it be permitted to charge a 7-cent fare, at least until the rapid-transit operation shows that it is cutting down the company's revenue to such an extent that it would be advisable for the company to apply for a zone system of fares. If the commission should think, however, that a zone system now would mean more revenue than a 7-cent fare, the company would suggest in general two zones—a minimum 5-cent fare with a fare point allowing the use of a 2-cent ticket beyond.

On this point the commission called J. P. H. De Windt, Jr., chief of its transit bureau, who described a copper zone system which in his opinion would substantially increase the company's revenue without involving so great a hardship on patrons as a 7-cent fare. In general his plan provided for three zones on one main line, with a minimum fare of 5 cents and 1 cent for third-zone travel, or 6 cents for a continuous trip. The other main line would, in a similar way, have four zones, with a fare of 8 cents for a continuous trip.

Counsel for the city expressed a desire to look into the zone question and complete his examination of the company along other lines. The commission stated that he might have a hearing before or on Aug. 3, in the absence of which the case would be closed on the basis of the evidence already presented.

Transfer Charge Hearings Postponed

Third Avenue Case Goes Over Until Sept. 10—All Cases in New York City Except One Now at Standstill

On July 23 the Public Service Commission for the First District of New York postponed until Sept. 10 the hearings upon the application of the Third Avenue Railway, New York, N. Y., for permission to charge 2 cents for transfers. The postponement was at the request of company counsel, the commission's desire for a recess in August also being considered.

This means that no further hearings will be held for about a month and a half on the question of financial relief for the street railways in New York City. As originally planned, the applications of the Third Avenue Railway, the New York Railways and the Brooklyn Rapid Transit Company for a 2-cent transfer charge were to be taken up in order by the commission. Thus far, however, only the Third Avenue Railway has begun the presentation of its case.

Other lines in New York City that have submitted petitions to the First District Commission are the New York & Queens County Railway and the Second Avenue Railroad, which asked for general relief, and the two lines on Staten Island, the Staten Island Midland Railway and the Richmond Light & Railroad Company, which requested authority to charge a 6-cent fare. The first two companies were directed to file amended petitions specifying the form of relief desired, but this step has not yet been taken. The hearings on the Staten Island cases have also been postponed until Sept. 10.

The only fare increase case in New York City that shows signs of receiving a settlement in the next few weeks is that of the New York & North Shore Traction Company. The almost complete closing of this case is described in the preceding article.

Higher Fare Hearings in State

First Three New York State Companies Begin Presentation of Cases Before Second District Commission

Before the Public Service Commission for the Second District of New York at Albany there was held on July 25 a hearing in the matter of the petitions of the Putnam & Westchester Traction Company, the Peekskill Lighting & Railroad Company and the Hudson River & Eastern Traction Company for authority to raise their fares within the corporate limits of the municipalities where they operate. These companies desire to increase their fares to 7 cents for one continuous trip, discontinue free transfers and issue tickets good for four trips for 25 cents.

These petitions are the first three of a group made by twenty-eight traction companies doing business within the jurisdiction of the commission. All the petitions first filed asked for a 6-cent fare, but in the cases just cited supplementary applications were made for authority to charge the higher rates noted.

Witnesses called by the petitioners testified that the railways were operating at a loss and explained the exact financial condition for the last five years. The testimony tended to show that a falling off in passenger traffic, a considerable drop in freight revenue and increased operating expenses are making it necessary that the petitioners increase their fares.

According to the petitions laid before the commission, the Putnam & Westchester Traction Company last year had a net corporate deficit of $2,974, the Peekskill company a net corporate deficit of $11,020 and the Hudson River company a net corporate deficit of $10,591.

Corporation Counsel Robert F. Barrett of Peekskill appeared in opposition to the proposed increase. He stated that the franchise given the traction company is a contract which cannot be broken. He insisted that the commission cannot change the fixed rate.

Included in the list of the twenty-eight original petitions presented to the Second District Commission was an application for an increased fare for the Empire United Railways, Inc. This petition has been revised so that separate petitions are now on file for the Empire United Railways, Inc., and each of two of its constituent lines, the Rochester, Syracuse & Eastern Railroad and the Syracuse, Lake Shore & Northern Railroad. An application for an increased fare has also been made by the Buffalo, Lockport & Rochester Railway. The total number of applications before the commission, therefore, is now thirty-one.

Introducing Coasting Records at Houston

A Formal Debate on Coasting and a Platform Men's Study Committee Are Among Several Notable Features

DURING October and November, 1916, 143 Rico coasting recorders were installed on cars of the Houston Electric Company and the Galveston-Houston interurban line, both of which are under Stone & Webster management. Previous to the operation of the recorders, private stop-watch tests showed that the average coasting on about 175 trips did not exceed 10.2 per cent. After all but ten Houston cars had been equipped (ten recorders having been taken away to equip the interurban cars), the following results in coasting percentages were noted:

October, 1916	24.2 per cent
November, 1916	18.8 per cent
(Loss due to winter weather, temporary change due to near-side stop and carnival parades.)	
December, 1916	21.8 per cent
January, 1917	24.7 per cent
February, 1917	26.6 per cent
March, 1917	30.0 per cent

Much higher average records can hardly be expected, as the motors used in Houston have comparatively low rates of acceleration.

Daily records are posted according to the six inspection divisions of the property. To encourage the men, a bogie is set up for each division. This bogie is easily within the attainment of any motorman. The men are, therefore, further encouraged by being urged to beat the average coasting of the division. For instance, the bogie may be set at 25 per cent, whereas the line average is 31.6 per cent.

Another unusual feature of the daily bulletins is the comments of the coasting analyst on the performances of the different men. These comments are tactful in tone with a full realization of the individual's character and naturally are intended to inspirit instead of dispirit the low coasters. The following remark is of additional interest in showing that the aid a conductor can be in coasting is fully appreciated: "Patterson used to be a good coaster when he had Cunningham for a conductor."

In referring to a case where the bogie was 35 per cent and the line average 47 per cent, the frank comment was: "We didn't think it could be done."

Here is a typical remark about a low coaster who is a tried and true veteran: "Woolery ought not to be discouraged and give up trying. Other men as old and 'sot in their ways' as he is have gone to work and made good. We believe that he is capable of doing as well as others."

PLATFORM MEN DEBATE ON COASTING

The Houston Electric Company is by no means satisfied that it has exhausted the possibilities of the coasting recorder in raising the standard of service. It realizes, particularly, that much can be done by securing the interest and advice of its men. To this end it recently arranged a set debate on the question: "Resolved, that the use of coasting recorders is beneficial to an electric railway system." It must have been truly humorous when the committee which had been appointed to take the negative asked: "Say, you don't really want us to knock coasting, do you?" They were told to go ahead and think up every objection possible.

Naturally this debate of the platform men brought out a great many inside points that might never have come to light otherwise. For instance, one man thought coasting implied drifting to a very low speed and then jerking the controller suddenly. Another mentioned that a greater number of time points would prevent unfair jockeying of cars.

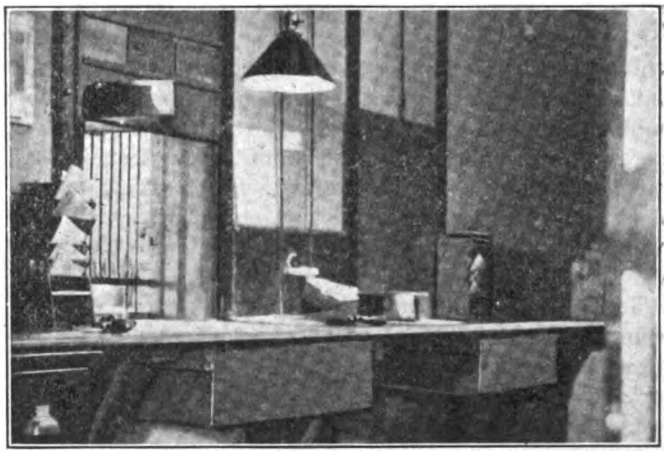
COMMITTEE TO STUDY COASTING

As the result of this debate the company has appointed a platform men's committee consisting of anti-coasters, pro-coasters and just plain neutrals. This committee, which will receive regular pay during its studies, is to take a given line, analyze its running and traffic conditions, revise its schedules and headways upward or downward, and, in general, do all it can think of to take full advantage of coasting in the attainment of better service. This experiment in democratized management should bear good fruit in putting at the disposal of the entire organization the best knowledge of its best operators.

Burglar-Proof Cashier's Cage

THE Washington Water Power Company has burglar-proofed one of its cashier's cages located in a carhouse in an isolated district, having been impelled to do so by an attempted hold-up which occurred some years ago.

The cage is sheathed with iron on the outer walls and the door, and the windows are provided with steel curtains, counterweighted, which can be lowered for complete protection. In the bottom of each steel curtain is a trap or hinged box which can be swung inside or outside without at any time affording a direct opening into the room. Cash is placed in the trap on the outside, which is swung in to give the cashier access to it. A small peek-hole with sliding cover is provided just above the trapdoor.



BURGLAR-PROOF CASHIER'S CAGE FOR USE IN ISOLATED CARHOUSE IN SPOKANE, WASH.

On Jan. 1, 1913, practically all the stock of the Durham (N. C.) Traction Company was acquired by the Cities Service Company. In the last four years the sales of electric current increased 80 per cent and the number of customers served 90 per cent. Likewise, the number of revenue passengers carried in a year has increased by more than 300,000. Due to the growth of the electric business, a new turbine is on order which will more than double the present capacity of the station.

COMMUNICATION

The Privately Conducted Publicity Bureau

PUBLIC UTILITY PUBLICITY BUREAU
CHICAGO, July 21, 1917.

To the Editors:

We note in the issue for July 7 of the ELECTRIC RAILWAY JOURNAL a communication from Leake Carraway, director of publicity Southern Public Utilities Company, urging the establishment by the American Electric Railway Association of a publicity bureau. The writer, like Secretary Burritt of the association, believes "that the exact form which such an organization should take should be carefully considered."

The fact that established privately conducted public utility publicity bureaus or companies have been for some ten or fifteen years in the field should, we believe, receive consideration. Probably Mr. Carraway does not realize the extent of the service now being furnished to public utilities by these privately operated concerns. This bureau alone furnishes service of various kinds to more than 400 public utility companies, including gas, electric and street railway companies, and other publicity concerns and experts, we believe, do an equally large volume of business.

We are publishing a company's employees' magazine for electric railways to distribute among their men which is giving such good service at a reasonable cost that some companies have discontinued their individual publications and are using this. By inserting a few pages of original matter each month they virtually secure an individual publication at a great saving in expense. It is now possible for companies with but twenty-five or thirty employees to secure the advantages of this kind of publicity at a small outlay.

To say, as Mr. Carraway does, that efficient results cannot be obtained from these co-operative publications is like claiming that an isolated plant can give better and cheaper service than a central station, or that a city can be best served by three or four competing electric railways instead of one system.

The fundamentals of public utility operation are the same whether the utility is in San Francisco or New York. And this is true as to public utility publicity. You don't teach trainmen one kind of courtesy in Jacksonville, Fla., and another kind in Portland, Ore. There is not one brand of safety first which can be used in Denver only but would result in disaster in Newark, N. J. Inspiring your employees to loyalty and higher ideals is not a matter of location. An article of inspiration will have just as much effect if read by a conductor in Salt Lake City or a motorman in New Haven. For that matter many Canadian companies use the publicity matter which these bureaus prepare for American companies and secure gratifying results. The general movement for higher fares, too, is applicable everywhere.

Another great advantage of this co-operative publicity service is that it is furnished at so low a cost that the company is not required to seek advertising from manufacturers of supplies to help defray the high cost of individual publications. This kind of advertising is not profitable to the advertiser, but is more like a tribute exacted from the manufacturer.

Of course there are cases where the publicity is strictly local and which require strictly local treatment. In such cases, if the conditions involve labor or operating questions, special matter covering the cases is inserted in the co-operative magazines at cost. In other publicity work, dealing with rate situations or public relations to cover a special case, direct local treatment is also required. In these cases comparative statistics from other cities are of little use, and each situation must be handled on its merits. The bureaus furnish men for this work where the company has no publicity department.

The privately operated publicity bureaus and firms and individuals engaged in this work believe they are giving efficient service and would be inclined to look upon the establishment of a publicity bureau by the association which would be in direct competition with them as unfair and unwarranted.

W. F. BRASHEARS, Director.

Pacific Claim Meeting Postponed

The convention of the Pacific Claim Agents' Association, which was scheduled to hold its annual convention last week at Portland, has decided to follow the example of the other electric railway associations and indefinitely postpone its meeting on account of the present unsettled conditions in the country. It is understood that the executive committee of the association will meet shortly to take up any matters of special importance which cannot well be postponed.

Accident Figures from Columbus

The following announcement by the Columbus Railway, Light & Power Company tells its own story:

Accident Prevention Record

Three Months Period Ending March 31, 1917.

In the four principal classes of accidents occurring in connection with operation of street cars, our record for the first three months period of 1917 as compared with the same period of 1916 is as follows:

1. Boarding moving cars . . . . . 6% decrease.
2. Leaving moving cars . . . . . . 11% decrease.
3. Collisions—cars and wagons . . . 15% increase.
4. Collisions—cars and automobiles 86% increase.

There were 44% more automobiles in operation on the streets on March 31, 1917, than on the same date of 1916, accounting for a large part of the increase in class 4.

In *The Federalist* of Nov. 3, 1787, John Jay wrote—

> **"Among the many objects to which a wise and free people find it necessary to direct their attention, that of providing for their safety seems to be the first."**

That sentiment of 130 years ago holds true today as we think of the principles of liberty and public safety our nation must defend, but even amid the war-time responsibilities which Americans gladly assume and the dangers which will come to so many of us, let us not fail to give heed to and take the necessary precautions to reduce the preventable accidents and dangers of the streets.

The Columbus Railway, Power & Light Company
4-14-17

EQUIPMENT and MAINTENANCE

HAVE YOU A GOOD WAY OF DOING A JOB?
—Pass It Along

In This Issue: **S. A. Bullock Tells the Causes of Car Nosing and How to Remedy It.**

Car Nosing

The Author Discusses Reasons for This Action of Moving Cars and Suggests Means for Limiting It

BY S. A. BULLOCK
Manager Electric Truck Department, the Baldwin Locomotive Works

Car nosing, which is horizontal oscillation of the car body about instantaneous axes, occurs on tangent track and is usually negligible on curves. In passenger service a slight amount of nosing is preferable to the rigid transverse shock of non-swinging bolsters, but when these oscillations become excessive, nosing becomes a question of serious moment.

Some of the factors to be considered are: (1) Irregularities of the track; (2) lateral play in the moving parts; (3) overhanging weights.

In general, as compared with steam roads, electric lines are more subject to car nosing, since they operate under worse track conditions. The proportion of longitudinal overhanging carbody weight is greater, and there is the further consideration of the overhung motor weights. Hence, it will be necessary to confine consideration only to the nosing of the electric motor cars.

The initial cause of nosing is poor track; that is, low joints and irregular gage, which force the wheels to slide horizontally, producing a horizontal force at the wheel. This horizontal blow is transmitted through the axle, to the brass, to the journal box, to the truck frame, to the transom, to the top of the swing links, to the bottom of the links, to the spring plank, to the bolster springs, to the truck bolster and finally to the carbody center plate and the carbody.

Lateral play in the wearing parts tends to augment the nosing by permitting the horizontal force to act through the total lateral play. This accounts for the fact that there is more nosing when the trucks are worn than when they are new. Also, the overhanging weights of the motors cause the wheels to "dig in," and this is particularly the case with outside-hung motor trucks.

Since swing links are used to transform the quick-acting, horizontal, transverse forces into slow movements of a greater mass, the question of swing link design is important. If the links are extensible—*i.e.*, with a spring within the link—the nosing is excessive. If links are too short, the nosing is sharp and abrupt. If the links are too long, the nosing is languid.

A combination of short links on one truck and long links on the other has given good results. One end of the car tends to oscillate at a quicker beat than the opposite end, and in this way the synchronism of the movement is broken up, the nosing being neutralized.

Theory and practice both prove that nosing is reduced with long distances from center to center of king pins and with heavy passenger loads.

Nosing can be minimized by the following practices:

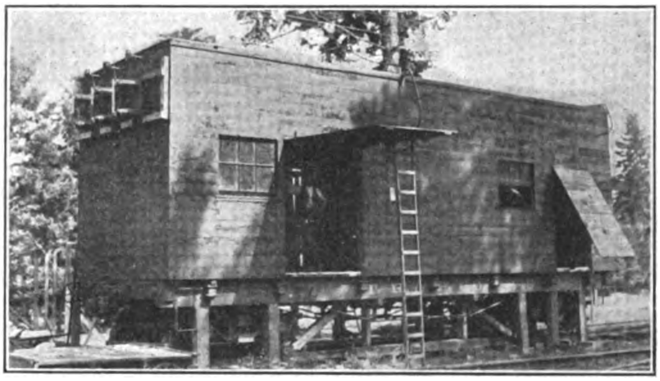
(1) Improve track conditions by leveling the low joints, keeping normal track gage, and using proper weight of rail.

(2) Reduce lateral play in the transverse moving parts by renewal of worn pieces, and break up synchronism of the movements by variable dampening of the transverse motions in the front and rear trucks.

(3) Reduce the overhang of the carbody by lengthening the distance center to center of king pins and reduce the overhang of the motors by placing the motors inside of the wheels.

Railway Substation on Flat Car Supplies Army Post

A new army post at American Lake, about 10 miles south of Tacoma, Wash., is served by one of the lines of the Tacoma Railway & Power Company. The increase in traffic over this line has been so great that an additional substation was required. The picture shows an emergency substation that is serving the purpose until the company decides upon the proper site and builds a permanent substation.



EMERGENCY SUBSTATION FOR SUPPLYING RAILWAY SERVICE TO ARMY POST

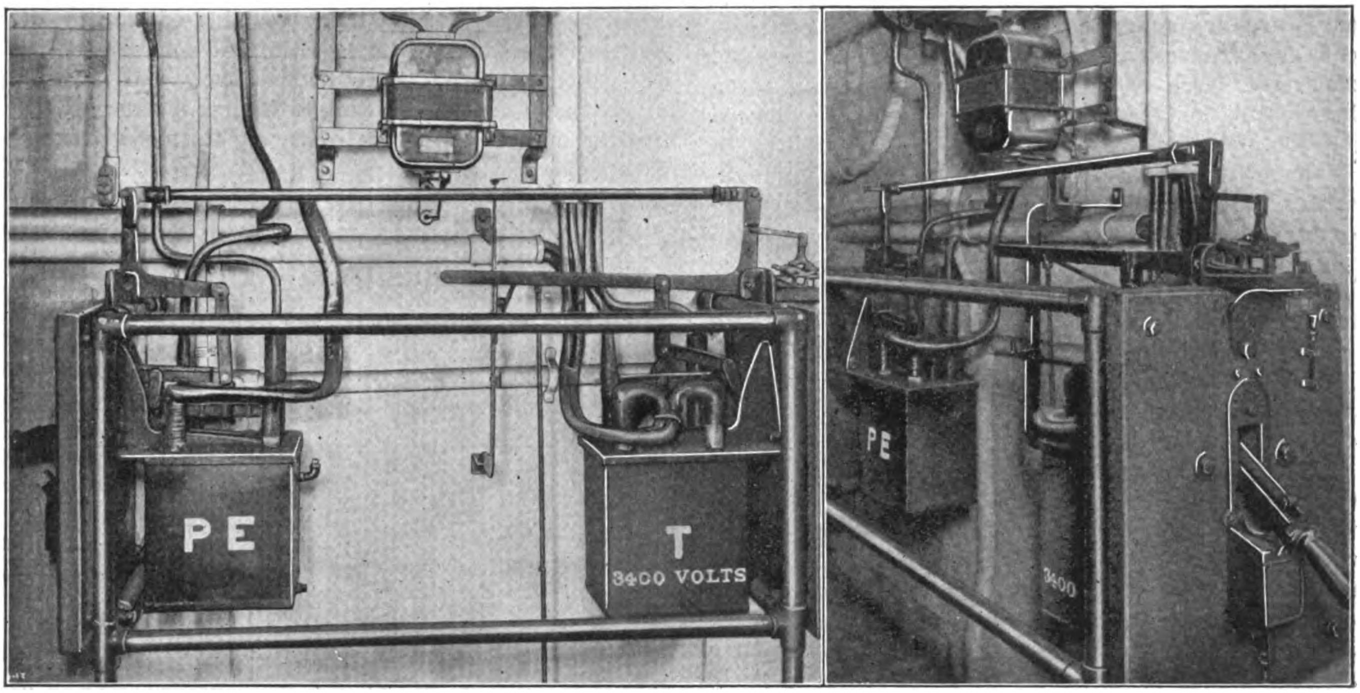
The emergency station is mounted on a 10-ft. by 36-ft. flat car which is shored up by short lengths of wooden timbers. The energy is transformed from 13,200-volt, three-phase, 60-cycle alternating current to 600-volt direct current. The apparatus used is all equipment which the company had on hand. It consists of two 180-kva., 13,200-2200-volt, three-phase-two-phase transformers; two 150-kva., 2200-400-volt, two-phase transformers and a 250-kw., two-phase rotary converter.

Switch Which Prevents Failure of Signal Current

Pennsylvania Railroad Has Developed a Switch Which Transfers Signal Feeders from One Source of Supply to Another in Less than One-Twentieth of a Second

BY H. K. LE SURE
Assistant Master Mechanic, Electrical Equipment, Pennsylvania Railroad, West Philadelphia, Pa.

Modern a.c. signal relays are undoubtedly more sensitive to momentary power interruptions than any other piece of apparatus in commercial use. On trunk lines where a large percentage of the service is operated by steam locomotives, the failure of signal power, causing all signal semaphore arms to go to stop position, results in considerable delay to trains, and it is, therefore, important that means be provided to insure a continuous supply of signal power, thus avoiding one source of signal failures. On the Philadelphia-Paoli and Chestnut Hill electrifications of the Pennsylvania Railroad, the signal system uses 3400-volt, single-phase, 60-cycle current, the power being obtained from motor-generator sets fed from transformers connected to the 11,000-volt, three-phase, 25-cycle traction bus. An emergency source of signal power is supplied from the 2300-volt, 60-cycle lighting feeders of the Philadelphia Electric Company, and the problem was to provide a means by which the signal load could be automatically transferred from the motor-generator sets to the emergency power supply, the transfer to be made at such speed that the signal relays would not be affected.



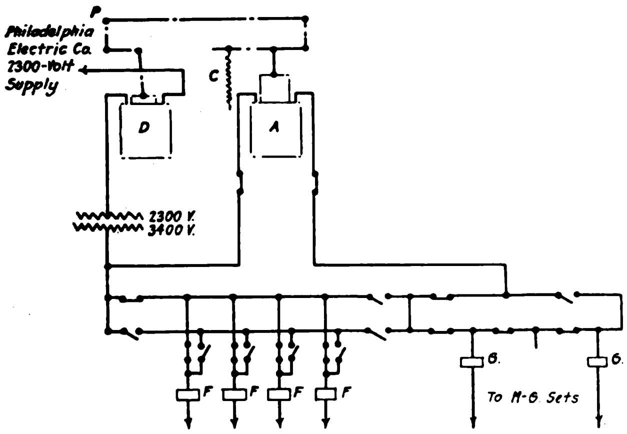
VIEWS OF CHANGEOVER SWITCHES SHOWING INTERLOCKING LEVERS

There are on the market several electric switching devices designed to change the supply of power from one source to another in the event of interruption of either source. However, apparatus of this type is usually designed for use on low-voltage circuits and is not designed especially for high-speed operation. The present condition involved a high-voltage system and one in which the time required for the actual change of the sources of power does not exceed 3 cycles, since it has been found that an interruption of 5 or 6 cycles is great enough to cause the galvanometer or vane type of relay to drop.

The changeover switching device developed consists of two 75-amp., 4500-volt, double-pole oil switches mounted back to back on separate panels and mechanically interlocked by means of bell cranks and connecting links, as shown in the accompanying halftones. Referring to the first wiring diagram switch *A* acts as a tie between the 3400-volt, 60-cycle motor-generator sets and the outgoing 3400-volt, 60-cycle signal feeder bus. This switch is normally closed. In case of failure of the normal power supply the trip coil located under the oil switch handle unlatches switch *A*, allowing the coil spring *C* to operate the mechanism. This opens switch *A* and closes switch *D*. The latter switch ties the 2300-volt, 60-cycle emergency feeder to the step-up transformer, the high side of which is connected to the 3400-volt signal feeder bus.

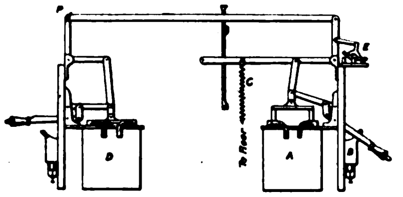
The trip coil on switch *A* is actuated as follows: Referring to the second wiring diagram *X*, *Y* and *Z* are induction-type relays. Relay *X* operates on 60-cycle current supplied from the potential transformer on the 3400-volt bus. Its contacts close whenever the bus voltage drops to 3300. Relay *Y* operates on 25-cycle current taken from the 500-volt tap of the transformer supplying the motor-generator sets and it closes whenever the voltage on the 11,000-volt traction bus falls below 9500. When the contacts of both relays are closed the trip coil on switch *A* is actuated and the changeover switch will operate.

Such a condition is the result of a gradual falling off of the voltage on the 11,000-volt bus. The contacts of relay *Y* close first, and later, as the speed of the motor-generator sets decreases, the contacts of relay *X* close, thus operating the changeover switch. The voltage on the 11,000-volt bus may drop as low as 4000, and if


P
Philadelphia Electric Co. 2300-Volt Supply
C
D
A
2300 V.
3400 V.
F
G
To M-G Sets

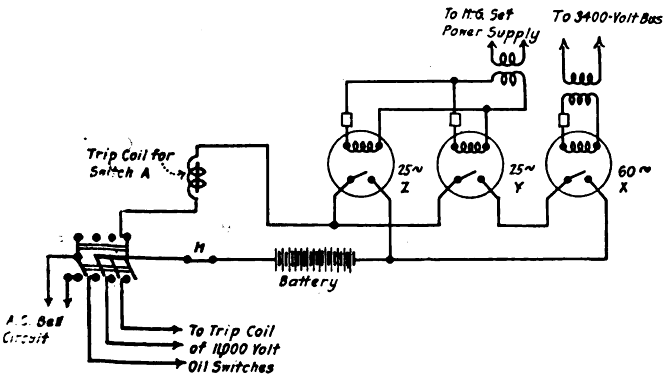
WIRING DIAGRAM OF CHANGEOVER SWITCHES AND SIGNAL FEEDERS

restored before the speed of the motor-generator sets changes, relay *X* will not operate. This condition prevents the changeover switch from operating at a time of momentary interruption on the traction feeder. Relay *Z* receives 25-cycle current from the same source as relay *Y*, but its contacts are not closed until the voltage on the 11,000-volt bus drops below 3500. The contacts on this relay, it will be noted, cause the changeover switch to operate through a different circuit from either of the other relays. Relay *Z*, therefore, takes care of a sudden loss of all the power on the 25-cycle traction bus. The knife switch *H* is used to prevent the operation of the changeover switch while relay adjustments are being made. It has been found by experience that the energy stored in the rotating parts of the motor-generator set is sufficient to carry the 150-kva. load during the short interval of time required for the operation of relays and the changeover switch.


P
T
E
C
D
A
B
To Rear

ARRANGEMENT OF SWITCHES AND INTERLOCKING LEVERS

To restore the system to normal after a 11,000-volt disturbance the motor-generator set is synchronized with the 60-cycle emergency feeder. This operation is accomplished by disconnecting the mechanical interlock between switches *A* and *D* by removing the pin *P*. Switch *G* is then opened and switch *A* closed, thus making the generator bus alive from the emergency source.


To M-G Set Power Supply
To 3400-Volt Bus
Trip Coil for Switch A
25~ Z
25~ Y
60~ X
H
Battery
A.C. Bell Circuit
To Trip Coil of 11,000 Volt Oil Switches

WIRING DIAGRAM OF CONTROL RELAYS FOR CHANGEOVER SWITCHES

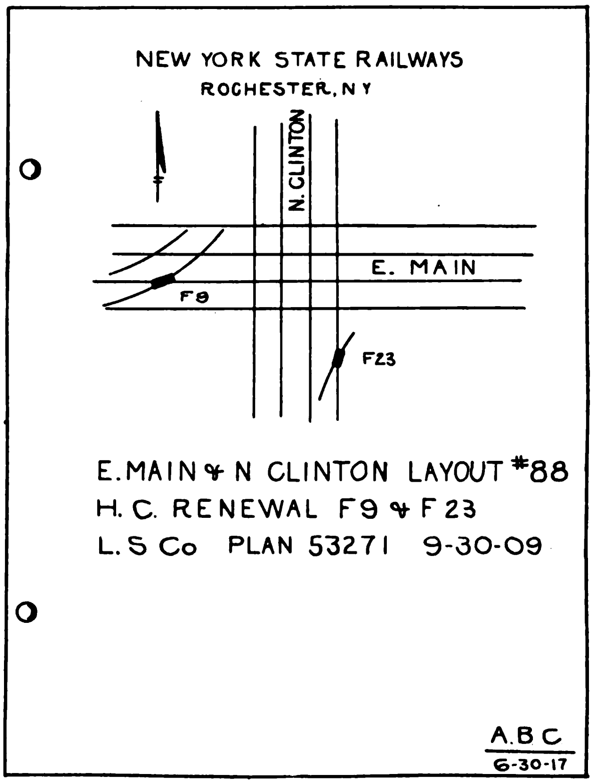
The automatic changeover switch has operated in actual service about eighty times during the last ten months, there being only one case on record where the 60-cycle feeder was out of service at the time of changeover.

Handling of Hard-Center Renewal Jobs Simplified

BY L. R. BROWN

Assistant Engineer Maintenance of Way, New York State Railways, Rochester, N. Y.

On a large electric railway the promptness of making hard-center renewals is an important factor in the special-work maintenance. The system in use in Rochester accomplishes this work with a minimum amount of red tape. When a broken or worn-out center is discovered by an inspector, engineer or roadmaster, it is reported to the assistant engineer, who visits the point, verifies the report and notes the exact location in the layout in his inspection book. A sketch such as the one reproduced herewith is then made, using a soft pencil and an 8-in. x 10½-in. sheet of tracing paper so that it can be blueprinted readily. The time required to look up the information as to manufacturer's plan number, piece number, etc., and prepare this rough sketch is only about five minutes.


NEW YORK STATE RAILWAYS
ROCHESTER, N Y
N. CLINTON
E. MAIN
F9
F23
E. MAIN & N CLINTON LAYOUT #88
H. C. RENEWAL F9 & F 23
L. S Co PLAN 53271 9-30-09
A.B.C.
6-30-17

TYPICAL SKETCH USED IN KEEPING TRACK OF HARD-CENTER RENEWALS

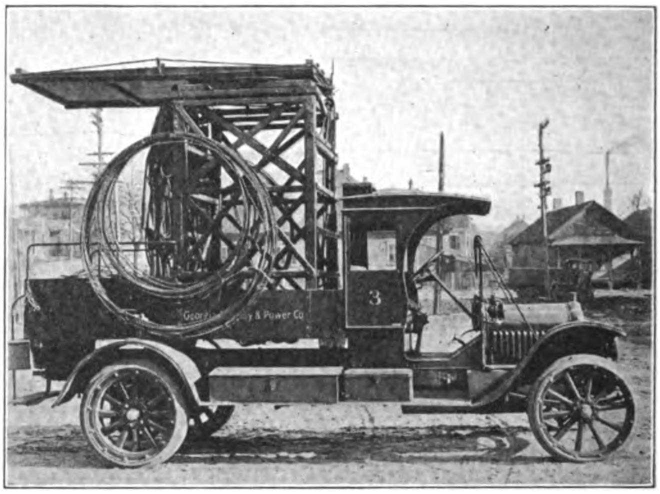
The sketch contains the following information: (A) Name of the railway company; (B) sketch of the layout, giving the exact location of the hard center being renewed; (C) layout number (each layout on the system is given a number corresponding to the file number of the special work plans); (D) a list of the frog numbers for which hard centers are wanted; (E) the steel company's name and the number and date of its drawing, and (F) the initials of the draftsman and date of the sketch.

Two blueprints are made from this sketch. One of these furnishes the clerk with all the information necessary for making out a requisition and is then inclosed with the order to the steel company. The second print is sent to the special-work foreman and serves to notify him that a hard center has been ordered for a certain location. When the hard centers are received from the factory the foreman knows from this sketch where they are to be placed. After the hard centers have been placed the foreman marks on the blueprint the word "Placed." He also dates it and returns it to the assistant engineer.

The original sketch, after the blueprints have been made from it, is placed in a folder marked "Hard Centers and Tongues Ordered but Not Placed." This folder thus acts as a follow-up and assures the engineer that no hard centers are lost or fail to be placed promptly at the proper locations. When the blueprint, with "placed" stamped on it, is received from the foreman the date is marked on the original and the latter is removed to another folder marked "Hard Centers and Tongues Placed, 1917." This folder gives a record of the hard centers placed during the year.

To summarize the system, the little sketch, prepared in a few minutes, provides directions to the clerk for making the requisition, full information to the manufacturer, directions to the foreman for placing, a record for following up the hard centers in stock, and a record as to what hard centers have been placed. The ordering and recording of tongue renewals is made in exactly the same manner.

In manholes, enameled-letter tags are now being used to mark the pot-heads instead of stenciling or using aluminum tags. Stenciling is objectionable because the letters become covered with dirt and cannot be found. Aluminum tags are affected by gas and moisture so that they become illegible.



VIEW OF 2-TON MOTOR TRUCK EQUIPPED WITH A TRENTON TOWER

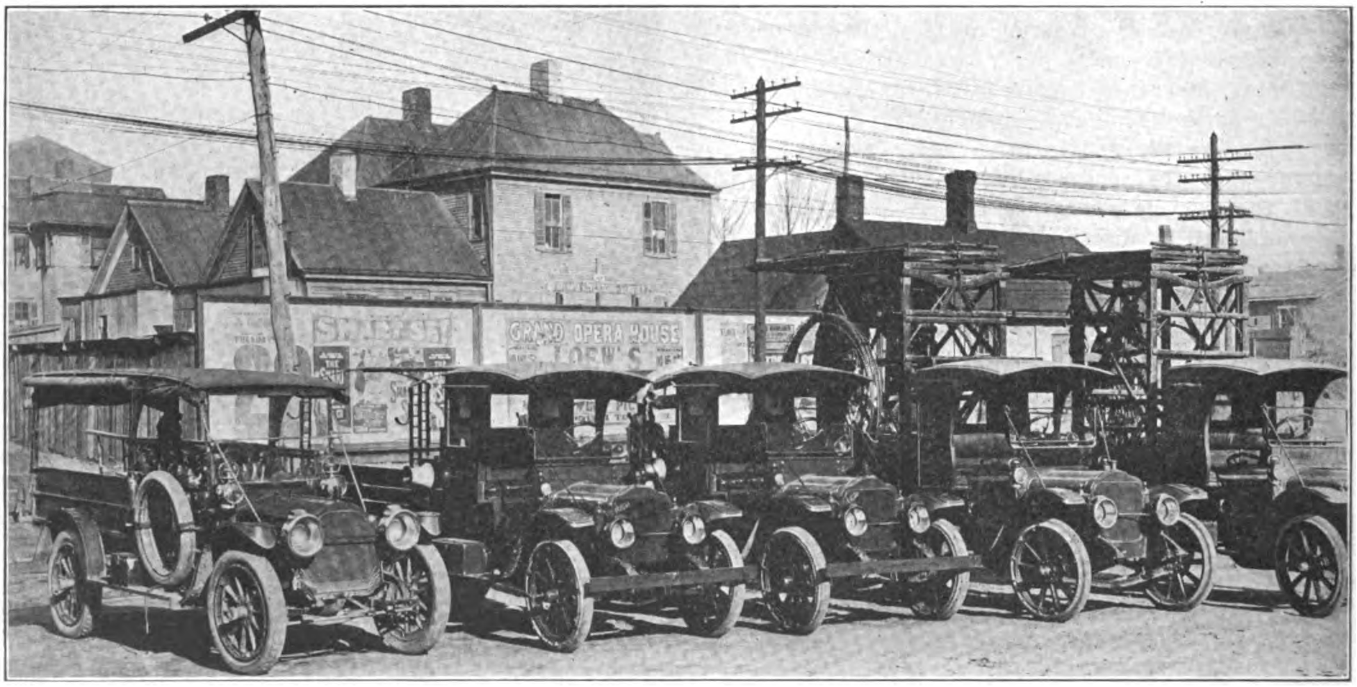
Motor Truck Practice of Georgia Railway & Power Company

Horse-Drawn Trucks Averaged 10 Miles a Day as Against an Average of 30 Miles a Day for Gasoline-Driven Cars

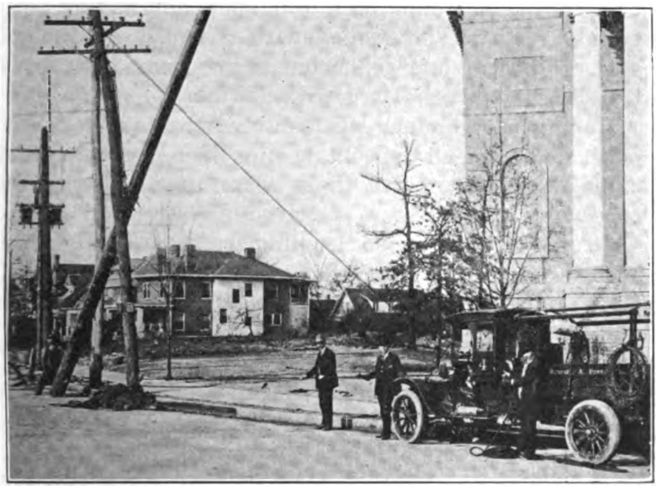
The Georgia Railway & Power Company, Atlanta, Ga., began the use of motor trucks for the construction and maintenance of its transmission and distribution lines about five years ago. To-day it has twenty-five motor trucks in use. Three track cars are also used for work along the right-of-way and for handling poles.

The motor trucks are divided as follows: Three ½-ton trucks, six ¾-ton trucks, two 2-ton trucks with Trenton towers, one line truck, one tower truck, four trouble cars and eight Ford cars for light duty.

The mileage per gallon of gasoline consumed is fifteen for the ¾-ton cars and ten for the heavier trucks. The motor trucks in city service average 30 miles per day as against 10 miles per day for the horse-drawn trucks formerly used. The ¾-ton trucks used in transmission



A FLEET OF MOTOR TRUCKS OF THE GEORGIA RAILWAY & POWER COMPANY WHICH HAVE REPLACED HORSE-DRAWN TRUCKS



ONE OF THE 2-TON MOTOR TRUCKS USED FOR HANDLING AND SETTING POLES

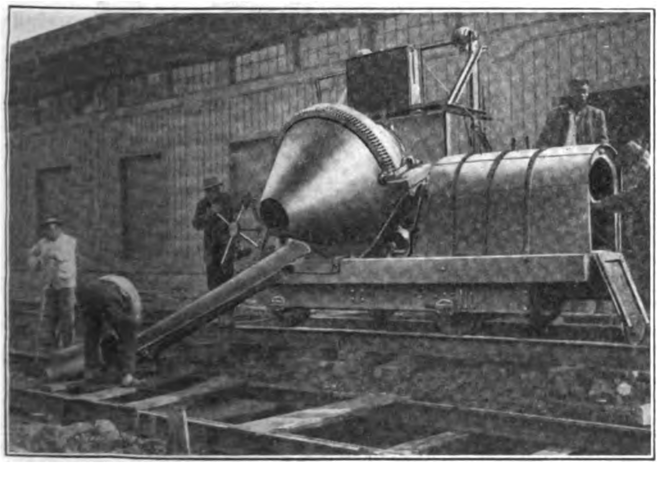
line service average 1000 miles per month. The cost of operation, including gasoline and maintenance, is 4.5 cents per mile for the Ford cars and 10 to 15 cents per mile for the heavier trucks.

New Orleans Builds Track Under Adverse Conditions

Old Ties Show Long Life—New Track Is Laid on Concrete Base—Street Is Paved with Wood Blocks Set in Wet Concrete

The track construction standards and methods of the New Orleans Railway & Light Company are of special interest because of the sub-surface conditions. The city is practically surrounded by water held out by levees. The soil under the city is an alluvial deposit and until a new city drainage system with large pumps was installed a few years ago, many portions of the streets of New Orleans were practically at water level. Then a 16-in. excavation would always show water. Since the new drainage system has been in operation, the permanent water level is now about 6 ft. below the street grade.

Because of the high-water level in earlier years, the wood ties used in the New Orleans track construction showed an exceptionally long life. During rehabilitation work carried on this past winter untreated cypress ties that had been under the track for more than twenty-five years, were found to be in such good condition that they still showed the check marks. M. V. Houlard, superintendent of track, credits this long life to the constant saturation of the ties. Although these ties are apparently in good condition they are not reused because of the indefiniteness of their life after having been dried.

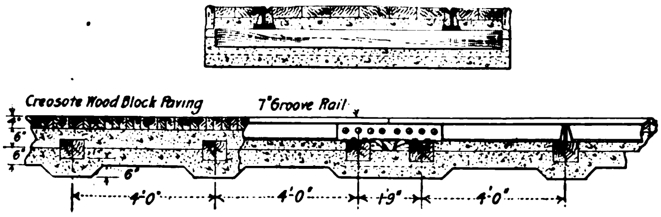


CONCRETING TRACK AT NEW ORLEANS WITH PORTABLE MIXER

THE TRACK AND FOUNDATION

The present track standards of the New Orleans property are of interest, as is the method used in prosecuting the work. After preliminary excavations the subgrade is prepared to a depth of 16 in. below finished paving grade and is rolled with a steam roller. The track, consisting of 105-lb., 7-in. grooved-girder, open-hearth rails, section Lorain No. 433 or Pennsylvania No. 295, is then laid on 6-in. x 8-in. x 7-ft. creosoted yellow-pine ties spaced 4 ft. between centers and provided with malleable brace tie plates. At the joints the ties are spaced approximately 21 in. between centers and the joint is supported by an Abbot plate. The rail joint consists of heavy channel plates provided with eight 1⅛-in. heat-treated bolts. Electrical bonds are welded to the rail underneath the joint plates.

After the skeleton track is laid it is aligned and surfaced by means of blocks and wedges. Then recesses are excavated under the ties to allow a minimum depth of 6 in. of concrete at any part of the base. A concrete mixture consisting of one part cement, two parts sand and five parts gravel is then poured into the excavation to within 10 in. of the top of the rail. This concrete, which leaves the mixer in a rather fluid condition, is then rammed under all the ties by means of tamping bars. After allowing a period of seven days for setting, the concrete paving base is laid to within 4 in. of the top of the rail and the spaces adjacent to the web under the head and groove are plastered with cement mortar. Creosoted pine paving blocks are paved in on the fresh mixture before setting takes place and then are thoroughly rammed to grade. The block pavement is given a flush coat of hot paving pitch, and later all small interstices are filled by running a hot iron over the tarred surface. A coat of ¼-in. fine torpedo sand is applied before the street is turned over to traffic.



STANDARD NEW ORLEANS TRACK

The sectional three-wire system which has been in experimental use on the lines of the Springfield Street Railway on the west side of the Connecticut River for several months has proved to be satisfactory, although operating details are not yet available for publication. It is probable that the same system will be installed on the city lines when new power arrangements involving the purchase of power from the Turner's Falls Power & Electric Company are completed.

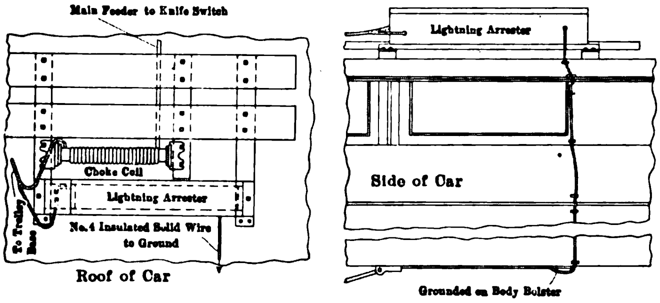
Results Obtained in Lightning Protection of Cars

Cars Equipped with Condenser-Type Arresters Struck Forty-three Times in One Season Without Damage

BY GEORGE JACKSON
Manager North Jersey Rapid Transit Company, Hohokus, N. J.

To protect the electrical equipment on our cars from electric storms has been a serious problem and one to which we have given much time and money in experimenting with the various protective devices as they appeared on the market. The route of our railroad passes through a section of northern New Jersey in which electric storms are particularly frequent and severe. For a distance of 15 miles the storms invariably pass in the direction of the railroad, and they go from one end to the other before they have spent their fury. Thus we are reputed to have the worst lightning belt in this section of the country.

We had adopted the recommended practice of installing an arrester along the railroad every one-fifth of a mile as well as at block signals and on each car, but as late as the summer of 1914 much trouble was experienced with each storm. Late in that year we purchased four Westinghouse condenser arresters, type K, which we saw advertised in the ELECTRIC RAILWAY JOURNAL. We also purchased two direct-current electrolytic arresters for our substation, thus having our incoming high-tension line and our outgoing feeders to cars well protected by the highly satisfactory electrolytic arresters.



METHOD OF WIRING LIGHTNING ARRESTERS, HOHOKUS, N. J.

At the time we installed our first condenser arresters it was late in the season and we had only two severe storms, but it happened in each storm that three of the cars were protected by the type K arresters and one was not. In each storm the cars not having the above protection were crippled, in one case by grounding the pump governor and in the other by grounding the compressor armature. The other cars, however, were not damaged at all, although two of them were struck in each storm. During the following winter the type K arresters were installed on all of our cars.

In the early part of the summer of 1915 we had many severe storms in which from one to four cars were struck during each storm, but in no case during the whole season were the cars damaged because of these storms. During that summer there were twenty-four storms and cars were struck forty-three times, but in each instance the arresters took care of the discharge.

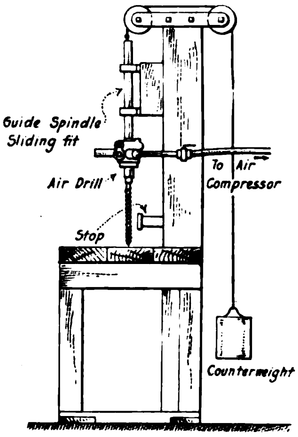
The arresters are installed on the roof of the car near one end, where the main feed wire goes to the main switch. The arrester is connected just ahead of a choke coil wound on a 3-in. spool and having about twenty turns. The ground wire is run down the outside of the car and connected to the body bolster. It is a No. 4 solid insulated wire and has no sharp bends.

During the summer we inspected the arresters each night and changed the telltale slips of paper which indicated whether or not there were any disturbances; otherwise the arresters received no attention. Since 1916 we have stopped keeping records of lightning arrester troubles as they have practically ceased.

Wood Boring Speeded Up

BY G. B. SISSON
Mechanical Department Georgia Railway & Power Company, Atlanta, Ga.

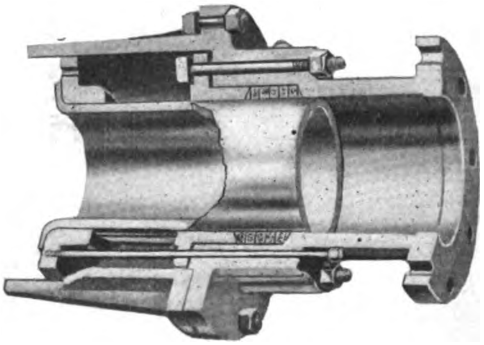
Boring holes in cross-arms and similar woodwork has been facilitated in the shops of this company by using an Independent pneumatic drill and mounting it on an improvised wood frame as shown in the sketch. Two U-shaped pieces of strap iron mounted on a wood block serve to keep the drill in a vertical position. After the drill starts on the work no hand pressure is needed, as the drill is self-feeding, and when the hole is finished the counter-weight helps to pull the heavy drill out of the work. We have found this device saves a good deal of time on jobs requiring a large amount of boring.



AIR DRILL MOUNTED FOR BORING WOOD

Crosshead-Guided Expansion Joints

A crosshead-guided expansion joint, designed by the Ross Heater & Manufacturing Company, Buffalo, N. Y., which adapts the crosshead principle used in a steam engine, has now been in use long enough to demonstrate its effectiveness. The illustration shows the relation existing between the parts of the joint and the stuffing box, guides and crosshead. These joints have a telescope of from 4 in. to 16 in., depending on the type. In applying the joints anchorage against movement under longitudinal stress is provided at points where there are elbows or tees for branch lines, and anchorages of vertical lines are made to carry the weight of pipe and fittings.



SECTION OF CROSSHEAD-GUIDED EXPANSION JOINT

News of Electric Railways

Traffic and Transportation

Financial and Corporate **Personal Mention** **Construction News**

Seattle and Tacoma Strikes

No Cars Run in Seattle—Partial Service in Tacoma—Conferences Looking Toward a Settlement

On the third day of the Seattle strike, which began on July 17, Judge Boyd J. Tallman, Department No. 3, Superior Court of King County, signed an alternative writ directing the Puget Sound Traction, Light & Power Company to proceed with the operation of its cars. The writ was made returnable on July 23. Acting under direction of the City Council, and with the approval of Mayor Hiram C. Gill, Corporation Counsel Hugh M. Caldwell asked in his petition that the company be compelled to operate its cars within twenty-four hours, failing in which he asked that a receiver be appointed to operate the lines and the company punished for contempt of court. The court gave the company three days in which to resume service.

In the meantime the company is only waiting adequate protection before resuming operations. A. W. Leonard, president of the company, in speaking on this point, said:

"We have been assured of protection in a general way, but in view of the deplorable situation that has been permitted to develop with reference to the express companies' strike, we may perhaps be justified in having our doubts."

Union employees of various express companies in Seattle are on strike and numerous cases of violence have been precipitated, with but little protection being afforded by the Police Department.

In speaking further on the subject of resuming service, Mr. Leonard said:

"It is possible that we will at once take up this protection matter with the city and endeavor to have it placed on a definite rather than a general basis. Having this, we will operate our cars."

Mayor Gill said:

"The traction company can have police protection if it desires to operate its cars. However, if the company imports any Connelly gunmen from Chicago or any others of that type to break the strike, I will have them arrested as fast as they arrive."

In Tacoma, where the strike had its beginning on the night of July 15, ten cars were put in operation on July 18 on the main lines. These were the first cars to move since the beginning of the strike when more than 300 employees of the Tacoma Railway & Power Company walked out. Operation of the cars was attended by no violence. The cars were manned by employees of the company who refused to strike. Aboard each car was a special officer. Further precautions were taken by placing heavy screen and steel netting over both the front and rear platforms.

A. W. Leonard, president of the Puget Sound Traction, Light & Power Company, in reciting the events which led up to the Seattle strike, made the following statement:

STATEMENT BY PRESIDENT LEONARD

"The strike in Tacoma was called on July 15 to force the reinstatement of seven discharged men and to secure recognition of a newly formed union.

"At that time negotiations were pending in Seattle looking to arbitration of the differences between the Puget Sound Traction, Light & Power Company and its employees on the matters of higher wages and shorter hours. When Seattle granted its traction franchise it inserted a clause providing for arbitration of such differences. on the theory that such a provision would make it impossible ever to inconvenience the public by suspension of service through a walk-out. Yet that is what happened.

"On June 21 a committee from the trainmen presented formal demands upon the company for higher wages and shorter hours. This had been preceded by the formation of a union of the Amalgamated Association and the enrollment of company men by the new union. The demands from the men, however, contained no reference to this union or to the work of organization that had been in progress.

"The committee waited on the company two days later with a request to submit the demands made on June 21 to arbitration, with the result that an agreement was reached at that time to leave the differences to mediation as provided in the terms of the franchise, and with the promise on both sides that there would be no hasty or arbitrary action. Two arbitrators were appointed immediately, James Duncan, secretary of the Central Labor Council, for the men, and C. J. Franklin, Portland, Ore., for the company.

"On July 3 an additional list of demands from employees other than trainmen was presented, and the company thereupon issued a statement making it plain that it depended upon arbitration as provided in the franchise and as agreed to in the conference of June 23.

"On July 14 a form of agreement making still greater demands was presented by the men with a suggestion that conciliation be substituted for arbitration, but promising that if this were not satisfactory the men would proceed to arbitration. The company's reply was made in these words: 'We now again make it clear that we are willing to go ahead with arbitration.'

"On the following day came the walk-out in Tacoma, and on July 16 the committee presented an ultimatum in two letters, one demanding that President Leonard personally enter the Tacoma situation on behalf of the strikers and force the reinstatement of the discharged employees there, and the other that the company recognize the union of the Amalgamated Association, with the threat of an immediate walkout as the alternative.

"The company's cars were left in the carhouses on Tuesday. The strike was precipitated by the men refusing to abide by the agreement to arbitrate, and walking out to force the reinstatement of men previously discharged in Tacoma."

President Leonard, further reviewing the events which preceded the Seattle strike and the differences between the company and its employees, said that wages and hours were not the issue that precipitated the strike, but the refusal of the company to enter the Tacoma strike situation and the demand for recognition of the union. Said Mr. Leonard:

"The first formal demand made on behalf of the employees was based wholly on wage increases and shorter hours of service and the reinstatement of several discharged employees. It was then agreed that these demands be submitted to arbitration, as provided for in our franchise, but instead of submitting the differences which had arisen to arbitration, new demands were made upon the company, which if acceded to would have been ruinous. It was a clear case of abandoning the original issue and the agreement to arbitrate, and of forcing the situation by demanding recognition of the Amalgamated Association with a sympathetic walkout immediately effective as the alternative.

"This union is one the company cannot recognize and continue to furnish adequate and satisfactory service. It arbitrarily demands the right to hire, discipline, direct and fire all employees under its jurisdiction and actually does that very thing to the detriment of service. Experience with it proves that the public invariably suffers wherever that organization is permitted to control street railway operation. We cannot delegate to that union, nor to any person or persons not in our employ, the right to hire, direct or make terms for us with our men."

The city of Seattle took official cognizance of the failure of the company to supply service when A. L. Valentine. superintendent of public utilities, addressed a letter to President Leonard in which he called attention to the terms of the franchise of the company fixing conditions under which service is to be rendered. In conclusion Mr. Valentine said:

"No street railway service has been given to-day, July 17, and unless I receive immediate advice that service is to be rendered as required by your franchises, I shall report to the City Council the failure of your company to operate its street railway franchises 'in accordance with their provisions or at all.'"

President Leonard, in replying to Superintendent Valentine's communication, reviewed the strike situation at length. He concluded his letter as follows:

"In short, while definite preparations were being made to arbitrate the questions of difference the trainmen, because of outside influence brought to bear upon them, broke their agreement and brought about a complete interruption of transportation, on account of something which had nothing whatever to do with the Seattle situation. We wish to advise that we are ready to resume service whenever we are guaranteed adequate protection for our property and employees. We fully realize our contractual and moral obligations, and it is our earnest desire to be placed in a position at the earliest possible moment to carry out these obligations."

Employees of the Seattle-Tacoma and Seattle-Everett interurban electric lines, operated by the Puget Sound Traction Light & Power Company, who are affiliated with the Brotherhood of Railway Trainmen, on July 18 formulated demands which were forwarded to the international officers in the East for consideration and ratification. It is believed that no trouble will occur on the interurbans, therefore, for ten days or more, unless the employees should affiliate at once with the Seattle trainmen.

A resolution adopted by the City Council of Tacoma directed the city attorney to petition the Public Service Commission to demand that action be taken directing the attorney general to apply to the court for a writ to insure the operation of the cars in Tacoma.

No cars were being operated in Seattle on July 26. Three hundred strike breakers have been imported from Chicago and New York and more are expected. It is regarded as likely that Mayor Gill may issue an order temporarily prohibiting the operation of cars on the downtown streets by strike breakers, saying it invites disorder. He insists that the outlying district also be served.

The Seattle company attempted to operate on July 20 and 21 under order of a writ by Judge Neterer in the Federal Court, who denied the injunction asked by the company to restrain the strikers from interfering with the operation of the cars. Judge Neterer declared that the situation called for executive, not judicial, action. He took under advisement the city's motion to remand to the State Court the city's case asking for a mandate to compel the operation of cars or for the appointment of a receiver. This case had been removed from the State Court on July 23.

The first conference looking toward a settlement of the strike was held on July 26 between five employees from the Tacoma Company, five from the Seattle Company and the officials of both companies. Nothing definite was agreed upon, but it was reported that progress had been made. It was believed on July 26 that the Seattle company would make no attempt to operate until a similar further conference had been held on July 27. On July 28 the strikers offered to arbitrate and return to work, providing seven discharged Tacoma men were reinstated. This was met with a counter offer from the company asking that the strikers withdraw their demand for the reinstatement of the Tacoma men. The strikers rejected this proposal.

Thirty-five cars were being operated in Tacoma on the main streets on July 26. No violence was reported there. The strikers in Tacoma are operating jitneys. No strike breakers have been used in Tacoma. Suit was brought on July 23 in the Pierce County Superior Court by the State Public Service Commission to compel the Tacoma Company to provide adequate service. The hearing was set for July 27. The Tacoma company on July 26 asked for an injunction against Messrs. Hoover and McMorrow, organizers of the Amalgamated Association. The company charged Messrs. Hoover and McMorrow with conspiracy and intimidation.

Wage Agreement in Portland, Me.

Summary of Working Conditions of Men on Portland Railroad and the Lewiston, Augusta & Waterville Street Railway

The Cumberland County Power & Light Company, Portland, Me., has completed negotiations with the Amalgamated Association of Street & Electric Railway Employees of America, of which its car men and shop men are members, and an agreement covering wages and other working conditions for the men has been signed for one year from May 1, 1917. Increases of 3 to 4 cents an hour are accorded platform men, while shop and other employees receive increases of 8 to 12 per cent. The new and former scales for car service are as follows:

	Cents per Hour	
	Former	New
First year	26	29
Second year	27	30
Third year	28	31
Fourth year and after	29	33

About 350 motormen and conductors and 200 miscellaneous employees are affected by the agreement. There is a provision for an automatic yearly renewal unless sixty days' notice is given prior to May 1. A standard day's work consists of nine hours, but on Saturdays, Sundays and holidays eight hours constitutes a day's service. The agreement is of the nine-hours-in-twelve type, with a guarantee of seven hours' minimum pay a day. Allowances of ten minutes are granted for making up accident reports and five minutes each for making up day cards and pulling out cars. Stools are to be provided for motormen. Extra allowances include 5 cents an hour for snow work and operating one-man cars (used in winter) and 2.5 cents for instruction service. A thirty days' probationary period is now required.

An agreement for one year has also been signed by the officers of the company with the trainmen and shopmen on the Lewiston, Augusta & Waterville Street Railway. The agreement with the men on the Lewiston, Augusta & Waterville Street Railway is practically identical with that of the Portland Railroad, with the exception that the wage scale is somewhat lower in practically every case. The pay of motormen and conductors on the Lewiston, Augusta & Waterville Street Railway, for example, is as follows:

	Cents per Hour	
	Former	New
First year	23	27
Second year	24	28
Third year	25	29
Fourth year and thereafter	26	31

Power house men, substation men, linemen and some of the shopmen are members of the local branch of the International Brotherhood of Electrical Workers, and a contract has been signed with them for one year from May 1, 1917. Briefly the agreement provides for a nine-hour day for linemen and shopmen, Mondays to Fridays inclusive, and eight hours Saturdays, Sundays and holidays with pay for nine hours. The power house and substation men work an eight-hour day. All men working seven days a week are allowed one week's vacation a year with pay. Time and a half is paid for overtime, but Sunday and holiday work is not considered overtime for seven-day men.

All of the agreements recently executed date from May 1, 1917, and the men will receive increased pay from that date.

Public Hearings on St. Louis Bills

Alderman Tamme on July 20 introduced two ordinances into the Council of St. Louis, Mo., embodying the terms of the two plans which have been advanced for the settlement of the differences between the United Railways and the city. The measures were sent to the public utilities committee at a special meeting on July 23 and public hearings were ordered to start on the night of July 25. One measure provides for a settlement under the plan by which the city would become a partner of the company. The other provides for a settlement without any partnership arrangement. The principal provisions of both ordinances have been reviewed briefly in previous issues of this paper.

Brooklyn Car Case Argued

Commission Seeks to Enforce Order to Require B. R. T. to Purchase 250 Surface Cars—Company Considers Order Unreasonable

On July 18 Justice Ordway of the Supreme Court held a hearing on the writs of certiorari obtained by the Brooklyn (N. Y.) Rapid Transit Company to review the commission's order that the company increase its equipment by adding to it 250 cars for use on its surface lines.

In his argument for a dismissal of the writs Judge William L. Ransom, counsel for the Public Service Commission, declared that the voluminous correspondence on the matter clearly proved that the writs were obtained in bad faith, and that no issue was raised on which any court could set aside the order of the commission. He said that the writs were obtained without notice to the commission, and that no opportunity was given to the commission's representatives to be heard. Mr. Ransom said:

"The commission has no desire to be unjust to the company or to any of its subsidiaries. Justice and fair dealing to the company, no less than to the public, is the spirit and purpose of the Public Service Commissions law. It is difficult for the commission even now to believe that these writs represent the best judgment of the officers of the companies interested as to what should be done in dealing with the commission and the public. If anything a commission orders may be indefinitely delayed by the simple filing of a writ, without even a pretence of concealment of the corporate purpose, the public will of necessity find reason for disappointment in the failure to realize in New York the benefits won by public service regulation in States which countenance no such dilatory writs. The lower courts should refuse to grant or countenance writs of this character."

In arguing in behalf of the company, D. A. Marsh said that additional cars were not needed, and that there would be still less need for them when the new rapid transit lines were in operation. He said:

"It is unreasonable to require these companies to go into the present abnormal market and purchase cars. There has probably been no time in our nation's history when prices for labor and material were so much above normal or when deliveries were so uncertain. It should be borne in mind that the credit of the Brooklyn Rapid Transit system, of which these companies are a part, is pledged to the carrying out of rapid transit enlargement jointly with the city, entailing for our system an expenditure of not less than $60,000,000, and inasmuch as this credit must for some time be assured by the earnings of the surface lines, any unnecessary burden now imposed on those lines will be an impediment to the larger plan of transit development. The time given the companies to provide the cars is so limited that unless the dates mentioned are to be considered as subject to change, no opportunity is given to exercise a proper and reasonable discretion with respect to market conditions."

The date for filing briefs was fixed for July 24.

Mr. Wilcox Advised Norfolk

Delos F. Wilcox, New York, N. Y., met the street railway committee of the City Council of Norfolk, Va., on July 16. As a result of the recommendations which were made by Mr. Wilcox, another meeting of the committee will be called shortly and a decision as to procedure in connection with the matter of the new railway franchise to the Virginia Railway & Power Company will be determined.

It is regarded as likely that the committee will report to the Council the need of funds to adopt the suggestions of Mr. Wilcox and ask the Council to let the committee take steps to bring the negotiations for a new franchise to a conclusion or to discharge the committee.

Mr. Wilcox advised the committee not to surrender any advantage that the city may possess. He urged that jitney regulation should wait the final determination of the franchise question. He declared also that the proposed new franchise should be written by the city. Having prepared the franchise, the committee should consider any modifications that might appear fair and just to the company, and then should put the matter squarely up to the company.

Lincoln Service Inquiry Closed

The hearings before the State Railway Commission of Nebraska to inquire into the service furnished by the Lincoln Traction Company have been closed. The case grew out of the recent strike of the employees of the company. The company was gradually building up its service to normal with new men when complaint about alleged inadequate service was filed with the commission. In this way the old men hoped that the hand of the company would be forced and that the impression would get abroad that the company was unable to return to normal service without their help.

At one of the hearings the company introduced testimony by men who had returned to the company to show that in a very large measure the former employees were largely responsible for the inability of the company to meet service demands. Many specific acts of vandalism were reviewed. There were recitals of the all too frequent cases of dynamiting, rock throwing, greasing rails, tearing up track, and other acts of violence practised in strikes. Shocking tales were told of the contumely heaped upon the heads of some of the men who returned to the company.

G. W. Wattles, president of the Omaha & Council Bluffs Street Railway, was called as the Lincoln Traction Company's last witness. He reviewed the history of the union in that city. The Omaha union was organized in 1902 and continued up to 1909, when a strike was declared. The company won and now it employed no men who belonged to the union. Mr. Wattles said that in the beginning the Omaha company was assured by the men who promoted the union that it would make no demands for recognition and would not try to force out of the service men who did not join it. Friction soon developed. After some years, a national organizer appeared on the scene, a number of meetings were held, and about half the employees became affiliated with the union. Demands were then made that the company recognize the union and discharge those in its employ who did not belong. This the company refused to do. A strike followed. Mr. Wattles expressed the opinion that public service corporations should not be hampered by union regulations, which interfere with the obligations of a company to the public. As he viewed it, the existing laws insured the men fair treatment. Mr. Wattles expressed the opinion that the union tied a man's hands, killed initiative, and took away the stimulus to do one's best work.

Philadelphia Bill Signed

Governor Signs Measure Giving the City the Right of Eminent Domain

The eminent domain bill, the so-called Hecht measure, giving the city of Philadelphia, Pa., the right of eminent domain in the case of railways and franchises was signed by the Governor on July 19. Two other bills bearing on the rapid transit matters which the city desired were also passed. These bills were purely financial measures.

As noted recently in the ELECTRIC RAILWAY JOURNAL, the Salus bill, which provided for through routing between municipal railway lines and privately owned electric railways and fixed the joint rates for such lines and the terms of transferring between them, went down to defeat. Mayor Smith was much put out by the failure of the Salus bill, and charged that the combined opposition of the electric railways to the measure brought about its defeat.

One of the pieces of legislation, the Hefferman resolution, found the Mayor and A. Merritt Taylor, former director of city transit of Philadelphia, opposed over the merits of the bill. This measure was passed by the Legislature. It permits the extra 3 per cent borrowing capacity of the city now available only for transit and port development to be used for any form of permanent city improvement.

The Hecht bill authorizes any city of the first class "to acquire (existing) street railway transit facilities within such city or adjacent thereto and the franchises for operating the same by the exercise of the power of eminent domain providing for the determination by the Public Service Commission subject to appeal of the amount of compensation to be paid for the properties and franchises taken and empowering such city to operate, maintain, use, lease, license or contract for the operation so acquired."

Strike in Kansas

Joplin & Pittsburg Railway Forced to Suspend Service by Strike of Its Power Employees

The lines of the Joplin & Pittsburg Railway, Pittsburg, Kan., were tied up recently for four days by a strike of the power station and allied employees declared by the men as a means of forcing the company to yield to demands which had been made for increases in pay. Service on the lines of the company was suspended during the period of the strike.

The members of the engineers' and firemen's unions demanded a wage increase of $5 to $7.50 a month and a shorter working day, in fixing the new three-year working contract. The original demand of the men was for $100 a month for the engineers and $90 a month for the substation men. This scale the company refused to meet. Later the men cut the figure to $95 for engineers and $82.50 for substation men. The company offered $90 a month for the engineers and $75 a month for the substation operators. W. A. Satterlee, general manager of the company, was quoted as follows:

"We cannot afford to give the men more than we have offered. In fact, I do not see how we are going to meet the scale we have offered them unless we can get an increase in rates. We have been seeking such an increase for the past two years, but have been unable to obtain permission from the Kansas State Public Utilities Commission to make the increase. We would give the men more if we could afford it, but we cannot."

Later both sides made concessions. The compromise agreement gives the engineers $95 a month, the amount they have been demanding since they made their first concession. The company had held out for $90 a month. Substation operators who had asked for $82.50 a month accepted the company's offer of $75 a month. The scale of wages previous to the strike under the expired three-year contract was $100 a month to engineers and $75 a month to substation men, both working twelve hours a day. The firemen had previously accepted the terms of the company, but they struck after the contract was signed because the engineers did not receive their demanded increase. The eight-hour day is now made effective for all men in the two unions.

Wages Advanced in Texas

Edward T. Moore, manager of the Dallas (Tex.) Consolidated Electric Street Railway, announced an increase in wages of all motormen and conductors of 2 cents an hour, effective on July 1.

The Houston (Tex.) Electric Company, a Stone & Webster property, has announced an increase in wages to all trainmen in its employ, including conductors and motormen, of 2 cents an hour, effective from July 1. About 500 men are affected by the increase, which is the third voluntary advance to be put into effect by the company within the last eighteen months.

An increase in wages of 2 cents an hour for all motormen and conductors has been announced by A. H. Warren, general manager of the Galveston (Tex.) Electric Company, a Stone & Webster property. The increase is effective from July 1, and is the third voluntary wage advance for the company since Jan. 1, 1916. The first raise was on Jan 1, 1916; the second on Aug. 1, 1916, and the third on July 1, 1917. The highest wage under the new scale will be 30 cents an hour, and new men will be started at 25 cents an hour. In announcing the wage increase, Mr. Warren called attention to the advancing cost of operation, but said that living cost for the men was also advancing and the company felt that it should help to lighten the burden of the employees as much as possible.

The Northern Texas Traction Company, Fort Worth, Tex., a Stone & Webster company which operates the Fort Worth street car lines, the Dallas-Fort Worth Interurban and the Oak Cliff electric railway lines in Dallas, announced, through G. H. Clifford, general manager, an increase of 10 per cent in the pay of all motormen and conductors on its lines, effective from July 1.

Engineers Retained in Rhode Island

Sloan, Huddle, Feustel & Freeman Employed in Rhode Island Investigation

Robert M. Feustel, president of the Fort Wayne & Northern Indiana Traction Company, and a member of the firm of Sloan, Huddle, Feustel & Freeman, Boston and Chicago, consulting engineers, has been employed by the special commission appointed by special act of the Legislature of Rhode Island to make an investigation of the Rhode Island Company. The latter operates 422 miles of electric railway in Rhode Island and has been collecting a straight 5-cent fare on all lines, but made application a short time ago to the Legislature for relief. This special commission appointed by the Legislature is composed of the chairman of the Public Service Commission, the chairman of the Tax Commission and the chairman of the Banking Commission.

Sloan, Huddle, Feustel & Freeman were employed to investigate whether there should be an increase of fare or whether changes in the operating methods of the company might bring about financial relief. They were also instructed to check the appraisal of the property of the Rhode Island Company made by Ford, Bacon & Davis for the company last fall and submitted this spring.

Inasmuch as the work of investigation is being done for the public and the company has placed itself entirely in the hands of the state officials, the case should serve as a model and should be of great interest to railway managers generally. The company has placed itself in the hands of the State, and the State, in turn, has passed on to the special commission and the engineers the question of what should be done. As stated previously in the ELECTRIC RAILWAY JOURNAL, the commission is to report to the Legislature on Feb. 18, 1918, which gives approximately eight months in which to complete the work of investigation.

Connecting Line Must Be Built

Boston Elevated Railway Ordered to Build Connecting Link Between Surface Lines and Subway Entrance

The Public Service Commission of Massachusetts has ordered the Boston Elevated Railway to build a double-track surface line in Pleasant Street, Boston, between Washington Street and the southerly entrance of the Tremont Street subway, in order to provide for faster service between the South Boston district and the retail shopping center of the city. Under an act of the 1917 Legislature the commission was required to investigate the necessity for such a line, including the extension of the proposed construction to the Park Square district. The company opposed the proposed expenditure on the ground that the opening of the Dorchester tunnel in the not remote future would enable passengers to travel from the foot of Broadway, South Boston, to Park Street in five minutes; that the cost of the tunnel, more than $9,000,000, would be a heavy burden, and that the company should not be required to furnish unnecessary duplicate service by a slower route after this rapid transit line has been opened. The company also contended that the Tremont Street subway was congested and that under present conditions it could not successfully digest additional traffic if the new route should prove popular.

The commission finds that by the construction of 460 ft. of double track from Washington Street to the subway entrance there will be a saving in time of about 5.5 minutes per trip in comparison with the present surface route over Broadway Extension, and from two to three minutes in comparison with the normal route, at present not used on account of the tunnel construction. The estimated cost of the extension is $38,000. The company questioned the power of the commission to require it to make this investment, but the board holds that it has authority to order the company to build the line as part of its facilities. The board does not require the company to extend the construction to the Park Square district at present, but holds that the improvement in surface line service will be useful even after the Dorchester tunnel is completed, for both regular and emergency operation.

East St. Louis Wage Terms

The differences between the officials of the East St. Louis & Suburban Railway, East St. Louis, Ill., and the employees over the question of wages have been settled by arbitration. The board returned its findings on the afternoon of July 21. The agreement which has been reached provides that motormen and conductors on the interurban lines shall receive 33 cents an hour and the men on the city lines 31 cents an hour. The shopmen and shedmen will also get increase of approximately 15 per cent over their present wages. The new wages are retroactive to May 1. Under the old contract, which expired on April 30, interurban men were paid 28 cents an hour and city men 27 cents an hour. No distinction was made between motormen and conductors in the matter of wages.

When the old contract expired demands were made on the company by a committee of the employees calling for a new wage scale considerably above what the officials of the company were disposed to pay and one much higher than the rate finally agreed upon. Officers of the international union went to East St. Louis and made an effort to come to an agreement with the company. Sessions were held daily for several weeks, but the differences could not be reconciled. Two or three weeks ago arbitration was decided upon. The officials of the company selected Charles E. Smith, a consulting engineer of St. Louis, to represent them and the employees chose Al. L. Towers, Belleville, Ill. Many meetings were held by Messrs. Smith and Towers in the hope that the matter could be adjusted by conciliation without calling a third party. In this, however, they did not succeed. Finally Frank Kesting, former city treasurer of East St. Louis and now a contractor, was selected as the third member of the board.

Arbitration in Buffalo

Efforts on the part of the union platform employees of the International Railway, Buffalo, N. Y., to repudiate a three-year agreement with the company and call a general strike on July 21 because of the discharge of a conductor for disobedience to the company's rules, were thwarted when Edward G. Connette, president of the company, suggested that W. D. Mahon, international president of the Amalgamated Association of Street & Electric Railway Employees, be appointed to pass upon the reasonableness of the grievances. This suggestion on the part of the company officials came as a complete surprise to the union. The offer was rejected. It was then suggested that a board of arbitration of three members be appointed. The International Railway appointed Bert L. Jones, vice-president and general manager of the Niagara Gorge Railway; the union selected John B. Kolb, a motorman, and these two arbitrators agreed upon Frank X. Schwab, a wholesale liquor dealer, as the third member of the board.

Several months ago the union made a demand upon the company for an increase in wages, in violation of a three-year agreement with the company. This agreement expires on April 30, 1918. The demand was rejected and since that time many union employees have resigned. The present trouble came to a climax about July 15 when Frank Reilly, a conductor and an officer of the union, was discharged for abandoning his car. The union demanded the man's immediate reinstatement. This the company refused. A strike vote was taken and the men decided to walk out on July 21. Arbitration was then agreed upon.

Chattanooga Wages Adjusted

The differences between the Chattanooga Railway & Light Company, Chattanooga, Tenn., and its employees have been settled. On Oct. 7, 1916, the company made an agreement with its employees, one clause of which provided for an increase in wages within six months from the date of the agreement, provided that the earnings of the company warranted an increase.

In keeping with the spirit and letter of the agreement, and notwithstanding the earnings of the company did not warrant it, an increase of 1 cent an hour was granted to all of its railway employees, regardless of their union affiliations.

The clause in the agreement above referred to provided that in the event the company did not grant an increase in wages, the employees would have the right to demand arbitration. Complaint was made that the increase in wages was not sufficient and the employees demanded arbitration. The company maintained, however, that there was nothing to arbitrate, as the increase had been granted within the time specified in the agreement.

In order to show its good faith, and anticipating that future earnings would increase, the company voluntarily granted a further increase of 1 cent an hour to all employees of the company, effective on Aug. 1, 1917. This did not satisfy the employees and a representative of the Amalgamated Association was called to Chattanooga. Later Hywel Davies, a concilliator of the Department of Commerce and Labor of the United States, was called to Chattanooga. He arrived on July 2 and conferred with the men and officials of the company. Mr. Davies was quick to see the company had lived up to its agreement in every respect and so advised the men. At his solicitation, however, the company agreed to make the additional increase effective from July 1 instead of Aug. 1.

Service Resumed in Lima

On July 20 the Ohio Electric Railway was operating fifteen cars on its local line at Lima with men employed to take the place of striking motormen and conductors. No cars were run after dark. Operation was resumed on July 18 with ten cars. About the same number was used the following day. The strikers did not attempt to interfere with the service, but very few persons used the cars the first few days.

On July 19 officers of the Carpenters' Union filed a petition with City Auditor D. L. Rupert asking that the city take over the street railway property by condemnation proceedings and an effort was made to prepare petitions for a referendum vote on the municipal ownership proposition. The unions affiliated with the Lima Trades & Labor Assembly will aid in this work.

The strikers have placed a number of 5-cent jitneys in operation in competition with the railway. The autos are operated on all the streets where the company is furnishing service.

Ohio Road Wants to Abandon Unprofitable Branch.—The Dayton, Springfield & Xenia Southern Railway, Dayton, Ohio, on July 17, filed a request with the Public Utilities Commission of Ohio for authority to abandon the Spring Valley division of its road between Spring Valley and Roslyn. It contends that the division has always lost money and that its continued operation might endanger the solvency of the company. This is the first application of the kind since the enactment of the law that stations and tracks may be abandoned only with the consent of the Public Utilities Commission.

New Wage Agreement at Providence, R. I.—A new wage agreement has been reached between the Rhode Island Company and the local branch of the Amalgamated Association at Providence. R. I. The agreement has a life of two years dating from June 1, 1917, and grants a wage increase ranging from 1 to 8 per cent. Uniformed men will receive the following rates per hour: First six months, 28 cents; second six months, 30 cents; second year, 31 cents; third year and over, 34 cents. Beginning June 1, 1918, men in service more than three years will receive 35 cents an hour. An increase of 4 cents an hour is granted to shopmen in the employ of the company.

Philadelphia Awards $15,000,000 Contracts.—W. S. Twining, Director of City Transit of Philadelphia, Pa., after a conference with Mayor Smith and Dr. William Draper Lewis on July 25 let six contracts, involving an expenditure of $14,747,359 for the construction of the main lines of the high-speed transit system. Four of the contracts were awarded to the Keystone State Construction Company, one to Smith, Hauser & MacIsaac, Inc., New York, and the sixth to the Philadelphia Subway Construction Company, a newly organized construction company. The contracts weree let upon bids which were submitted by the contractors six months ago.

Philadelphia Appeals for Approval of Rapid Transit Construction.—Transit Director Twining and Assistant City Solicitor Lowengrund, representing the city of Philadelphia, appeared before Chairman Ainey of the Public Service Commission on July 18 and asked the commission's approval of the city's purpose to proceed with the construction of the section of the Frankford elevated line from Arch to Callowhill Street and of the Chestnut Street subway from Front to Thirtieth Street. At the conclusion of the hearing Mr. Ainey announced that he would lay the matter before the entire commission, in executive session on July 23.

Another New York Rapid Transit Line Opened.—The Interborough Rapid Transit Company, New York, N. Y., began the operation of its Second Avenue elevated trains over the Queensboro Bridge on July 23 to a connection with the new rapid transit lines in the Borough of Queens, extending to Astoria on the north and to Corona on the northeast. The Queens lines in the past have been operated by trains from the Queensboro Subway, running from a connection in Manhattan with the first subway at the Grand Central Station in Forty-second Street. Under the new operation subway trains will be withdrawn from the Astoria service, and the elevated trains from the Second Avenue (Manhattan) line substituted. This will give to Queens both elevated and subway service from Manhattan and the Bronx at a single fare.

Plan for Initiating Rapid Transit Ordinance.—The defeat of the underground terminal and subway ordinance by the City Council of Cleveland, Ohio, has caused the friends of the movement to rally to the Mayor and plans have now been made for initiating the ordinance by petition. The petitions will probably be laid before Council on Aug. 27, the first meeting after the summer vacation, and then, if not acted upon favorably, the question will be placed before the voters at the fall election. The ordinance calls for the appointment of a street railway commission, the construction of a subway between the underground bridge approach on Superior Avenue and the Public Square and the construction of a subway terminal at the Public Square. It is proposed to issue $3,500,000 of bonds to provide funds to pay for the construction work.

Conductors Who Stole Arraigned Before Court.—W. G. Gilbert and Guy Brinsfield were tried at May's Landing, N. J., recently on the charge of participating in a conspiracy to mulct the Atlantic City & Shore Railroad for which they worked for a short time last summer. They were arrested in Connecticut and indicted in Atlantic County on the charge of stealing from the railroad by withholding fares. Gilbert, who is not well, was ordered by the court to return to his home and appear for sentence later. Prosecutor Charles S. Moore informed the court that the men were members of a gang that had been defrauding electric railways. They obtained jobs, it is said, by submitting fake recommendations. The apprehension of Gilbert and Brinsfield by the authorities was noted in the ELECTRIC RAILWAY JOURNAL of March 31, page 609. Previous to that Thomas Barlow, another conductor, was sentenced to serve six months in the county jail.

Women Operators Being Considered in Los Angeles.—Confronted with a labor shortage, the Pacific Electric Railway, Los Angeles, Cal., is considering the employment of women to operate its cars, according to a statement made by Frank Karr, chief counsel for the company, to the City Board of Public Utilities at a hearing held by the board to determine why the Pacific Electric Railway was not rendering better service. Representatives of the company admitted that a mistake had been made on July 4 when cars were taken off certain lines and some cars were not properly marked, and promised that this would not happen again. The hearing was continued to give the engineering department of the board an opportunity to make a thorough check of the service and to prepare suggestions for improving service. In response to statements made by the railroad officials that they could not secure men at the present schedule of wages, the board made it plain that it was interested only in service rendered by the company and not in wages paid.

Financial and Corporate

Annual Reports

Brooklyn Rapid Transit Company

The comparative income statement of the Brooklyn (N. Y.) Rapid Transit Company for the fiscal years ended June 30, 1916 and 1917, follows:

	1917		1916	
	Amount	Per Cent	Amount	Per Cent
Transportation revenue...	$28,992,111	98.27	$27,557,278	98.60
Miscellaneous revenue....	511,908	1.73	391,493	1.40
Total operating revenues.	$29,504,019	100.00	$27,948,771	100.00
Maintenance of way and structure	$2,505,288	8.50	$2,485,421	8.89
Maintenance of equipment	2,496,349	8.46	2,508,369	8.98
Operation of power plant.	2,041,617	6.92	1,725,307	6.18
Operation of cars—trainmen's wages...........	5,605,533	19.00	5,084,648	18.19
Operation of cars—other expenses	1,978,089	6.70	1,858,323	6.65
Damages	713,768	2.42	602,968	2.16
Legal expenses in connection with damages.....	269,523	0.91	256,113	0.91
General law expenses....	57,394	0.20	66,038	0.24
Other general expenses...	768,991	2.60	797,652	2.85
Freight expenses.........	304,666	1.03	302,102	1.08
American Railway Traffic Company—expenses ...	199	0.00	6,961	0.02
Total expenses.........	$16,741,417	56.74	$15,693,907	56.15
Net revenue from operation	$12,762,602	43.26	$12,254,864	43.85
Income from other sources	427,814	1.45	438,705	1.57
Gross income............	$13,190,416	44.71	$12,693,569	45.42
Taxes	$2,351,104	7.97	$1,837,682	6.58
Interest and rentals (net)	5,644,074	19.13	5,244,055	18.76
Total deductions.....	$7,995,178	27.10	$7,081,737	25.34
Net income..............	$5,195,238	17.61	$5,611,832	20.08

The year's surplus applicable for dividends was $5,195,238—equivalent to 6.97 per cent on Brooklyn Rapid Transit Company stock outstanding. The gross revenue from operation at $29,504,019 showed an increase of $1,555,247 or 5.5 per cent. The passenger earnings increased $1,422,626 or 5.2 per cent, $446,638 or 2.7 per cent coming from the increase in surface division earnings and $975,988 or 9.4 per cent from elevated division earnings.

The operating expenses were increased by the rising prices of labor and materials. These expenses at $16,741,417 represented an increase of $1,047,509 or 6.6 per cent. Most of this increase was caused by wages, which rose $520,884 or 10.2 per cent. The charges to maintenance of way and structures showed an increase of $19,866 or 0.80 per cent, while those for maintenance of equipment decreased $12,020 or 0.48 per cent. The aggregate amount expended, however, was less than the aggregate amount charged by $120,376, which balance was carried to the credit of reserves. The large increase of $316,309 or 18.33 per cent in power was due primarily to two factors, namely, the higher cost of coal, and the necessity for purchasing outside power because of delay on the part of the Public Service Commission in approving arrangements for the supply of power for rapid transit lines.

The burden of taxation continued to increase, the amount charged for the year being $513,421 or 27.94 per cent more than for the preceding year. Deductions from income were swelled by the addition of $442.863 to interest on account of new rapid transit properties placed in operation. Other interest and rental deductions were somewhat less than for the preceding year, making the net deductions $400,018 or 7.63 per cent greater.

The net income was $416,593 or 7.42 per cent less than for the preceding year. In other words, out of an addition of $1,555,247 in operating revenue, while $507,737 was saved in net revenue, the additional charges for taxes and interest absorbed all of this and considerably more. Nevertheless, the company was able to maintain its dividend rate of 6 per cent and add a substantial amount to the system's surplus.

The operations of the company's rapid transit lines in conjunction with those provided by the city under the provisions of the contracts of March 19, 1913, resulted for the year ending June 30, 1917, in earning not only the first preferential of $3,500,000 (which accrues under the contracts to the operator and is applicable to interest on obligations outstanding prior to the date of the contracts, and to dividends), but within $250,371 of interest at the rate of 6 per cent on the cost of new properties placed in operation since March 19, 1913. This deficit is cumulative and becomes a charge against future earnings before the city receives interest on its investment. The total deficiency from the beginning of temporary operation on Aug. 4, 1913, to June 30, 1917, is $1,037,276. These results have been attained before the completion of the combined system and without the addition of any new lines which contribute materially to net earnings. The showing justifies the confidence that it will only be a short time after complete operation when all of the operator's preferentials will have been earned and the city will get interest on its investment.

On account of the construction and equipment of rapid transit lines under contracts with the city, the allied New York Municipal Railway Corporation expended during the year an additional amount of $9,146,736, making the total expenditures to June 30, 1917, as follows: On account of contribution to city-owned lines, $11,149,308; on account of equipment of city-owned lines, $8,373,233; on account of additions, extensions and improvements of existing railroads, $30,458,769; total, $49,981,311.

The other companies of the system expended during the year for additions and improvements $1,249,326, of which $546,824 was for track and roadway (including extensions), $122.772 for electric line, $256,318 for power plant, $174,657 for cars and electrical equipment $72,581 for buildings and fixtures, $48,608 for real estate, and the remainder for miscellaneous purposes. As against these charges, however, credits were made for properties displaced aggregating in value $957,200, leaving a net addition to the property accounts of other companies $292,125. Miscellaneous operating statistics for the last two fiscal years follow:

Passenger earnings	$28,485,861	$27,063,235
Increase over preceding year (per cent)	5.26	6.28
Passengers carried	760.519,397	728,465,567
Revenue mileage	98,593,632	98,748,451
Increase or decrease over preceding year (per cent)	0.16	6.28
Earnings per revenue mile (cents)	28.8	27.4
Units per passenger (cents):		
Passenger earnings	3.74	3.72
Miscellaneous earnings	0.19	0.18
Total earnings	3.93	3.90
Operating charges	2.20	2.16
Taxes	0.31	0.25
Interest and rentals	0.74	0.72
Total	3.25	3.13
Surplus	0.68	0.77

Augusta-Aiken Railway & Electric Corporation

The gross earnings of the Augusta-Aiken Railway & Electric Corporation and subsidiaries for the calendar year 1916 amounted to $838,456 as compared to $732,990 in 1915, an increase of $105,466 or 14.4 per cent. The operating expenses, including taxes, totalled $431,721 in 1916 and $381,255 in 1915, an increase of $50,466 or 13.3 per cent. The net earnings from operation, therefore, amounted to $406,734 in 1916 and $351,735 in 1915, a gain of $55,000 or 15.6 per cent. After the payment of interest charges the 1916 surplus amounted to $58,060, a large increase over the surplus of $3,137 the year before. As in 1915, no dividends were paid on the company's preferred stock. A total of $45,000 was paid in 1914 and $90,000 in 1913 and 1912.

The earnings in the electric railway department increased $42,236 or 12.5 per cent, and the expenses $43,235 or 23.3 per cent. The earnings in the electric department increased $52,557 or 15.3 per cent, and the expenses $17,648 or 16.1 per cent. The earnings from the hotel and land companies increased $10,672 or 19.9 per cent, while the expenses were less by $12,161 or 44.3 per cent. The daily receipts from railway operation averaged more than $1,000, and despite the steadily increasing number of private automobiles, are at present better than at any time in the history of the company. The operating expenses during the year were increased by the large amount expended on deferred maintenance of track, roadway and railway equipment and overhead tower lines, the cost of materials and labor for such work having greatly increased. During 1916 $79,425 was expended for additions, betterments and extensions.

Seattle Franchise Obligation Case

Corporation Counsel of City Seeks to Have Dismissed Railway's Appeal for Relief from Its Franchise Obligations

Hugh M. Caldwell, corporation counsel of Seattle, Wash., has petitioned the Public Service Commission to dismiss the complaint of the Puget Sound Traction, Light & Power Company, asking for relief from franchise obligations, including payment of a gross earnings tax and paving between its tracks. The petition of the company has been pending since June, 1915. In that year a motion was made by the city to dismiss the application of the company, but was lost after a hearing by the commission. Since that time no pleading has been filed nor further action taken until the completion of the valuation of the company's property heretofore begun by the commission. A decision of the Public Service Commission in the case of the city of Tacoma vs. the Tacoma Railway & Power Company, which was very similar to the Seattle case, led Mr. Caldwell to renew his motion for dismissal.

At the same time, the Public Service Commission is considering a petition of George H. Tilden, Seattle, who, with others, protests against the dismissal of the petition of the company. In his petition Mr. Tilden makes the claim that he and others are entitled to extensions to the electric railways in their vicinity and to a 5-cent fare, which the company says cannot be done if it is held to the strict terms of its franchise. He therefore requests that the commission conclude the investigation which has been started. The city of Seattle is desirous of having the matter tried in the courts. The King County Superior Court has refused to pass upon the city's suit to force the company to pave between its tracks and to pay gross earnings tax until the Public Service Commission disposes of the matter.

Lehigh Valley Deal Arrangements

Final Details Being Worked Out Under Which Lehigh Valley Transit Company, Lehigh Navigation Electric Company and Northern Central Company Will Be Combined

A syndicate of which Brown Brothers Company, New York, and Edward B. Smith & Company and Henry & West, Philadelphia, will be members is about ready to carry out an electric power project by which the Lehigh Valley Transit Company, Allentown, Pa., the Lehigh Navigation Electric Company and the Northern Central Company will be taken over by a new company to be called the Lehigh Power Securities Corporation. While the Lehigh Coal & Navigation Company sells its generating station and distributing system, it will own an important interest in the new corporation.

The financial plan provides for a present issue of $20,000,000 of ten-year 6 per cent secured gold notes of that corporation, and looks forward to large additional investments properly to develop the business. It is not intended to extend the present system much while construction costs are abnormally high and prompt deliveries of electric machinery almost impossible to secure, but the existing power plants will be so tied together and co-ordinated as to enable them to perform much greater and more efficient service.

The Lehigh Navigation plants at Hauto and Harwood will be enlarged to develop 70,000 kw., and then tied in with the Lehigh Valley Transit plant now being expanded to 30,000 kw. Additional plants will be constructed as required. They will be located at points where water is available.

The management of the new corporation will be in charge of the Electric Bond & Share Company, of which Sydney Z. Mitchell, New York, is president. As is well known, all the common stock of the Electric Bond & Share Company is owned by the General Electric Company.

Electric Railway Statistics

Data from East Show That Section Hard Hit—Expenses Continue to Mount Faster Than Revenues

A comparison of electric railway statistics for the month of April, 1917, with figures for the corresponding month of 1916, made by the information bureau of the American Electric Railway Association, indicates that the expenses of electric railways in the United States are increasing faster than the revenues. The Eastern district is suffering most in this respect.

Data for April, representing 8765 miles of line of companies scattered throughout the country, figured on the per mile of line basis, indicate an increase in operating revenues of 2.90 per cent, in operating expenses of 8.56 per cent, and a decrease in net earnings of 6.23 per cent. Data representing approximately 75 per cent of the above mileage indicate an increase in the amount of taxes paid of 5.30 per cent and a decrease in operating income of 13.29 per cent.

The returns from the city and interurban electric railway companies, as shown in detail in the accompanying table, have been classified according to the following geographical grouping: Eastern district—East of the Mississippi River and north of the Ohio River. Southern district—South of the Ohio River and east of the Mississippi River. Western district—West of the Mississippi River.

COMPARISON OF REVENUES AND EXPENSES OF ELECTRIC RAILWAYS APRIL, 1917 AND 1916

Account	UNITED STATES				EASTERN DISTRICT				SOUTHERN DISTRICT				WESTERN DISTRICT			
	Amount, April, 1917	Per Mile of Line			Amount, April, 1917	Per Mile of Line			Amount, April, 1917	Per Mile of Line			Amount, April, 1917	Per Mile of Line		
		1917	1916	% Increase		1917	1916	% Increase		1917	1916	% Increase		1917	1916	% Increase
Operating revenues	$19,290,850	$2,201	$2,139	2.90	$14,316,755	$2,376	$2,316	2.59	$1,058,773	$1,257	$1,226	2.52	$3,724,868	$2,063	$1,986	3.87
Operating expenses	12,556,543	1,433	1,320	8.56	9,361,793	1,554	1,425	9.05	620,871	737	711	3.65	2,357,075	1,357	1,257	7.95
Net earnings	6,734,307	768	819	†6.23	4,954,962	822	891	†7.74	437,902	520	515	0.97	1,367,793	706	729	†3.16
Operating ratio, per cent	1917, 65.11; 1916, 61.71				1917, 65.40; 1916, 61.53				1917, 58.63; 1916, 57.99				1917, 63.77; 1916, 63.29			
Average number of miles of line represented	1917, 8,765; 1916, 8,681				1917, 6,026; 1916, 5,967				1917, 842; 1916, 839				1917, 1,897; 1916, 1,875			
COMPANIES REPORTING TAXES																
Operating revenues	$14,289,937	$2,223	$2,200	1.05	$9,961,843	$2,349	$2,349	......	$479,598	$1,252	$1,228	1.95	$3,667,502	$2,133	$2,056	3.74
Operating expenses	9,574,185	1,490	1,387	7.43	6,775,684	1,598	1,489	7.32	275,592	719	691	4.05	2,311,682	1,398	1,296	7.87
Net earnings	4,715,752	733	813	†9.84	3,186,159	751	860	†12.67	204,006	553	537	†0.75	1,355,820	735	760	†3.29
Taxes	1,021,557	159	151	5.30	697,834	165	154	7.14	42,557	111	105	5.71	273,192	156	153	1.96
Operating income	3,694,195	574	662	†13.29	2,488,325	586	706	†17.00	161,449	422	432	†2.32	1,082,628	579	607	†4.62
Operating ratio, per cent	1917, 67.03; 1916, 63.05				1917, 68.03; 1916, 63.39				1917, 57.43; 1916, 56.27				1917, 65.54; 1916, 63.03			
Average number of miles of line represented	1917, 6,427; 1916, 6,347				1917, 4,241; 1916, 4,182				1917, 383; 1916, 383				1917, 1,804; 1916, 1,783			

†Decrease.

Of the three groups shown in the accompanying table, returns for the Eastern, representing 6,086 miles of line, indicate an increase in operating revenues of 2.59 per cent, in operating expenses of 9.05 per cent, and a decrease in net earnings of 7.74 per cent. Taxes paid by companies represented by approximately 70 per cent of the above mileage increased 7.14 per cent, while the operating income of these companies decreased 17 per cent.

Returns for the Southern and Western groups indicate that both have been affected by the rising costs of operation. The operating income of the Southern groups decreased 2.32 per cent, while that of the Western decreased 4.62 per cent. Both groups show increases in taxes paid.

The operating ratio for the country as a whole has increased from 61.71 in 1916 to 65.11 in 1917. The operating ratio of the Eastern district has increased from 61.53 in 1916 to 65.40 in 1917. The operating ratios of the Southern and Western groups have also risen.

American Water Works & Electric Company, New York, N. Y.—The directors of the American Water Works & Electric Company met on July 23 and declared an initial dividend of 1¾ per cent on the cumulative first preferred stock. This action follows the general plan which was proposed to the stockholders to fund the back dividends in part by cash and in part by stock, and which was accepted. The present dividend will put the stock on a 7 per cent basis. The cumulative first preferred has been selling at 80 to 83, which will yield about 8.5 per cent at this dividend rate.

Boston (Mass.) Elevated Railway.—A petition has has been filed with the Massachusetts Public Service Commission by the West End Street Railway for permission to issue $458,000 of 6 per cent thirty-year bonds to reimburse the Boston Elevated Railway for additions to the property of the West End Street Railway.

Chambersburg, Greencastle & Waynesboro Street Railway, Waynesboro, Pa.—The directors of the Chambersburg, Greencastle & Waynesboro Street Railway, which operates a line 30 miles long from Pen-Mar to Chambersburg and an electric light and power plant in Waynesboro, are reported to have received an offer of purchase of the property from interests representing the Hagerstown & Frederick Railway, Frederick, Md.

Philadelphia Company, Pittsburgh, Pa.—Under the sinking fund and redemption plan for Philadelphia Company bonds there had been deposited up to the close of business on July 18, $5,563,000 of first mortgage and collateral trust bonds of a total issue of $6,500,000, and $13,630,000 of the consolidated mortgage and collateral trust bonds of a total issue of $15,148,000.

Portsmouth, Dover & York Street Railway, Portsmouth, N. H.—The lines of the Atlantic Shore Railway, Sanford, Me., west of the terminus of that company in York Beach, Me., have reverted to the Portsmouth, Dover & York Street Railway, one of the companies which was included in the properties that were consolidated originally to form the Atlantic Shore Railway. The Portsmouth, Dover & York Street Railway is being operated by W. G. Meloon as receiver and general manager, with R. W. Sturtevant as superintendent. Mr. Sturtevant was formerly superintendent of the western division of the Atlantic Shore Railway.

United Railways, St. Louis, Mo.—David R. Francis, Jr., has announced his resignation as a director of the United Railways following his appointment as a member of a committee formed to protect the interests of holders of the 4 per cent general mortgage bonds of the railway.

Waterloo, Cedar Falls & Northern Railway, Waterloo, Ia.—Allard, Kinnear & Company, Inc., New York, N. Y., are offering for subscription first mortgage sinking fund 5 per cent gold bonds of the Waterloo, Cedar Falls & Northern Railway of 1910, due Jan. 1, 1940. The company has outstanding $5,775,000 of first mortgage bonds, $410,000 of second mortgage bonds, $1,249,750 of preferred stock and $2,263,000 of common stock.

Electric Railway Monthly Earnings

Period		Operating Revenue	Operating Expenses	Operating Income	Fixed Charges	Net Income
BANGOR RAILWAY & ELECTRIC COMPANY, BANGOR, ME.						
1m., May,	'17	$65,428	*$39,979	$25,449	$18,711	$6,738
1 " "	'16	63,989	*38,441	25,548	17,608	7,940
12 " "	'17	861,583	*487,555	374,028	220,318	153,710
12 " "	'16	797,490	*426,605	370,885	212,983	157,902
CHATTANOOGA RAILWAY & LIGHT COMPANY, CHATTANOOGA, TENN.						
1m., May,	'17	$117,863	*$78,387	$39,476	$30,071	$9,405
1 " "	'16	103,765	*65,055	38,710	30,065	8,645
12 " "	'17	1,282,020	*897,275	384,745	357,387	27,358
12 " "	'16	1,167,518	*745,509	422,009	357,721	64,288
CITIES SERVICE COMPANY, NEW YORK, N. Y.						
1m., June,	'17	$1,388,560	$29,785	$1,358,775	$233	$1,358,542
1 " "	'16	740,848	16,520	724,328	28,858	695,470
12 " "	'17	15,865,984	300,303	15,565,681	13,999	15,551,682
12 " "	'16	6,459,297	203,841	6,255,456	491,479	5,763,977
COLUMBUS RAILWAY, POWER & LIGHT COMPANY, COLUMBUS, OHIO.						
1m., May,	'17	$316,274	*$223,357	$92,917	$47,109	$45,808
1 " "	'16	277,688	*164,737	112,951	42,875	70,076
12 " "	'17	3,715,866	*2,398,038	1,317,828	527,138	790,690
12 " "	'16	3,270,766	*1,923,814	1,346,952	498,200	848,752
COMMONWEALTH POWER, RAILWAY & LIGHT COMPANY, GRAND RAPIDS, MICH.						
1m., May,	'17	$1,512,014	*$931,921	$580,093	$437,257	$142,836
1 " "	'16	1,328,071	*707,149	620,922	420,861	200,061
12 " "	'17	17,919,035	*10,366,987	7,552,048	5,103,594	2,448,454
12 " "	'16	15,630,910	*8,322,835	7,308,075	4,787,941	2,520,134
CUMBERLAND COUNTY POWER & LIGHT COMPANY, PORTLAND, ME.						
1m., May,	'17	$236,728	*$174,718	$62,010	$67,985	$5,975
1 " "	'16	223,429	*136,437	86,992	66,225	20,767
12 " "	'17	2,973,215	*1,931,979	1,041,236	812,431	228,805
12 " "	'16	2,736,122	*1,610,299	1,125,823	794,154	331,669
EAST ST. LOUIS & SUBURBAN COMPANY, EAST ST. LOUIS, ILL.						
1m., May,	'17	$301,645	*$202,805	$98,840	$64,870	$33,970
1 " "	'16	239,328	*151,749	87,579	62,259	25,320
12 " "	'17	3,309,740	*2,050,501	1,259,239	765,337	493,902
12 " "	'16	2,651,975	*1,588,088	1,063,887	753,794	310,093
EL PASO (TEX.) ELECTRIC COMPANY						
1m., May,	'17	$103,174	*$66,437	$36,737	$4,652	$32,085
1 " "	'16	84,029	*45,025	39,004	4,671	34,333
12 " "	'17	1,198,303	*751,061	447,242	60,554	386,688
12 " "	'16	1,036,343	*534,684	501,659	59,913	448,746
GALVESTON-HOUSTON ELECTRIC COMPANY, GALVESTON, TEX.						
1m., May,	'17	$155,988	*$107,739	$48,249	$37,441	$10,808
1 " "	'16	154,839	*94,953	59,886	36,607	23,279
12 " "	'17	1,953,504	*1,272,059	681,445	441,245	240,200
12 " "	'16	1,910,481	*1,218,539	691,942	435,936	256,006
GRAND RAPIDS (MICH.) RAILWAY						
1m., May,	'17	$107,618	*$77,355	$30,263	$18,174	$12,089
1 " "	'16	111,126	*72,184	38,942	14,165	24,777
12 " "	'17	1,306,964	*865,665	441,299	205,206	236,093
12 " "	'16	1,239,177	*831,849	407,328	167,592	239,736
HOUGHTON COUNTY (MICH.) TRACTION COMPANY						
1m., May,	'17	$26,466	*$16,291	$10,175	$5,117	$5,058
1 " "	'16	25,962	*15,625	10,337	5,351	4,986
12 " "	'17	338,980	*196,938	142,042	62,387	79,655
12 " "	'16	302,353	*167,948	134,405	65,900	68,505
JACKSONVILLE (FLA.) TRACTION COMPANY						
1m., May,	'17	$56,762	*$38,673	$18,089	15,754	$2,335
1 " "	'16	53,732	*34,850	18,882	15,442	3,440
12 " "	'17	650,994	*438,689	212,305	186,459	25,846
12 " "	'16	615,616	*422,232	193,384	178,446	14,938
LAKE SHORE ELECTRIC RAILWAY, CLEVELAND, OHIO						
1m., May,	'17	$141,530	*$97,997	$43,533	$34,253	$9,280
1 " "	'16	130,172	*85,774	44,398	36,197	8,201
5 " "	'17	659,925	*65,053	194,872	171,837	23,035
5 " "	'16	583,317	*397,598	185,719	181,576	4,143
LEWISTON, AUGUSTA & WATERVILLE STREET RAILWAY, LEWISTON, ME.						
1m., May,	'17	$71,822	*$56,988	$14,834	$15,635	†$802
1 " "	'16	65,703	*41,084	24,619	16,119	8,500
12 " "	'17	842,493	*612,659	229,834	185,102	44,732
12 " "	'16	759,165	*499,696	259,469	192,171	67,298
NASHVILLE RAILWAY & LIGHT COMPANY, NASHVILLE, TENN.						
1m., May,	'17	$198,301	*$136,260	$62,041	$40,539	$21,502
1 " "	'16	194,938	*121,292	73,646	42,570	31,076
12 " "	'17	2,427,202	*1,526,588	900,614	499,167	401,447
12 " "	'16	2,226,927	*1,373,113	853,814	514,826	338,988
NORTHERN TEXAS ELECTRIC COMPANY, FORT WORTH, TEX.						
1m., May,	'17	$180,238	*$109,050	$71,188	$29,151	$42,037
1 " "	'16	150,755	*96,489	54,266	28,692	25,574
12 " "	'17	2,058,447	*1,212,833	845,614	348,814	496,800
12 " "	'16	1,816,978	*1,109,697	707,281	338,578	368,703

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*Includes taxes. †Deficit.

Traffic and Transportation

Bay State Revenue Situation

Brief Review of Fare Increases Recently Granted and a Summary of Present Rates for Passenger Traffic

The recent decision of the Massachusetts Public Service Commission authorizing the Bay State Street Railway, Boston, to inaugurate a six months' trial of a 6-cent fare unit on the city lines served by the company did not terminate the company's efforts to secure increased revenue, as some operating and executive readers of the ELECTRIC RAILWAY JOURNAL appear to have understood. By the commission's decision of 1916 the company was permitted to establish the 6-cent fare unit on the country lines, the rate on the city lines remaining at 5 cents with the prominent exception of Fall River, Mass., where the sale of tickets continued at the rate of six for 25 cents. Recently the commission permitted the company, after due hearings, to eliminate these tickets. On July 3, following further hearings and conferences before the board between the company and representatives of urban communities served by the road, the board allowed the company to establish the 6-cent fare unit in the urban territory with concessions in the way of tickets good in that territory only. This put the whole system for the immediate present on a 6-cent fare basis.

NON-TRANSFERABLE FIVE-CENT TICKETS USED

This last proceeding before the commission on behalf of increased revenue led then to the establishment of a 6-cent fare unit in the cities with the sale of tickets of a decidedly restricted character. These tickets are non-transferable; they are sold in books at the rate of twenty rides for $1, and cannot be lifted without the cover. A novel feature is the invalidity of the tickets after 1 p. m. on Saturdays, Sundays and holidays, this restriction undoubtedly being placed on the ground that the bulk of the travel at these times is at least closely associated with pleasure and hence partakes in a measure of luxury. The officials of the company estimated that at the maximum about 50 per cent of the revenue in the urban territory would be derived from ticket sales, but so far this percentage has not been reached. Again, it was estimated that not over 20 per cent of the company's whole income would be derived from ticket sales. In two or three weeks more a better idea can be obtained as to the ratio of ticket sales to total and urban revenue, but it seems likely that this feature of the commission's decision will not have as much effect upon income as has been feared, particularly in quarters sympathetic to the company's aims but outside its organization.

Both tickets and transfers are good in the urban territory, but transfers are not issued in the suburban territory (in general, towns adjoining cities) except to a very limited degree, as where a suburban town is virtually identified with the urban center. The schedule has been worked out to shorten the haul per fare unit in the suburban districts, in the interest of selling transportation at a more equitable figure in relation to its total cost.

The company believes that its interurban fare schedule is in general below the level of rates yielding a return commensurate with the cost of the service. Within the next two months a revised schedule of interurban rates is to be filed with the commission, and the company will support the proposed increase both on the ground of increased and increasing costs and in the belief that high-class interurban service will appeal to the public more at a fair price than a less satisfactory service at inadequate rates.

In sum, the present main revenue from passenger traffic comes from: (1) cash fares, 6-cent unit, in urban and suburban territory; (2) cash fares, 6-cent unit, in interurban territory, essentially rural districts; (3) sale of tickets good only in urban territory and with certain restrictions.

Jersey Road Gets Increase

Commission Authorizes 6-Cent Fare, Making Average Mileage Rate Less Than That of Steam Road Competitor

The Board of Public Utility Commissioners of New Jersey recently granted a fare increase to the North Jersey Rapid Transit Company, Hohokus, N. J., when the financial statements of the company showed beyond question that the road had been operated on too low a basis of fares. The rate charged was 5 cents for each of the five zones, and the company proposed to increase the fare in each zone to 6 cents without changing the present zone arrangement. The average mileage rate for the different zones was formerly about 1.97 cents per mile, while the rate for the longer rides was approximately 1.7 cents per mile. On the new basis the mileage rate will be about 2.05 cents. The commission granted the 1-cent increase in view of the fact that the company's rates have been less than those charged by many of the interurban roads which in the past two years have found it necessary to increase to a 2-cent basis.

The North Jersey Rapid Transit Company is an interurban line running northward from a point in Bergen County just east of the Passaic River at Broadway, Paterson, and extends about ½ mile into New York State to Suffern. The company began operation about seven years ago and it was expected that the line would be extended to connect with one of the railroads running into Jersey City. Owing to the location of the road and the fact that it is partly paralleled by the main line of the Erie Railroad, the company has been unable to pay interest on its bonded debt and has been in the hands of receivers for several years.

Analysis of the financial statement submitted by the company showed that revenue had increased, but the cost of operation had increased in a much greater proportion. The operating deficit for the year 1916 was more than $33,000, making the total deficit at the close of the year amount to $151,546. The funded debt is $800,000, and it was shown at the hearing that the construction of the road was approximately that sum. No salaries have been paid to any administrative official other than the superintendent, and it was considered that the operation of the road has been conducted economically.

More Revenue Asked in Seattle

The Public Service Commission of Washington has been notified by the Puget Sound Traction, Light & Power Company, Seattle, that the tariff providing for the sale of twenty-five tickets for $1 on the company's Seattle division would be canceled and that, beginning Aug. 12, only the straight 5-cent fare and the half rates for school children would be charged. A. W. Leonard, president of the company, stated that the increased costs of railway equipment make it necessary that the company take some step to increase its income. It is said that the elimination of ticket sales will increase the revenues about 5 per cent.

The city of Seattle will make an attempt to prevent the traction company from eliminating the sale of tickets, as evidenced by the fact that in answer to a communication from Corporation Counsel Hugh M. Caldwell the City Council has almost unanimously expressed itself as being willing to contest the company's proposed action. It is expected that the city's objection will shortly be filed with the Public Service Commission, with a request for a hearing.

Connecticut Fare Controversy

Company Is Enjoined from Discontinuing the sale of 4-Cent Tickets in Waterbury

Another fight against an increase in trolley rates has developed from the attempt on the part of the Connecticut Company to abolish the sale of twenty-five tickets for $1. The company had announced that beginning July 25 the sale of reduced-rate tickets in the city of Waterbury would be discontinued. Corporation Counsel Francis P. Guilfoyle obtained a temporary injunction from Judge Reeves in the district court to restrain the company in its proposed action, whereupon it was announced that the 4-cent tickets would be sold as usual unless the injunction was dissolved or the Public Service Commission decided in favor of the company. The Connecticut Company claims it loses $150 a day through the sale of the tickets and is taking steps to have the injunction nullified.

Joseph F. Berry, counsel for the company, said he knew of no agreement with the city whereby the company is obliged to sell transportation at the reduced rate. The order did not include the cancellation of school children's tickets. The company's statement was substantially in full, as follows:

"With the great activity in all branches of industry and the resulting increase in prices, the cost of all materials used in the extension and upkeep of the Connecticut Company's property, as well as all classes of wages, have so increased the cost of service that it is no longer possible to continue transportation of passengers at reduced rates. The city of Waterbury has long been favored with the only materially reduced rate for urban transportation in Connecticut. Everyone is familiar with the great increase in the cost of all materials within the past year, especially copper and steel products. The cost of coal alone, required to produce power for the operation of cars throughout the Connecticut Company territory as a whole, has increased in the past four months $160,000 over the costs for that period of last year.

"While the interest of any community cannot be served by a transportation agency that is not to a reasonable extent a profitable enterprise, the entire transportation agency will 'break down' if the revenues are not ample to meet current demands, and this is the situation that is rapidly overtaking the company at this time."

Washington Jitney Decision

Judge Neterer Grants Injunction Against Their Operation, but Permits Them to Operate During Present Strike

On July 11 United States District Judge Neterer granted a temporary injunction to the Puget Sound Traction, Light & Power Company, Seattle, Wash., against E. W. Arnold and 169 other jitney operators, forbidding the operation of jitneys as common carriers in Seattle. Judge Neterer held that such operation of jitneys constitutes a nuisance and no doubt exists that the company suffers a loss of revenue on account of the acts referred to in its complaint. The court held further that the operation of "free buses" is not authorized and that it is an invasion of the company's rights. The steps leading up to the application by the company for this injunction were related in the ELECTRIC RAILWAY JOURNAL for July 21, page 123.

While refusing to modify his order of July 11 barring the operation of jitneys on the streets over which the Puget Sound Traction, Light & Power Company holds franchises, Judge Neterer on July 18 allowed the operation of motor vehicles during the time the franchise is not being used by the company due to the present strike. He refused to enter an order modifying the temporary injunction, but stated that operation of motor vehicles would not be taken as a violation in the spirit of the injunction during the time that the electric railway cars are not operating. Judge Neterer stated that the people of Seattle, while not directly involved in the case, present the most important issue in it and one which must be given consideration.

The motion to permit the jitneys to resume operation during the electric railway strike was brought by W. R. Crawford, attorney for the jitney drivers. Attorney A. J. Falknor, for the company, presented to the court an affidavit signed by Vice-President William H. McGrath, deposing that W. R. Crawford has for more than six months made active efforts to bring about a strike of the car men. Mr. Crawford said he stood ready to deny this allegation under oath.

More than 200 jitneys are operating in the city, on practically all of the routes of the railway lines. The jitney men's association has gone on record with a resolution to expel from the organization any driver who attempts to charge extortionate prices.

Skip-Stop Successful in Buffalo

After operating on the skip-stop plan for two weeks on two of the busiest lines of the International Railway, Buffalo, N. Y., the municipal traffic commission is so favorably impressed with the results that plans are now being made for extending the skip-stop to other lines. The running time of cars operating upon the two streets where the plan is in effect has been materially reduced and the public has sent many letters of appreciation to the company officials and to the traffic commission. Patrons of other lines have asked that the skip stop be extended to practically every line in the city.

The introduction of skip-stop operation on the Main Street and Elmwood Avenue lines was reviewed on page 79 of the ELECTRIC RAILWAY JOURNAL for July 14. It was decided to give the new form of service a thirty-day trial on these two lines. John O. Weigel, general superintendent of traffic of the International Railway, states that the first two weeks of the trial period leaves no doubt as to the plan's success. The service will be extended to other lines as soon as practicable, according to Thomas Penney, vice-president and general counsel of the company. Mr. Penney has also recommended the establishment of additional safety zones in Main Street through the congested retail business district.

Trailers to Care for Heavy Traffic.—In response to a request by Councilman W. T. Edwards, the Jacksonville (Fla.) Traction Company has agreed to run trailers on its Phoenix Park line on Saturdays to give better service during the increased traffic to the manufacturing section of the city.

Boys Fined for Stealing Rides.—Sixty-six boys, charged with stealing rides on the cars of the Boston (Mass.) Elevated Railway, were fined $2 each in the Juvenile Court at Boston on July 20. The boys were arrested as the result of a crusade waged by the company against miscreants who have been in the habit of stealing under the turnstiles at the South Station. Extra guards were used to assist in the round-up.

Motor Bus Auxiliary.—The Tacoma Railway & Power Company Tacoma, Wash., has instituted a motor bus service on a half-hourly schedule connecting the end of its Sixth Avenue line with its Point Defiance line. This will open up a large territory which at present is handicapped by lack of transportation facilities and is not sufficiently settled to make the operation of an electric railway a profitable undertaking as yet.

Decision Against Atlantic City Jitneys.—The Supreme Court of New Jersey has denied the writ of mandamus asked by the Atlantic City Jitney Association to compel the City Commissioners to hold a referendum election on the municipal legislation, which ruled jitneys from Atlantic Avenue. It held that there were some facts in dispute before the court and that it would be better if they were sent before a jury in the Circuit Court to establish their status.

Jitney Bonds Required in Portland.—By a decision of Commissioner of Public Utilities John M. Mann, of Portland, Ore., all jitneys and "for hire" cars operating in that city were required to file a bond of $2,500 by July 20. The premium charged by the only bonding company willing to issue bonds is said to be prohibitive. The jitney operators are planning to resist the enforcement of the bond ordinance. A fund is being raised for the purpose of employing an attorney.

Increase in Fare Refused.—The Public Service Commission of Pennsylvania recently ordered the Shamokin & Mt. Carmel Transit Company, Mt. Carmel, Pa., to continue with the old rate of fare following an attempt by the company to withdraw the issuance of strip tickets sold at the rate of six for 25 cents and to increase its fare on certain lines. The miners and others of Shamokin and Mt. Carmel opposed the action and after a hearing before the commission the old rate was restored.

Abolition of Tickets Suspended.—The Public Utility Commission of New Jersey has issued an order prohibiting the Bridgeton & Millville Traction Company from abolishing its six-for-a-quarter tickets and those sold at the rate of fifty for $2 until after the hearing which is to be held at Camden on Sept. 13. The company in filing its proposed schedule desired to make it effective Aug. 6. As the figures will increase the income of the road, however, the Board ruled that no alteration may be made before Nov. 6, unless the result of the hearing previous to that date, justifies it.

New Schedule Proposed for Pacific Electric Railway.—Officials of the Pacific Electric have been ordered to appear before the Board of Public Utilities of Los Angeles, Cal., and show cause why the company should not increase its service inside the city, which, the utilities board claims, is inadequate. It was announced that the railway must provide additional cars and more frequent service and that to assist in relieving congestion the utilities board is ready to take up the questions of re-routing cars.

Massachusetts Road Will Ask Increase.—The Northern Massachusetts Street Railway, Athol, Mass., will petition the Massachusetts Public Service Commission for authority to revise its fare schedule, according to an announcement made recently by Daniel P. Abercrombie, vice-president and general manager of the company. The new schedule will call for a minimum rate of 5 cents for the first 2½ miles and a mileage rate of 2 cents for each additional mile. Mr. Abercrombie said that more revenue is necessary to maintain the present standard of service and keep up the financial standing of the company.

Higher Fares in Easton Denied.—The Board of Public Service Commissioners of New Jersey has refused to grant to the Northampton, Easton & Washington Traction Company, Easton, Pa., permission to increase its fares on the line between Phillipsburg and Port Murray, N. J. The road was constructed in 1906, and covers 17 miles. The commission bases its decision on the Supreme Court ruling that an ordinance fixing a reasonable rate of fare remains inviolable during the life of the franchise. The company operates under price-fixing ordinances in its different zones, but asked the right to increase the fare in the zones from 5 cents to 6 cents. The deficit for last year was claimed to be $5,311 and was attributed to the cost of materials and labor.

Philadelphia & Western Gets Increase.—The Philadelphia & Western Railway, Upper Darby, Pa., has increased its fares after having had its application for permission to raise its rates advertised and filed with the Public Service Commission for thirty days. The changes in rates affect the price of one-way and ten-trip tickets, the increases being from 1 cent to 6 cents per trip. No change was made in the commutation rates. In its notices to the public the company called attention to the abnormally high operating costs as being responsible for the necessity for increasing rates. The change in fare schedules was contemplated for some time but action was postponed in the hope that conditions both local and national would improve. Before the effective date of the increases no opposition had been made. Since that time two complaints have been filed with the commission, but no action has yet been taken by that body in connection with the case.

Bonuses for St. Louis Men.—Richard McCulloch, president of the United Railways, St. Louis, Mo., has announced the establishment of a bonus system for the benefit of the transportation employees, to encourage skill and care, with an expected resultant decrease in the expense for injuries and damages and maintenance cost, greater regularity in operation, increase of average speed and increase of receipts per mile. Gains resulting from increased efficiency will be divided as follows: 40 per cent to the employees, 40 per cent to the company and 20 per cent for the necessary clerical work in connection with the bonus system. The employees' share will be divided equally among the transportation employees, except that part resulting from saving in the injuries and damages account, of which 60 per cent will go to the motormen and 40 per cent to the conductors. The participation of the trainmen will be determined by crediting each employee with 1000 points at the beginning of each month and penalizing them for preventable accidents or infractions of the rules. Only those having more than 750 points to their credit at the end of the month will share in the bonus.

Legal Notes

CONNECTICUT.—*Collision with Car Which Indicated It Was About to Stop.*

Where a team driver knew the custom of a street railway company to stop its cars on one side of the street to take on passengers, and he observed a car slowing down at such corner and a person preparing to board it, and thereupon drove upon and across the tracks and was injured by the car, which did not stop, it was a question for the jury whether he was contributorily negligent. (Middleton v. Connecticut Company, 100 Atlantic Rep., 1062.)

KANSAS.—*Injury to Person at Station Between Platform and Car.*

In an action against an interurban electric railway company, the plaintiff's evidence tended to show these facts: He came to the company's station about dusk with friends who were leaving: After they had boarded the car, and before it started, he went down into the space between it and the station platform to look for a coin his daughter had dropped. Passengers were received and discharged by a gangplank laid to the rear steps. As the defendant was stooping over, facing away from the car, it started without any signal being given, and he was struck by the rear step. Held: in the aspect most favorable to the plaintiff, he was but a licensee while in the place between the platform and the track, and the company owed him no duty to give him warning of the starting of the car. If such a duty had been owing to him, his own failure to use reasonable care for his safety would bar a recovery. (Senning v. Arkansas Valley Interurban Railway, 165 Pacific Rep., 863.)

KENTUCKY.—*Negligence Must Be Proximate Cause of Injury—Liability for Delay.*

That a traction company was negligent in using defective coal, thereby causing a car to stop, did not render it liable for injury to a passenger from falling on a trestle while walking down the track toward her destination after she had voluntarily left the car, where it did not appear that defendant's negligence was the proximate cause of her injuries. Where failure of a passenger to reach his desination on schedule time is due to the carrier's negligence, the carrier is liable only for such damages as flow directly from the delay and which the carrier might reasonably have anticipated at the time of contracting. (Paducah Traction Company v. Weitlauf, 195 Southwestern Rep., 99.)

MASSACHUSETTS.—*Duties to Elderly Passengers When Alighting.*

It is not a requirement of due care on the part of a conductor of an electric car to give the signal for an emergency stop simply because a passenger advanced in years rises from his seat in an open car and steps on the running board and stands there for a moment with a hold upon the post of the car. (Bigelow v. Boston Elevated Railway, 115 Northeastern Rep., 250.)

MASSACHUSETTS.—*Liability for Charged Pole Near Footpath.*

Where a car shifter for an electric railway was told that a trolley support was charged with electricity and he knew that people would be likely to be in the vicinity thereof and that wire had been dumped close to the post, and it was his duty to report the condition to his superior officer, and for a long time prior to the accident children and other persons without the railway's permission but with knowledge of the division superintendent and other employees had used the path, his failure to report the condition constituted reckless or wanton negligence. (Romana v. Boston Elevated Railway, 116 Northeastern Rep., 218.)

MICHIGAN.—*Cattle on the Highway.*

For a farmer to drive domestic animals slowly along a highway is as legitimate a use of the highway as the running of high-speed interurban cars along it. (Bewernitz v. Detroit, Jackson & Chicago Railway, 161 Northwestern Rep., 976.)

Personal Mention

S. H. Carr has been elected vice-president of the Tulsa (Okla.) Street Railway to succeed C. W. Eliff.

M. R. Barkwell has been appointed secretary-treasurer of the St. Thomas (Ont.) Street Railway to succeed C. T. Boughuer.

W. T. Scott has been appointed comptroller and purchasing agent of the International Transit Company, Sault Ste. Marie, Ont.

J. A. Van Clostere has been elected vice-president of the Gulfport & Mississippi Coast Traction Company, succeeding W. T. Stewart.

W. McKinley, Chicago, has been elected vice-president of the Alton & Jacksonville Railway, Alton, Ill., succeeding W. C. Fordyce.

Howard Duff has been appointed superintendent of power of the Lehigh Valley Transit Company, Allentown, Pa., to succeed George T. Bromley.

Edward Early, formerly assistant to the auditor of the United Railways & Electric Company, Baltimore, Md., has been appointed assistant treasurer.

William Hayward, of the Public Service Commission for the First District of New York, has been mustered into the federal service as colonel of the Fifteenth Infantry, New York National Guard.

W. J. Lynch, treasurer and comptroller of the Quebec Railway, Light, Heat & Power Company, Ltd., Quebec, Que., has been appointed general manager of the company to succeed H. G. Matthews, deceased.

Henry W. Hodge, member of the Public Service Commission for the First District of New York, has resigned from the commission to accept an offer of the government to go to France as a bridge engineer.

Robert V. Massey has been appointed general superintendent of the Eastern Pennsylvania Division of the Pennsylvania Railroad, which includes the Paoli Electric Division, with headquarters at Altoona, succeeding the late George W. Creighton.

S. A. Foltz has resigned as secretary, treasurer and general manager of the Mansfield Public Utility & Service Company, Mansfield, Ohio, to devote his attention to his personal interests in Mansfield. Mr. Foltz will be succeeded by P. Barnhard.

Matthew C. Brush, president of the Boston (Mass.) Elevated Railway, is, according to rumors which have appeared in a number of newspapers, under consideration by the directors of the Chicago, Milwaukee & St. Paul Railway for the presidency of that road.

H. A. Rhoads has recently been appointed master mechanic of the Youngstown & Ohio River Railroad, Leetonia, Ohio. Prior to his connection with that company Mr. Rhoads was employed as machinist with the Columbus Railway & Light Company, Columbus, Ohio, for more than eight years. He was also master mechanic of the Ohio & Southern Traction Company for six years.

Henry W. Anderson, general counsel for the Virginia Railway & Power Company, Richmond, Va., has been named chairman of a Red Cross Commission to Roumania. A Red Cross medical unit of twelve doctors and twelve nurses will accompany the commission, which is the third to be sent to Europe since the organization of the war council. The commission will undertake, in addition to its investigation of sanitary and health conditions, actual relief work among the Roumanian refugees.

W. L. Barker, electrical engineer of the Southern Utilities Company, which consists of electric, gas and ice properties in Florida, has resigned to accept the position of electrical engineer of the Manila Electric Railroad & Light Company, Manila, P. I. Both of these companies are under the management of The J. G. White Management Corporation, New York, N. Y. Before joining the organization of the Southern Utilities Company, Mr. Barker was connected with the staff of the General Electric Company. He is a graduate of the Alabama Polytechnic Institute.

J. D. Nailor has been appointed superintendent of transportation of the Buffalo, Lockport & Rochester Railway, Rochester, N. Y. Mr. Nailor was born in Glens Falls, N. Y., in 1886. He entered railway work in June, 1906, as conductor for the Hudson Valley Railroad, Glens Falls Division, and was made motorman in 1907. In the following year he resigned to accept a position as motorman on the Buffalo, Lockport & Rochester Railway and later served successively as third and second trick dispatcher. In March, 1914, Mr. Nailor was appointed chief dispatcher, the position he has held until his recent promotion.

Sir Albert Stanley, in his capacity of president of the Board of Trade of Great Britain, on May 17, made his first address before the House of Commons. He spoke for an hour presenting the annual estimates of the board. His speech was well received and its presentation was made the occasion of complimentary references to his work in the traction field, as director of munitions transport and finally as a member of the government. He presented to the House a plan for the establishment of the British Trade Corporation which would have for its purpose the promotion of large enterprises abroad.

George Applegate has recently been appointed master mechanic of the Salem & Penns Grove Traction Company, Salem, N. J. Mr. Applegate has been engaged in railway work for twenty-eight years. He was with the Philadelphia (Pa.) Rapid Transit Company for thirteen years. Subsequently he was master mechanic of the Trenton & New Brunswick Railroad. He next became general foreman of the Atlantic City & Shore Railroad, Atlantic City, N. J., and then went to the Washington, Baltimore & Annapolis Railroad, Baltimore, as armature winder. It was from that position he resigned to become connected with the Salem & Penns Grove Traction Company.

C. P. Westlake has been appointed general manager of the Goldsboro (N. C.) Electric Railway to succeed R. Harold Smith. Mr. Westlake has long been engaged in railroad and electric railway work. He served his apprenticeship as machinist with the Southern Railway. Shortly thereafter he entered the electric railway field with the Columbia Railway, Gas & Electric Company, Columbia, S. C. During the fifteen years that he served with that company Mr. Westlake acted as dynamo tender, armature winder, foreman of shops, master mechanic, superintendent and superintendent of maintenance. Previous to becoming connected with the Goldsboro Electric Railway he was with the Southern Car Company, High Point, N. C., in charge of the electrical and air-brake department.

W. H. McHenry has been elected vice-president of the Inter Urban Railway, Des Moines, Iowa, to succeed Edward P. Smith. Judge McHenry, who is one of the most widely known lawyers in Iowa, has been general counsel and head of the claim department of the Des Moines City Railway since Jan. 1. He is a native of Des Moines and after the successful practice of law in that city for a long period he was made judge of the district, where he served for fourteen years. Following his recent retirement from judicial duties at the age of fifty-five he took up the important legal work for the local railway system. The safety-first work of the Des Moines City Railway, referred to in the ELECTRIC RAILWAY JOURNAL for Nov. 25, 1916, page 1130, which was begun on Jan. 1, was directed by Judge McHenry, assisted by Dan M. Finch, claim agent of the company, in direct charge of the work.

Obituary

Henry G. Matthews, general manager of the Quebec Railway, Light, Heat & Power Company, Ltd., Quebec, Que., died at the Jeffery Hales Hospital. Mr. Matthews was born in Montreal in 1878 and received his education at the Montreal high school. Before becoming associated with the Quebec company in 1911 he was manager of the Marconi Wireless Telegraph Company of Canada. He was also president of the Lotbinière & Megantic Railway Company and a director of the subsidiary companies of the Quebec Railway, Light, Heat & Power Company, Ltd.

Construction News

Construction News Notes are classified under each heading alphabetically by States.

An asterisk (*) indicates a project not previously reported.

FRANCHISES

Calistoga, Cal.—The San Francisco, Napa & Calistoga Railway has abandoned its franchise in Calistoga north of Lincoln Avenue. The company has decided that it will not extend its lines north of Calistoga and all construction work done beyond the present terminal in the town will be removed.

Valdosta, Ga.—The Valdosta Street Railway has asked the Railroad Commission of Georgia for permission to take up its tracks from Pine Park to the cotton mills and to construct a line from West Hill Avenue along Pearl, West Gordon, Johnson and Ann Streets to North Patterson Street, completing a belt line which has been in contemplation. The permission of the City Council has been received for this change.

Louisville, Ky.—The Louisville Railway has been granted a permit to build a switch into the property of the Bourbon Stockyards. This will be available for handling shipments of live stock from the country lines and making deliveries of them to the pens in which they will be sold. Heretofore the company has had to unload at its freight depot and the stock has been transported the remainder of the way in wagons.

Lincoln, Neb.—The Lincoln Traction Company has asked the Nebraska State Railway Commission for six months' extension of time on its franchise in which to construct a line to Omaha.

Dayton, Ohio.—The City Railway has asked the City Commission for a franchise to construct an extension on Kammer Avenue to Westwood Avenue, on Westwood Avenue north to Hoover Street and two blocks on Hoover Street.

Seattle, Wash.—A bill has been introduced in the City Council and referred to the franchise committee, granting a street railway franchise to A. A. Phinney, R. V. Ankeny and David P. Eastman, extending on various streets, between Carleton Park Addition and Fifteenth Avenue West at West Wheeler Street. Messrs. Phinney, Ankeny and Eastman have expended $500,000 in the development of Carleton Park, overlooking Puget Sound in the Magnolia Bluff District. It is proposed to construct an electric railway and turn it over to the Puget Sound Traction, Light & Power Company to operate. The proposed franchise will expire on Dec. 21, 1934, the same date as the traction company's franchises expire.

TRACK AND ROADWAY

Los Angeles & San Diego Beach Railway, San Diego, Cal.—The Los Angeles & San Diego Beach Railway has filed with the Council of San Diego an ordinance permitting removal of that portion of the company's tracks in La Jolla on Prospect Street extending from Cave Street to a junction with the present track between Culver and Silverado Streets. Abandonment of its franchise for this portion of the road also is asked. The request is to be subject to approval of the State Railroad Commission.

Caldwell (Idaho) Traction Company.—Officials of the Caldwell Traction Company have given assurances that its present line to McNeil's Station will be extended to tap the Snake River Valley. Walter R. Sebree, president of the company, and Carl E. McStay, who is affiliated with Mr. Sebree in the undertaking, are planning a new town near the Nampa Ferry, where the extension will terminate. Recently officials of the company announced their intention of floating a loan of $100,000 on the company's properties, now having no outstanding indebtedness. With the money thus obtained it is planned to make various extensive improvements to the system.

Railway Securities Corporation, Harvel, Ill.—L. J. Magill, Rock Island, has been appointed receiver for the Railway Securities Corporation, the company having filed an involuntary petition in bankruptcy. It was incorporated to build an electric line between Springfield and Hillsboro.

Peoria (Ill.) Railway.—This company is reconstructing its tracks in East Peoria to Farm Creek. The tracks are being removed from the side of the street and are being placed in the center.

Des Moines (Ia.) City Railway.—Work has been begun by the Des Moines City Railway double-tracking its Fort Des Moines line from Walnut Street across the Seventh Street bridge.

Louisville (Ky.) Railway.—All details as to the service the Louisville Railway will give to the Federal Army Cantonment, which is being constructed south of Louisville, have been settled, and the company will begin immediately the construction of the additional trackage. About 2½ miles of single track and about 1 mile of double track will be built. The company will double-track the Preston Street interurban line to Coke Station, at which point the cantonment line will be deflected and penetrate the camp grounds for a distance of 1 mile. Material for the construction is at hand and it is expected that the new line will be ready by Sept. 1. The spur into the camp will leave the line of the Preston Street track about half way out to its terminus at Okalona, and the haul from its terminus to the city will be 6 miles, with transfers good on all lines to which the Preston Street cars usually transfer. The fare will be 5 cents and the large double-truck cars used on the Preston Street line will be used in the camp service. Traffic requirements on the western end of the new line will not be increased and it is probable that a loop will be arranged for downtown.

Shelbyville & Frankfort Realty Company, Shelbyville, Ky.—Interest in the project to connect Shelbyville and Frankfort with an electric railway line and thus connect the Louisville & Interurban Railway with the Kentucky Traction & Terminal Company has been revived. F. C. Dunn, secretary of the Chamber of Commerce of Frankfort, has announced that negotiations looking toward the financing of the project by Eastern concerns have been begun and that a meeting has been arranged at which the details of the project will be gone over. [Dec. 30, '16.]

Washington, Baltimore & Annapolis Electric Railway, Baltimore, Md.—This company will expend about $350,000 on the construction of extensions to the cantonment at Admiral. Work is already under way on the grading of a tract of land on which will be laid 2 miles of double tracks from the company's main lines at Odenton to Admiral and into the cantonment itself.

Detroit (Mich.) United Railway.—Work has been started on reconstruction work on the track foundations along Woodward Avenue and paving between the tracks of the Detroit United Railway between the Detroit Terminal Railroad crossing and the Six-Mile Road, in Highland Park. The work will take about five weeks. New concrete foundations will be put in with the exception of the approaches to the Terminal Railroad crossing. At this point the foundation and tracks will be repaired and put into first-class shape, but permanent foundations will be delayed until such time as the subway is built to separate the grades. It is expected that work on the subway will be started within a year.

Michigan Railway, Kalamazoo, Mich.—It is reported that this company will construct an extension from Lansing to Grand Ledge at a cost of about $175,000.

McComb & Magnolia Railway & Light Company, McComb, Miss.—A report from this company states that grading has been begun on this company's proposed road to connect McComb, Magnolia and Summit. Construction of a new power house at Fernwood was begun in June. Guy M. Walker, 61 Broadway, New York, president. [July 7, '17.]

Hampton & Langley Field Railway, Hampton, Va.—A communication from C. Loomis Allen, president of Allen & Peck, Inc., states that the Hampton & Langley Field Railway, which will connect Hampton with the Langley Aviation field, will be operated by the Newport News & Hampton Railroad when completed. [April 21, '17.]

SHOPS AND BUILDINGS

Petaluma & Santa Rosa Railway, Petaluma, Cal.—A new station will be built by the Petaluma & Santa Rosa Railway at Sebastapol. The building will be 40 ft. x 60 ft., and will be constructed of metal lath and plaster with a stucco finish.

Sioux City Service Company, Sioux City, Ia.—This company reports that it is constructing an addition to its carhouse.

Washington, Baltimore & Annapolis Electric Railway, Baltimore, Md.—This company will construct a new station in connection with its extension to the cantonment at Admiral.

Worcester (Mass.) Consolidated Street Railway.—This company has purchased the property at Grove Street, Sagamore Road and Park Avenue, containing 312,165 sq. ft., on which it will construct a carhouse, repair shops and administration buildings.

Interborough Rapid Transit Company, New York, N. Y.—The contract for the station finish at the Thirty-fourth Street and Times Square stations of the Broadway subway has been awarded by the Public Service Commission for the First District of New York to A. W. King & Company, Inc., New York, the lowest bidder, at $178,722. Under the contract the work must be completed within five months.

POWER HOUSES AND SUBSTATIONS

Fort Smith Light & Traction Company, Fort Smith, Ark.—This company has completed a high-tension transmission line to Huntington to supply the Coal District Power Company with electricity. The company has also ordered material for an extension of its lines to furnish wholesale power to the Citizens' Electric Company, which supplies the electrical requirements of Alma, Mulberry and Ozark. Power to the extent of 1000 hp. will be furnished the Coal District Company and the Fort Smith Company will enlarge its generating capacity at Fort Smith to provide additional power for this and other new business which it has secured.

Des Moines (Ia.) City Railway.—This company will install a new turbine in its power house, doubling the capacity of the plant. A substation will be built south of South Park to increase the carrying capacity of the Fort Des Moines line. Another substation is being completed at East Second and Walnut Streets to handle the east side and still another is being completed at West Fourteenth Street to supply the interurban and part of the city lines. A new station will also be erected at Polk Boulevard and Chamberlain Avenue for the west lines.

Duluth (Minn.) Street Railway.—The City Council of Duluth has granted permission to the Duluth Street Railway to string two feed wires of 500,000-cm. capacity each in a double cable over the Aerial Bridge across the Duluth ship canal to connect with the circuit of the Park Point Traction Company, which was recently taken over by the Duluth Street Railway. The power plant of the Park Point Traction Company will be used only for emergency purposes after the connections are made across the ship canal.

New Jersey & Pennsylvania Traction Company, Trenton, N. J.—The Eureka Power Company, a subsidiary of the New Jersey & Pennsylvania Traction Company, has been granted permission by the Public Utility Commission to erect poles along the River Road from Ewing Township to the Hunterdon County boundary line. The lines will be extended from Washington's Crossing to Titusville and Pennington.

Hocking-Sunday Creek Traction Company, Nelsonville, Ohio.—This company will erect a substation at a cost of $10,000.

Monongahela Valley Traction Company, Fairmont, W. Va.—Surveys have been made and right-of-way secured by the Monongahela Valley Traction Company for the erection of 30 miles of electric transmission lines to furnish energy to various coal mines.

St. Albans & Swanton Street Railway, St. Albans, Vt.—This company reports that it has purchased 2650 kw. generators for the Public Electric Light Company, to be installed at its Fairfax plant.

Manufactures and Markets

Discussions of Market and Trade Conditions for the Manufacturer, Salesman and Purchasing Agent

Rolling Stock Purchases Market Quotations Business Announcements

Present Friction and Rubber Tape Situation

Uncertainties of the Future Force Short-Time Contracts—Need of Care in the Conservation of Raw Materials

BY EDGAR E. FAY

Sales Manager Boston Woven Hose & Rubber Company

Never before in this country's history has manufacturing been carried on with so many difficulties and uncertainties. From every angle handicaps are imposed which make economical manufacturing impossible, and aside from the increased costs, bring delays and disappointments which cannot be foreseen. When the first shock was over after the European war was declared there was a substantial increase in the demand for tapes from the foreign trade. As the manufacturing of England and her allies became more and more concentrated on the work of producing for the direct needs of the armies and the requisitions for munitions and other supplies were shifted over to this country, the demand for tape followed accordingly. Since the United States entered actively into the conflict, the demand has further increased, until we are now producing at the rate of 8,000,000 to 10,000,000 lb. per year.

THE RAW MATERIAL MARKET

The advances during the entire period of the war have practically been constant. This is particularly true of the materials and supplies produced in this country such as cotton fabrics of all descriptions, paper boxes, wire, etc., showing advances all the way from 25 to 300 per cent. With the advance of costs the uncertainty of supply increases. Then there is shortage and uncertainty of labor, the transportation difficulties, and all told the problems which confront every manufacturer increase in direct proportion to the number of ingredients he uses in his operations.

These difficulties make the simplification of manufacturing a vital necessity, and the greatest uniformity and best service can be given where buyers order stock goods rather than special constructions or even special brands. The reason for this is obvious, for there is a constant flow of standard goods pouring through the factory all the time. Where special goods are ordered, the manufacture is intermittent and production is consequently retarded.

ALL-INCLUSIVE HELPFULNESS TO SAFEGUARD CONSUMERS

While service has always been one of the important features of our business, the conditions which have obtained for the past two years have forced us to organize a special service department. Every possible effort is made to overcome the handicaps imposed upon us and give our customers service. If the materials for which we have contracted do not come in time, we have made it a practice to secure supplies near at hand, even at atrociously higher prices, if they are obtainable. When this country entered the war and boats shipping from the South ceased for fear of submarines, we brought ducks, sheetings and yarns on by express. When there was a coal shortage here in New England because of congestions in the transportation lines, we bought coal locally at local war prices so as to keep the factory running. As we have no distributing branches of our own but are "manufacturers for jobbers," we endeavor to support our distributers in two important features of business conduct, quality of product and service, in order that together we may build strongly a business that will result to our mutual benefit and satisfaction.

The uncertainties of the future are such that we cannot take undue risks, either for ourselves or for our customers, and all engagements which contemplate future delivery are made for short terms only and are accepted subject to war clauses. It has been impossible to get materials in sufficient quantities for manufacturing. Not a week goes by that we do not have to close down some department for one reason or another, and now the government is requisitioning not only our plant but the sources of supply in many lines, which simply adds to the confusion and uncertainty. But we are good sports and when we think of the young men shortly going to the front, we are glad to "do our bit" as far as lies within our power.

Wire Manufacturers Co-operate with Government

Committee Formed to Accept All Orders, Make Binding Prices and Apportion Orders Out Among Manufacturers

Insulated wire and cable manufacturers have been very active in lending their support to the government since a state of war was declared. Immediately the United States entered the war practically every wire manufacturer placed his entire organization at the disposal of the national government.

Now this co-operation is taking on a more tangible form. The manufacturers were called to Washington recently to confer with navy officials and at that time three of their number, LeRoy Clark of the Safety Insulated Wire & Cable Company, Edward Sawyer of the Atlantic Insulated Wire & Cable Company and Wallace S. Clark of the General Electric Company, were appointed a committee to represent the entire insulated wire and cable industry in connection with purchases of wire by the Navy Department. It was then agreed that all navy orders for insulated wire should pass through this committee's hands. The prices would be fixed between this committee and the Navy Department and the committee would distribute all work of manufacture, the distribution to be made according to the capacity of the plant and to the ability of the manufacturer to ship promptly.

The wire manufacturers have agreed to these conditions and already they are in force and orders have been placed by the government in accordance with them. From the standpoint of the government this offers one of the best possible ways of placing orders. No favoritism is shown and orders are placed in such a way as least to disrupt the market and assure quickest deliveries. No individual manufacturer is loaded down with government business, the market is stabilized, and the effect on the trade is much smaller than it would be otherwise. Prices are based on a certain wire base, the copper for which the government agrees to furnish. By the manufacturer, of course, this is welcomed, because he does not have to sell to the government his own stock of copper at considerably less than he paid for it or could replace it for.

The first order was for 1,000,000 ft. of lead-covered submarine cable, which was wanted right away. This order, which would normally have required eighteen months to fill, was accepted and deliveries commenced in thirty days. In sixty days the order was completed. This order was followed by orders for several million feet of other kinds of cable, which were apportioned among sixteen manufacturers.

Prices on this business, it is understood, were much better than the government could have made in the market, and deliveries were much quicker than they would otherwise have been. Therefore, from the standpoint of the government, this method of handling orders has been found to be very satisfactory and very reasonable.

Coal Situation Serious

International Traction Buys Mine to Insure Winter's Supply—New England's Supply Increasing—Government to Report on Conditions Weekly

With the exception of the question of increased fares, the most important thing in the minds of leading electric railway executives is the present coal situation, which it must be admitted is a most important one. Conditions existing in the Middle West were made plain by Frank J. Petura, purchasing engineer of the H. L. Doherty Company, in the March 31 issue in these columns, and since that time a number of railways have combined forces and purchased coal mines in order to guarantee an adequate supply of coal for the coming winter. These roads include the Terre Haute, Indianapolis & Eastern Traction Company, the Indianapolis Traction & Terminal Company, the Union Traction Company of Indiana and the Fort Wayne & Northern Indiana Traction Company. Also, the W. S. Barstow & Company interests acquired coal mines for the use of its subsidiaries. The latest company to purchase a mine is the International Traction Company, a subsidiary of the United Gas & Electric Corporation. It has purchased a mine in the Pittsburgh district which is producing 150,000 tons annually, and the company will thus be able to furnish coal to its lines in Buffalo at normal prices. The railways will require only 50,000 tons, leaving the surplus available for sale. Other large properties are expected to follow suit on the theory that this is the only positive way of insuring the winter's supply.

NEW ENGLAND GETS SLIGHT RELIEF

The committee on coal production and distribution of the Advisory Commission of the Council of National Defense, of which F. S. Peabody is chairman, has been deluged with telegrams asking for assistance in obtaining coal and this committee has been doing everything in its power to get consumers in touch with producers or agents. That New England is getting relief is attested to by the fact that all previous records were broken on the New Haven Railroad during May and June in the number of cars of all-rail coal handled by this company. The total number of cars of both all-rail and tidewater coal handled by the New Haven in May was 21.850, and in June 20.707. This compares with 15,546 in May and 17,466 cars in June, 1916. Of the 21,850 cars handled in May, 17,168 cars were of all-rail coal, which is the largest number of all-rail coal cars handled in the company's history.

GOVERNMENT REPORTS ON CONDITIONS

Weekly statistics showing what the soft-coal miners of the country are doing, and why they are not doing more, are now being collected by the United States Geological Survey under the direction of Secretary of the Interior Lane. With all the information available from the already organized operators' associations, which represent about 25 per cent of the production of the country, the committee on coal production is able to concentrate its efforts where the greatest stringency lies—whether, as in most localities, the trouble is lack of cars, or whether it is labor shortage. Some of the important producing districts, particularly Alabama, West Virginia, parts of Pennsylvania, Ohio, and the territory from Texas to Iowa, figures from which are not shown in this first statement, are being rapidly organized for this purpose and have already furnished partial information.

The figures collected indicate that the bituminous mines of the country are at present working to 75 per cent of their capacity possible by utilizing the labor force at present available. The ratios of tonnage produced to full-time capacity for the three weeks ending June 23, June 30 and July 7 for twelve operators' associations are 72.9 per cent, 71.4 per cent and 76.5 per cent respectively. The increase in percentage of full-time capacity produced from 71.4 for the week ending June 30 to 76.5 per cent for the week ending July 7 is attributed to the fact that the mines were shut down on July 4, and the railroads were therefore able to supply more of the cars ordered for the remainder of the week.

Actual tonnage losses, below full-time capacity, as reported by six associations representing approximately one-fifth of the production of the country for the weeks ending June 23, June 30 and July 7, were 500,000 tons, which would indicate that the weekly output of mines of the whole country is not less than 2,000,000 tons below full-time capacity. By far the greatest factor concerned in the losses was the inadequate car supply. Thirty-one per cent of the total full-time capacity of these representative mines was lost because the supply of cars at the mine mouth was insufficient. Other important causes were labor deficiency, crippling the industry to 4.5 per cent of its full-time capacity, and mechanical breakdowns within the mines to which losses amounting to 3.2 per cent of the full-time output were attributed.

New Financing for General Electric

J. P. Morgan & Company and Lee, Higginson & Company, New York, on July 19 offered for subscription at 99¾ and interest, to yield about 6.10 per cent, $15,000,000 of three-year 6 per cent gold notes of the General Electric Company. These notes are dated July 1, 1917, and are available in coupon form in $1,000, $5,000 and $10,000 denominations, registerable as to principal. The issue was oversubscribed more than 100 per cent.

Apart from these notes the only debt of the company is represented by $12,047,500 of debentures. The net income available for interest in 1916 amounted to more than thirty-three times the interest requirements. The $15,000,000 of new money, it is reported, will bring working capital, in connection with surplus accumulated during the last six months, above the $100,000,000 mark.

The United States Steel Corporation's orders on hand on June 30 amounted to 11,383,287 tons, which is a decrease of 504,304 tons as compared with the orders on May 31. This showing is regarded as favorable because of the refusal of this corporation's subsidiaries to sell additional capacity pending the settlement of the price question by the government.

NEW YORK METAL MARKET PRICES

	July 19	July 26
Prime Lake, cents per lb	26½	26
Electrolytic, cents per lb	26½	26
Copper wire base, cents per lb	36	36
Lead, cents per lb	10½	10¼
Nickel, cents per lb	50	50
Spelter, cents per lb	8⅞	8¾
Tin, Straits, cents per lb	62½	62½
Aluminum, 98 to 99 per cent, cents per lb	55	57

OLD METAL PRICES

	July 19	July 26
Heavy copper, cents per lb	26½	24
Light copper, cents per lb	23½	21
Red brass, cents per lb	19½	19
Yellow brass, cents per lb	17½	16
Lead, heavy, cents per lb	9	8½
Zinc, cents per lb	6¼	6
Steel car axles, Chicago, per net ton	$46.50	$45.50
Old car wheels, Chicago, per gross ton	$36.00	$32.50
Steel rails (scrap), Chicago, per gross ton	$43.00	$43.00
Steel rails (relaying), Chicago, per gross ton	$59.50	$59.50
Machine shop turnings, Chicago, per net ton	$19.00	$17.50

CURRENT PRICES FOR MATERIALS

	July 19	July 26
Rubber-covered wire base, New York, cents per lb.	36½	36½
No. 0000 feeder cable (bare), New York, cents per lb.	36½	36½
No. 0000 feeder cable (stranded), New York, cents per lb.	33¾	33¾
No. 6 copper wire (insulated), New York, cents per lb.	33	33
No. 6 copper wire (bare), New York, cents per lb.	36	36
Rails, heavy, Bessemer, Pittsburgh	$38.00	$38.00
Rails, heavy, O. H., Pittsburgh, per gross ton	$40.00	$40.00
Wire nails, Pittsburgh, per 100 lb	$4.00	$4.00
Railroad spikes, 9/16 in., Pittsburgh, per 100 lb.	$5.00	$5.00
Steel bars, Pittsburgh, per 100 lb	$4.50	$4.50
Sheet iron, black (24 gage), Pittsburgh, per 100 lb.	$8.35	$8.35
Sheet iron, galvanized (24 gage), Pittsburgh, per 100 lb.	$9.55	$9.55
Galvanized barbed wire, Pittsburgh, cents per lb.	$4.85	$4.85
Galvanized wire, ordinary, Pittsburgh, cents per lb.	$4.65	$4.65
Cement (carload lots), New York, per bbl	$2.22	$2.22
Cement (carload lots), Chicago, per bbl	$2.31	$2.31
Cement (carload lots), Seattle, per bbl	$2.60	$2.60
Linseed oil (raw, 5 bbl. lots), New York, per gal.	$1.13	$1.12
Linseed oil (boiled, 5 bbl. lots), New York, per gal.	$1.14	$1.13
White lead (110 lb. keg), New York, cents per lb.	12¾	12¾
Turpentine (bbl. lots), New York, cents per gal.	40	42

ROLLING STOCK

Union Light & Power Company, Kansas City, Mo., has recently purchased five trailers which will be placed in service on the line to the Fort Riley cantonment.

Tuscaloosa (Ala.) Railway & Utilities Company is constructing an electric locomotive for which Brill trucks and Westinghouse electrical equipment have been ordered. The company will build the body.

Columbia (S. C.) Railway, Gas & Electric Company is reported to be in the market for four semi-convertible cars to be used in service to the cantonment near this property. The company is building four semi-convertible cars and expects to lay about five miles of double track.

Northwestern Pennsylvania Railway, Meadville, Pa., has ordered six Birney one-man, double-end safety cars from the American Car Company, St. Louis, Mo. The following details have been specified:

Number	6
Date of order	June 1, 1917
Date of delivery	60 to 90 days
Builder	American Car Co.
Type	Birney
Seating capacity	30
Weight (total)	14,000 lb.
Over bumpers	27 ft. 9½ in.
Over vestibule	26 ft. 9½ in.
Width over all	8 ft. 0 in.
Rail to trolley base	12 ft. 6 in.
Body	Semi-steel
Interior	Birch stained mahogany
Headlining	Agasote
Roof	Arched
Air brakes	Westinghouse
Axles	Brill
Car trimmings	Bronze
Conduits	American Car
Control	G. E.
Couplers	Brill
Curtain fixtures	Curtain Supply
Curtain material	Pantasote
Dest. signs	Hunter Illuminated
Door mechanism,	Safety Car Devices
Fenders	H. B. Lifeguard
Gears and pinions,	General Electric
Hand brakes,	Brill—Pittsburgh Drop Handle
Heaters,	Peter Smith Trus Plank
Headlights	Golden Glow SM95
Journal boxes	Brill
Lightning arresters,	General Electric
Motors	Two G.E.—258 Inside hung
Paint	Paint
Registers	None
Sanders	Brill
Sash fixtures	Brill
Seats	American Car special reversible light-weight cross seat
Seating material	Steel, birch veneer stained mahogany
Springs	Brill
Step treads	Feralum
Trolley catchers	Keystone
Trolley base	General Electric
Trolley wheels	General Electric
Trucks	Brill Special 78-M-1
Ventilators	Brill Exhaust
Wheels	26-in. cast wheels
Special devices, etc.	100 per cent dead man control
Automatic braking and sanding devices	Made by Safety Car Devices Company

Michigan Railway, Jackson, Mich., has specified the following details for four all-steel, three-compartment motor cars and for two all-steel, double-end trailers which are being built by the St. Louis Car Company.

	All-Steel Motor	*All-Steel Trailer*
Number	4	2.
Name of road	Michigan Railway	Michigan Railway
Builder	St. Louis Car	St. Louis Car
Seating capacity	56	52.
Weight (total)	100,000	67,900.
Bolster centers, length	36 ft. 0 in.	30 ft. 2 in.
Length over bumpers	61 ft. 0 in.	53 ft. 1 in.
Length over vestibule	59 ft. 0 in.	51 ft. 1 in.
Width over belt rail	8 ft. 11 in.	8 ft. 11 in.
Height, rail to roof	12 ft. 10½ in.	13 ft. 0 in.
Lower sill to roof		9 ft. 5 in.
Body	Steel	Steel.
Interior trim	Steel—imitation mahogany	Mahogany.
Headlining	¼ in. agasote	3/16 in. agasote.
Roof	Plain arch	Arch.
Air brakes	Westinghouse	Westinghouse.
Axles	Open hearth, heat treated	
Cables	St. Louis Car	St. Louis Car.
Bumpers	Rico anti-climber	Rico anti-climber.
Car trimmings	Bronze—St. Louis Car.	Bronze—St. Louis Car.
Conduits	St. Louis Car	St. Louis Car.
Control	Multiple unit	
Couplers	Tomlinson MCB.	Tomlinson.
Curtain fixtures	Forsyth No. 88	Forsyth No. 88.
Curtain material	Pantasote No. 77	Pantasote.
Designation signs	Illuminated.	
Trap door and steps	O. M. Edwards.	
Fenders	Railway co.'s design.	
Gongs	14 in. air operated.	
Hand brakes	Ackley	Ackley.
Headlights	G E Luminous arc	
Heaters	Peter Smith O-C	Peter Smith O-C.
Journal boxes	Symington.	
Paint	Murphy ABC	Murphy ABC.
Sandbox	With Reliance Trap.	
Sash fixtures	O. M. Edwards	O. M. Edwards.
Seats	Hale & Kilburn	23 Hale & Kilburn.
Seating material	Plush and leather	Plush and leather.
Step treads	Mason	Mason.
Trucks, type	Baldwin	Baldwin—trailer.
Ventilators	Automatic	Automatic
Wheels	FSC, 36 in. diam.	36 in. diam., steel.
Special devices, etc.	Light Fixtures, Safety Car Heating Co.; Bolsters, fitted with Baltimore ball bearings and Perry roller side bearings.	West. signals.

TRADE NOTES

Standard Underground Cable Company, Perth Amboy, N. J. is building a new extension to its plant.

Frederic de P. Hone & Company, New York, N. Y., engineers, announce the removal of their New York office to 13-21 Park Row.

B. L. Yepson has been elected second vice-president and general manager of sales of the National Fireproofing Company, Pittsburgh, Pa.

J. H. McKelway has been appointed sales manager of the Laclede Christy Clay Products Company, St. Louis, Mo., succeeding H. K. Lackland, resigned.

R. M. Klein has been appointed sales manager of the International Oxygen Company and will be located at the company's main office, 115 Broadway, New York.

Duquesne Electric & Manufacturing Company, Pittsburgh, Pa., has been incorporated with a capital stock of $50,000 to manufacture electrical machinery, etc. E. A. Casey is treasurer.

A. C. Cornell, formerly house goods specialist in the St. Louis branch of the Western Electric Company, has been appointed sales manager of the Denver (Col.) branch house of that company.

Alonzo B. Reed, formerly with Charles T. Main, consulting engineer, Boston, Mass., is now associated with the power transmission sales office of the James Hunter Machine Company, Boston, Mass.

General Electric Company, Schenectady, N. Y., has received bids for the construction of a reinforced concrete addition 135 ft. x 250 ft. at its Edison Lamp Works, Harrison, N. J., to cost about $200,000.

L. S. Washington, formerly a member of the transformer sales division of the Westinghouse Electric & Manufacturing Company at East Pittsburgh, has recently been transferred to the St. Louis office of that company as supply salesman.

T. A. Gillespie Company, Gillespie, N. J., has been incorporated by Thomas H. Gillespie, H. S. Morrow and R. A. Johnson of New York City. The company is capitalized at $500,000 and proposes to do a general contracting and electrical engineering business.

Sangamo Electric Company, Springfield, Ill., has established a service station on the Pacific Coast for recalibration and repairs of meters for the territory west of Salt Lake City. The service station is located at the factory of the Western Electro-Mechanical Company, Oakland, Cal.

James A. Parker, who has been associated with the United States Steel Products Company of New York for a number of years, has been appointed as steel expert by Secretary Redfield for the newly created Division of Export Licenses of the Bureau of Foreign and Domestic Commerce.

National Carbon Company, Cleveland, Ohio, has purchased the works and business of the American Carbon & Battery Company, St. Louis, Mo. With the exception of Henry Wrape, the president of the St. Louis company, who is retiring, the management and organization remains unchanged.

World Harvester Corporation, New York, N. Y., has been chartered with a capital stock of $1,500,000 by D. Halley Barber, Herbert E. Monahan and Ruth Frackman, all of New York, N. Y. The company proposes to manufacture apparatus and mechanical devices operated by electricity and other power.

J. D. Collier, director of L. J. Healing & Company, Ltd., Tokyo, Japan, general engineers and contractors, is visiting America on a short business trip and expects to arrive in New York the first week in August. His headquarters while in New York will be care of W. J. Sparks, Inc., 17 Battery Place, New York.

Bound Brook Oil-less Bearing Company, Bound Brook, N. J., announces that its new foundry being erected at plant No. 2, Lincoln, N. J., two miles east of the Bound Brook plant, will be ready for occupancy on Aug. 3. This building is of steel and brick construction, 60 ft. x 180 ft., and will materially increase the production of this company's output.

Leeds & Northrup Company, Philadelphia, Pa., announces that its factory was closed from July 6 to July 18, during which time almost the entire force of the company took its vacation and all production work was stopped. The new factory addition, which will double the floor space, is nearly completed and the company proposed moving into it during the vacation period.

Atlantic Welding Company (formerly the Atlantic Welding Corporation), 30 Church Street, New York City, announces two important changes, one technical and the other commercial. First, the Gailor welded joints formerly installed under contract by this company will hereafter be offered to railways with a remarkably compact unit type motor-generator set and simplified apparatus for the Atlantic welding method, thereby permitting the installation of these electric arc-welded joints at minimum cost and maximum convenience. Second, the joints hereafter can be installed directly by the electric railway purchaser on a license basis, making use of the special motor-generator and other equipment, instead of having the work done by contract with the Atlantic Welding Company's forces.

Calebaugh Self-Lubricating Carbon Company, Philadelphia, Pa., announces that it has been compelled to seek larger quarters for the manufacture of its "No-Spark" carbon brushes for use on motors and generators, and that after Aug. 1 its plant will be located at 1508 to 1518 Columbia Avenue. The offices, however, will remain at 1503 Columbia Avenue. Its sales representatives are: F. Steetler and B. C. Hilliard, Philadelphia, Pa.; F. A. Best, Atlantic City, N. J.; Frank Van Anden, New York; Charles A. Fine, Western Pennsylvania; Fred H. Dorner, Milwaukee, Wis.; R. C. Stage, Rochester, N. Y.; Moore-Handley Hardware Company, Birmingham, Ala.; Baltimore Electrical Supply Company, Southern territory; Quality Electric Works, Los Angeles, Cal.; Advance Machinery & Supply Company, Denver, Col.; Antiga & Co., Havana, Cuba, and the Electrical Equipment Company, Montreal, Canada.

Holden & White, Inc., Chicago, Ill., announce that they have received orders for the following specialties: Anderson slack adjusters, purchased by the United Railways of St. Louis for 100 cars, and by the Omaha & Council Bluffs Street Railway for 40 cars; Garland ventilators, by the New York State Railways, Rochester Lines (Cincinnati Car Co.) for 25 cars, by the Pacific Gas & Electric Railway (American Car Co.) for new cars, and by the Fort Wayne & Northern Indiana Traction Company for cars being rebuilt in company shops; Wasson air-retrieving trolley bases ordered by the East St. Louis & Suburban Railway for the new all-steel cars to be used on its line to Alton; Columbia car equipment specialties, for the Chicago, South Bend & Northern Indiana Railway; Fort Dodge, Des Moines & Southern Railroad, Wisconsin Public Service Company and Chicago Surface Lines; Miller trolley shoe equipments for the International Railway, Chicago, North Shore & Milwaukee Railroad, Gary & Interurban Railroad, Fort Wayne & Northwestern Railway, Union Traction Company of Indiana, East St. Louis & Suburban Railway, Des Moines City Railway and Michigan Railway, and Perry-Hartman roller side and centering center bearings for the Interborough Rapid Transit Company, Chicago, Aurora & Dekalb Railroad, Fort Wayne & Northern Indiana Traction Company, Waterloo, Cedar Falls & Northern Railway, Oklahoma Union Traction Company (J. G. Brill Company), Winnipeg Electric Railway, Central Illinois Traction Company, Joliet & Eastern Traction Company and Evansville Railways.

NEW ADVERTISING LITERATURE

Wagner Filing Methods Company, New York, N. Y.: A 16-page catalog on indexing subjects, firms, individuals and records.

General Electric Company, Schenectady, N. Y.: A leaflet on special outfits for recharging ignition and lighting batteries.

American Steel Export Company, New York, N. Y.: A booklet, "Export Engineering and Contracting," which deals with the export organization of this company.

International Money Machine Company, Reading, Pa.: A pamphlet of payroll machinery giving brief descriptions of machines for adding, listing, recording, scheduling and paying out money.

Ford, Bacon & Davis, Engineers, New York, N. Y.: A bulletin, "Recent Construction Work," giving descriptions an dillustrations of a double-deck wharf on Pier 41 at Galveston, Tex., showing construction features, plans, specifications, etc.

Gardner Machine Company, Beloit, Wis.: A complete 120-page catalog on grinding machines, abrasive materials and accessories. Contains a section on tables, specifications, prices and other useful information.

Colonial Steel Company, Pittsburgh, Pa.: Catalog No. 16 gives specifications for tool, alloy and special steels with lists of extras and methods of treatment. Articles made from various steels are shown and processes of manufacture illustrated.

Lidgerwood Manufacturing Company, New York, N. Y.: Bulletin No. 20, giving a complete line of electric hoists designed especially for contracting work, special hoisting duty, etc. General descriptions, illustrations and tables of sizes and capacities of the different hoists are given.

New Publication

Properties of the Calcium Silicates and Calcium Aluminate Occurring in Normal Portland Cement. This is the title of a report recently issued as Technologic Paper No. 78 by the Bureau of Standards. Copies can be obtained from the superintendent of documents, Government Printing Office, Washington, D. C., for 25 cents each.

Electric Central Station Distribution Systems. Revised and enlarged edition. By H. B. Gear and P. F. Williams. D. Van Nostrand Company, New York. 457 pages, 187 illustrations. Cloth, $3.50 net.

While, as the title indicates, this book is addressed particularly to distribution engineers of central stations, there are many features of interest to electric railway engineers, especially those connected with companies engaged in the sale of industrial power. The authors occupy responsible positions with the Commonwealth Edison Company of Chicago, and the text reflects their extensive experience, particularly in cable installation and overhead-line construction. The book is practical rather than theoretical, but fundamental principles are cited when necessary. In a treatise on a subject like this little of novelty is to be expected, its principal value lying in the fact that the reader secures much first-hand information as to the merits of certain schemes and practices. It also forms a convenient handbook in its particular field.

Abstract of the Census of Manufacturers. United States Bureau of the Census. Government Printing Office, Washington, D. C. 722 pages bound in cloth, 65 cents per copy.

Statistics of 340 separate manufacturing industries are presented in the abstract of the census of these branches of production that has been issued by the United States Bureau of the Census. Among the details given are those relating to number, size and character of ownership of establishments, and States in which located; proprietors, officials, salaried employees, and wage-earners, classified according to sex and, in the case of wage-earners, according to whether over or under sixteen years of age; salaries and wages paid; power used; fuel consumed; cost of materials; value of products; quantities of principal products, and various other items. Statistics somewhat similar in scope but in less detail are given, with reference to all industries combined, for each State and geographic division and for each of the leading 130 cities. This inquiry, which related to the calendar year 1914, was made in 1915, and the primary or fundamental data derived from it, together with some details as to kinds and quantities of the various classes of products, were issued some time ago in the form of several series of press summaries. The abstract presents, in convenient form, with an alphabetical index, all the information that will be needed by the great majority of persons who have use for the manufacturers' statistics.

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It Is Important to Check Transfers

THEORETICALLY, every transfer presented for passage on the cars should be checked by the auditing department before it is destroyed. Actually, however, such a plan would involve too much time and labor. Hence, the common practice is to check only a portion of the transfers, usually all those of one or two lines being taken each day so that all of the lines will be included, though not in any regular system of rotation, within a comparatively brief period. If this plan is carefully followed, it is undoubtedly adequate, but we have observed a tendency toward slackness by some companies in this respect. Electric railway managers must remember that as each transfer represents a ride, it is potentially worth 5 cents to the company, whether the practice on the road is to register transfers or not to do so. In other words, unless care is taken to prevent transfer abuse by passengers and conductors, a large loophole is left for the escape of fares. Of course money can be wasted in too elaborate systems of auditing transfers, but we believe that more roads err on the side of laxity in this respect than from over-caution.

The Use of Short-Term Notes at the Present Time

THE proposed financing of the power deal involving the Lehigh Valley Transit Company shows the situation that is to-day confronting the corporate borrower. As noted last week, the banking syndicate, in the tying together of the various plants concerned, plans to use an issue of $20,000,000 of ten-year 6 per cent notes. Such short-term media are not unexpected in view of the existing financial conditions. Government bond offerings, generally upon at least a twenty-year basis, have at present, for patriotic reasons, the first call upon our national resources. The Farm Loan bond business is another source of important competition, and there are many bargains in old bonds in the general market. To compete even to a small degree with the federal issues and to meet the high yield on outstanding bonds, the business of the country must pay a high rate. But this does not mean that corporations need commit themselves for a long term of years to 6 per cent money, for it is feasible to defer long-term bonds until peace is restored. Thus one finds corporations issuing notes for even shorter periods than the proposed Lehigh issues—for one, two or three years, at a rate sufficient to be attractive. This method of financing seems advisable, pending the restoration of normal conditions. It would probably be well, however, to remember that any financing will be easier during the lulls between Liberty Bond offerings.

A Patriotic Spirit Will Offset Draft Reaction

THERE is no doubt of the existence of a feeling of uncertainty and unrest in the electric railway ranks, as in others, due to the present and prospective drafts of men for military service. It will require special effort to maintain discipline under these conditions. There may even be a tendency among the younger employees subject to draft to become careless in their work, feeling that they are about to leave their present employers anyway and that it matters little what they do. A patriotic spirit will prevent such an unwholesome reaction from the draft, which has been adopted equitably to distribute the burden of the war so far as man power is concerned. Those who go and those who remain behind will equally contribute to the winning of the war if they possess the proper spirit. Such a spirit is not that of the motorman who thinks that he can take chances or the conductor who feels that he can knock down a few fares because he is not going to be in his present job very long anyway. Such a man would make as poor a soldier as he is a railway employee. In spite of the difficulty which railways are having in keeping up the quantity as well as the quality of their labor supply, we believe that such virtual slackers are far from representative. Nevertheless, it is incumbent upon railway managers to promote a spirit of patriotism among their employees, not only because it is the right and proper thing to do but also because it will help the men to keep their standards of service high, whether or not they expect to join the army soon.

Low Wages Are Often a Waste of Money

IN commenting last week on the question of pay for rainy days to track gangs, we referred to the difficulty of obtaining labor of this kind at the rates which railways think they can pay or ought to pay. Several construction engineers who have read that editorial say that the belief of many managers that low wages are adequate for this sort of work is the crux of the problem. One of them writes:

"Laborers are being paid 40 cents an hour all through the towns in this valley, and my instructions this year were to get men for 20 cents an hour. We are now paying $2.50 a day for ten hours' work on the track. It is not work, however. We are simply donating $2.50 a day to the finest collection of human flotsam that was ever washed ashore at Cull Harbor. I could hire one good man for $3.20 a day who would do more work, heavier work, better work, more intelligent work than a pair of the half-dead culls that now cost us $5."

It should be borne in mind that poor labor in track construction is not only inefficient in itself, but it is demoralizing to the gang foremen, who are usually the better men carried by the company on a monthly basis throughout the year. Poor laborers cause these men to become discontented and leave for higher-waged though less certain employment in other industries. That this is the case is evidenced by a recent canvass of fifteen of the larger companies in all sections of the country.

The problem is a serious one to maintenance-of-way engineers throughout the country. They come into direct contact with the poor labor used in many track gangs and thus realize the situation. One of them suggests, as a partial solution, that an effort be made to carry a few of the best track men through the winter so as to insure them an all-year job. They could be kept at tightening bolts, cleaning up brush, mending right-of-way fences and other jobs which are suitable for winter and would form the nucleus when the spring came of a good section gang which would be satisfied with moderate wages. We stand with them in believing that good work on the track is essential and that cheap labor is usually inefficient labor and uneconomical in the long run.

High Altitude in Service as Well as Location

THE rare air and the magnificent view in which the Denver Tramway men live and work may be the source of inspiration for the real accomplishment in evidence in the operation of this Western railway property. Or perhaps it is only a keen perception of the future that is responsible for the marked progress in conditions, both internally and with respect to the public which this company is enjoying. Whatever may be the background, there is no gainsaying the fact that the Denver Tramway organization is working out new solutions of electric railway problems. Part of this work has been described in recent issues of this paper. Another article in this issue tells of the publicity policies of the company, while others which will appear in succeeding issues will cover some of the details of the company organization and management. The one-man car idea is undergoing study in anticipation of its adoption in Denver, in a way which, it is hoped will greatly increase its desirability. Other schemes equally interesting and vital are being worked out to provide for the needs of the times.

An outstanding feature of this company's printed talks to the public is the truthfulness and sincerity with which it puts forth any discussion of the service being rendered. No hint of any attempt to cover up deficiencies through nice talk can be gleaned from any of the company's publicity. The watchword handed down from the general manager and permeating the whole organization is service, and no statement is made in any advertising literature which the company is not prepared fully to back up. No advertising campaign was ever continuously successful unless the goods proved to correspond to their representation, and this is the governing policy of the Tramway company in all its publicity matter. It is in the market to sell transportation and expects to be continuously in this business. Therefore, it cannot afford to misrepresent. If there are deficiencies, they are admitted but corrected as rapidly as possible. If there are complaints and criticisms, these are gladly received, for some of them carry valuable suggestions for the improvement of the service. If the tramway is at fault, the publicity manager does not hesitate to take a "rap" at his own company. This induces confidence in the veracity of the mouthpiece of the corporation. The publicity manager is directed in his relations with the balance of the organization, to maintain the viewpoint of the public and in short to be the public's special representative in the company conferences. This is indicative of the real intent to be of maximum service to the public in fact as well as in theory.

Railway Men Must Let the Light of Publicity Shine

READERS of the great metropolitan newspapers feel that they are entitled to find in the editorial pages at least evidences of intelligent consideration and careful thought. What, then, are we to say when we come upon such paragraphs as these which appeared the other day in the New York *Evening World* in discussing a raise in car fares?

> * * * is it the duty of these American people to bear added burdens in order that no street railway corporation shall have to reorganize its business methods or share by so much as a fraction of a per cent of its accustomed dividends? * * *
>
> Twenty-eight up-State traction companies have already petitioned the Public Service Commission for permission to increase their fares from 5 to 6 cents.
>
> Think what this means for the corporations, a comfortable increase of 20 per cent in revenues. * * *
>
> The distraction and confusion of war must not for one instant be allowed to serve as a cover under which street railway corporations may shift their share of the general load to the shoulders of the public.

There is no evidence here whatever that the writer has ever conceived the situation as involving anything but sentiment. He seems to think, as so many critics do, that the electric railway corporations have countless millions of annual profits and have only to make up their minds to be happy with a bit less. It is quite apparent that he does not know that many of the companies are paying no dividends, that some are not making even interest on their bonds, and not one is making enough to make either its stock or bonds a prime investment. He has no apparent glimmering of the idea that this situation means just one thing to the public—that the public will be the real sufferer if the companies are made to suffer. The public must appreciate the absolute certainty that if this business situation continues with the carrier companies the public will have to get along soon with fewer cars, passengers will have to stand closer together and will lose many car lines altogether.

This editorial writer never stopped to think that the business of furnishing street railway rides cannot go on indefinitely with fixed fares and rising costs any more than selling clothes, furniture, food or coal can continue under the same conditions. The companies are not caught red-handed trying to "put something over." They show the public and the Public Service Commission the facts and ask only a judgment that will be fair to them and at the same time keep up good service for the public.

Now for the real point, the point that prods the electric railway man himself.

Such crass editorial ignorance of a simple public business proposition is due to the fact that the electric railway men haven't made the facts of their business known. Newspaper editors are not so foolish or hateful as not to perceive that a company whose expenses are growing faster than its income is headed toward bankruptcy. Now, if the editors lack information and appreciation of the facts, how much more will the public generally lack them? No one but the railway people can change this. The need of intelligent and persistent publicity about the electric railway business is proved merely by the appearance of such writings. Nothing else can clear away the darkness of mind that leads to such misconceptions. These misconceptions, through repetition to millions of readers in the columns of the press, may do enormous damage.

There is no good reason to suspect malicious intent on the part of at least the majority of the papers. They are really open to the truth and intelligent presentation of the railway case. But the railway men must illuminate the darkness.

Now Is the Time to Get the Skip Stop Going

WE cannot withhold a word of praise for the wide-awake manner in which our neighbors in the transportation field—the steam railroads—are adapting their transportation methods to the abnormal conditions brought about by the war, and we believe that the electric railways could gather some suggestions from what they have done. Judging by reports, the steam railroads are undertaking everything and anything that spells economy—such as reducing the number of passenger train units, taking off diners and sleepers and accepting l.c.l. shipments only once a week, and the public applauds because it recognizes that these things are helpful for the country at large and so are necessary. This should give the electric railways heart, not only in the fare contest but in introducing other reforms. No such radical changes, so far as the public is concerned, as the steam railroads are making need be applied because there are at hand for the electric railways plenty of possible economies that do not depend upon reduced service for their introduction. All that is involved is a relaxation of popular opposition to improvements, and this seems to be very much in evidence to-day.

Probably the most prominent of such means for economy without reduced service appears in the skip stop. This has been definitely established as a time-saver to both public and railways for at least two years, but the number of cities where it has actually been introduced is painfully small. Places where it has been tried out and has "failed" are somewhat more numerous, but still the list of railways that have taken up the subject vigorously includes but an insignificant percentage of those that would benefit by such a change.

Part of this lack of energetic interest may be due to the apparent pettiness of the savings involved, and it is true that there are some conditions where the introduction of the skip stop will effect no direct economy and very little improvement in service. However, they are by no means in the majority. Generally speaking, they include short lines with infrequent headway, and under such circumstances the existing frequency of stops makes very little difference in the result. For example, there may be assumed a 4-mile round trip with a fifteen-minute headway served by two cars. The apparent schedule speed would then be 8 m.p.h., and allowing two minutes for layover the actual schedule speed would be about 9 m.p.h. With good equipment and limited interference, this schedule could be maintained with about ten actual stops per mile, but the advantage gained by cutting out half of the designated stopping points and thus reducing the actual stops to, say, about six per mile would hardly mean anything more than an increased layover. Elimination of four stops per mile or sixteen stops in each 4-mile round trip at fifteen seconds each (including acceleration and braking periods) would save four minutes out of the thirty originally required and, assuming an even distribution of patrons over the route, would save the average patron one minute at the expense of a schedule that would make the cars pass at odd times.

Double the assumed length of the line, however, and cut the headway to ten minutes, and the skip stop presents a wholly different aspect. Using the same actual schedule speed as assumed in the foregoing paragraph, six cars would then be needed to serve the run, allowing four minutes' layover. A reduction from ten actual stops per mile to six would save eight minutes in the time of each round trip, and if two minutes are cut off the layover, only five cars instead of six would serve the run, since the time for each round trip would be fifty minutes instead of sixty.

The outlined increase in actual schedule speed would save the average patron two minutes and the patron at the end of the line four minutes in each ride—well worth consideration. At the same time the increase of 16 per cent in apparent schedule speed would produce a saving equivalent to 11 per cent of the operating expenses of the line. This is also well worth consideration. The saving in fact, is equivalent to no less than a third of the gain to be effected by introducing the 6-cent fare under normal conditions.

Making the Most of Publicity

Denver Tramway Has Found Humor the Wedge to Public Understanding of the Railway Problems—Special Publication For and By the Employees Is Popular and Worth While

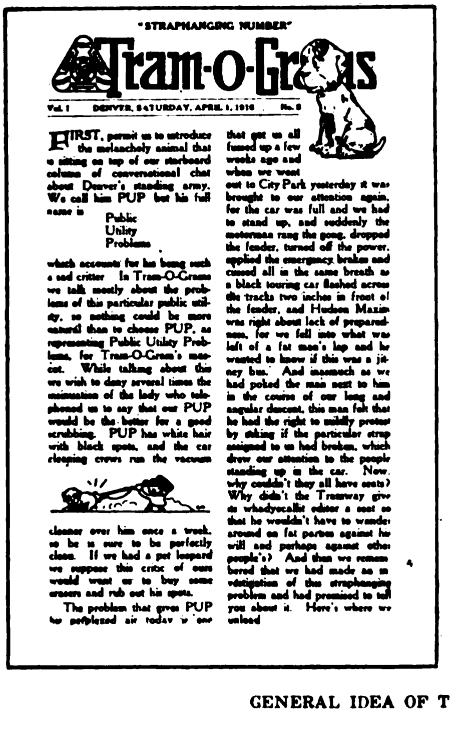
CONSISTENTLY living up to the declared intention that its publicity should not in any sense constitute a whitewash for the deficiencies of the company, and frankly turning the searchlight of public scrutiny on itself and admitting some imperfections, the Denver Tramway Company has for a year been steadily gaining ground in public favor. It took some seven or eight issues of the little now-much-sought "Tram-O-Grams," the company-public magazine, to overcome frequent references to this utility sheet by such titles as "Tramway Bunk," etc. Many letters were received at first to the effect that if the money thus appropriated were used to improve the service, it would be better spent. But with bi-monthly issues beginning on Feb. 5, 1916, it was not long until the droll humor of the green print and the antics of the tramway "pup" (Public Utility Problems), which mascots the publication in its precarious mission, had won a place in the routine life of the car riders. Now, Tram-O-Grams is not only read by the company patrons, but its periodic appearance is actually awaited. In popular favor, Tram-O-Grams is to Denver what B. L. T.'s column in the Chicago *Tribune* is to Chicago, but in addition, despite its humorous trend, it weaves the true knowledge of the tramway problems into the stories and the readers are educated as well as entertained.

TRAM-O-GRAMS

While many of the policies embodied in the publication of Tram-O-Grams are not new, the ideas of the men responsible for its character are worthy of recitation. The big governing principles of course are laid out by F. W. Hild, general manager, the "Heap Big Chief," as the public knows him through Tram-O-Grams, while the editor of this paper is J. C. Davidson, publicity manager. The latter is blessed with the happy faculty of telling the public why the company is right when it seems to be wrong, and making everyone believe it and take it with a smile.

Pouring oil on troubled water was to be metaphorically the effect of the publicity which Tram-O-Grams was to set forth when it was decided that the breach between company and public was such that the former needed some more intimate contact with its patrons in order to disseminate information on the company's real problems and to foster a get-together spirit. The discussions in the paper were to be truthful and backed up by efficient service. It was realized that the company was permanently in the business of selling transportation, and that no advertising could be continuously successful unless the goods to be sold were exactly what they were represented to be. So every member of the company organization was instilled with the spirit of service, and the maximum of this commodity was to be the least that would be satisfactory. Consequently the publicity department was armed with the most powerful weapon available in the strife for public good favor, and could go ahead confidently to show how much, and not to cover up how little, service the company was supplying its patrons.

No "scrapping" back is tolerated in Tram-O-Grams, since its publishers believe this engenders antagonism to the company and disinterest in the paper. Sometimes the contents of letters to the company are made the



"STRAPHANGING NUMBER"

Tram-o-Grams

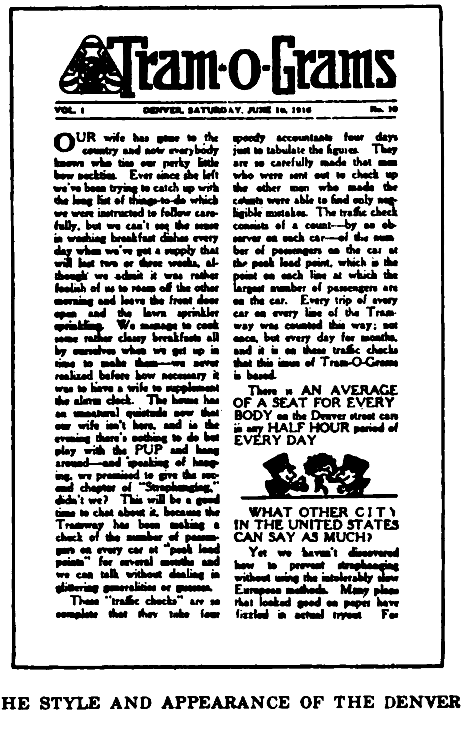
Vol. 1 DENVER, SATURDAY, APRIL 1, 1916 No. 8

FIRST, permit us to introduce the melancholy animal that is sitting on top of our starboard column of conversational chat about Denver's standing army. We call him PUP but his full name is

Public
Utility
Problems

which accounts for his being such a sad critter. In Tram-O-Grams we talk mostly about the problems of this particular public utility, so nothing could be more natural than to choose PUP, as representing Public Utility Problems, for Tram-O-Gram's mascot. While talking about this we wish to deny several times the insinuation of the lady who telephoned us to say that our PUP would be the better for a good scrubbing. PUP has white hair with black spots, and the car cleaning crews run the vacuum cleaner over him once a week, so he is sure to be perfectly clean. If we had a pet leopard we suppose this critic of ours would want us to buy some erasers and rub out his spots.

The problem that gives PUP his perplexed air today is one that got us all fussed up a few weeks ago and when we went out to City Park yesterday it was brought to our attention again, for the car was full and we had to stand up, and suddenly the motorman rang the gong, dropped the fender, turned off the power, applied the emergency brakes and cussed all in the same breath as a black touring car flashed across the tracks two inches in front of the fender, and Hudson Maxim was right about lack of preparedness, for we fell into what was left of a fat man's lap and he wanted to know if this was a jitney bus. And inasmuch as we had poked the man next to him in the course of our long and angular descent, this man felt that he had the right to mildly protest by asking if the particular strap assigned to us had broken, which drew our attention to the people standing up in the car. Now, why couldn't they all have seats? Why didn't the Tramway give its whadyecallit editor a seat so that he wouldn't have to wander around on fat person against his will and perhaps against other people's? And then we remembered that we had made an investigation of this straphanging problem and had promised to tell you about it. Here's where we unload



Tram-o-Grams

VOL. 1 DENVER, SATURDAY, JUNE 10, 1916 No. 10

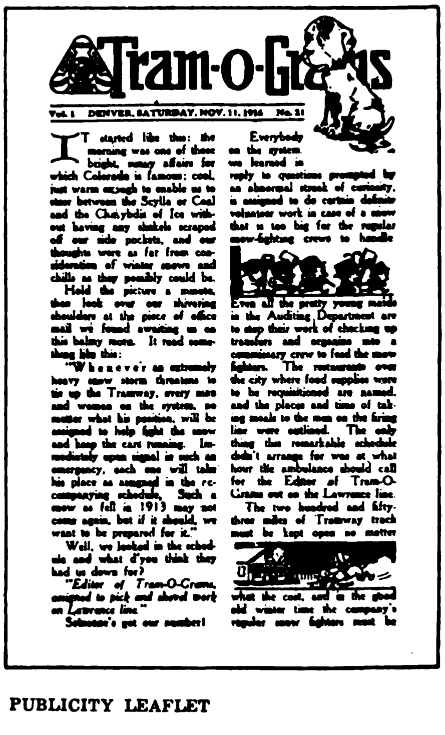
OUR wife has gone to the country and now everybody knows who ties our perky little bow neckties. Ever since she left we've been trying to catch up with the long list of things-to-do which we were instructed to follow carefully, but we can't see the sense in washing breakfast dishes every day when we've got a supply that will last two or three weeks, although we admit it was rather foolish of us to roam off the other morning and leave the front door open and the lawn sprinkler sprinkling. We manage to cook some rather classy breakfasts all by ourselves when we get up in time to make them—we never realized before how necessary it was to have a wife to supplement the alarm clock. The house has an unnatural quietude now that our wife isn't here, and in the evening there's nothing to do but play with the PUP and hang around—and speaking of hanging, we promised to give the second chapter of "Straphanging," didn't we? This will be a good time to chat about it, because the Tramway has been making a check of the number of passengers on every car at "peak load points" for several months and we can talk without dealing in glittering generalities or guesses.

These "traffic checks" are so complete that they take four speedy accountants four days just to tabulate the figures. They are so carefully made that men who were sent out to check up the other men who made the counts were able to find only negligible mistakes. The traffic check consists of a count—by an observer on each car—of the number of passengers on the car at the peak load point, which is the point on each line at which the largest number of passengers are on the car. Every trip of every car on every line of the Tramway was counted this way; not once, but every day for months, and it is on these traffic checks that this issue of Tram-O-Grams is based.

There is AN AVERAGE OF A SEAT FOR EVERY BODY on the Denver street cars in any HALF HOUR period of EVERY DAY

WHAT OTHER CITY IN THE UNITED STATES CAN SAY AS MUCH?

Yet we haven't discovered how to prevent straphanging without using the intolerably slow European methods. Many plans that looked good on paper have fizzled in actual tryout. For



Tram-o-Grams

Vol. 1 DENVER, SATURDAY, NOV. 11, 1916 No. 21

IT started like this: the morning was one of those bright, sunny affairs for which Colorado is famous; cool, just warm enough to enable us to steer between the Scylla of Coal and the Charybdis of Ice without having any shekels scraped off our side pockets, and our thoughts were as far from consideration of winter snows and chills as they possibly could be.

Hold the picture a minute, then look over our shivering shoulders at the piece of office mail we found awaiting us on this balmy morn. It read something like this:

"Whenever an extremely heavy snow storm threatens to tie up the Tramway, every man and woman on the system, no matter what his position, will be assigned to help fight the snow and keep the cars running. Immediately upon signal in such an emergency, each one will take his place as assigned in the accompanying schedule. Such a snow as fell in 1913 may not come again, but if it should, we want to be prepared for it."

Well, we looked in the schedule and what d'you think they had us down for?

"*Editor of Tram-O-Grams, assigned to pick and shovel work on Lawrence line.*"

Someone's got our number!

Everybody on the system, we learned in reply to questions prompted by an abnormal streak of curiosity, is assigned to do certain definite volunteer work in case of a snow that is too big for the regular snow-fighting crews to handle.

Even all the pretty young maids in the Auditing Department are to stop their work of checking up transfers and organize into a commissary crew to feed the snow fighters. The restaurants over the city where food supplies were to be requisitioned are named, and the places and time of taking meals to the men on the firing line were outlined. The only thing this remarkable schedule didn't arrange for was at what hour the ambulance should call for the Editor of Tram-O-Grams out on the Lawrence line.

The two hundred and fifty-three miles of Tramway track must be kept open no matter what the cost, and in the good old winter time the company's regular snow fighters must be

GENERAL IDEA OF THE STYLE AND APPEARANCE OF THE DENVER PUBLICITY LEAFLET theme for a lesson story, but the letters are never quoted and the names of the writers never mentioned. No advertising is carried in the little two or four-page paper, for the reason that it was the aim to concentrate full attention on the stories the company had to tell. Another of the policies which has helped most to establish the company organ in the confidence of its patrons is the admission of a fault when there is one, and then the prompt action to correct this. Even in so large a matter as the charge that a number of cars of safe and serviceable character but much smaller than the present standard ought to be discarded, the company graciously acknowledged through Tram-O-Grams the truth of the charge, and then explained why these cars could not be dispensed with at the moment, but it gave assurance that they would be later on. This was after the cars had been dubbed "Hildidink" cars to "honor" the g.m.

THE TRAMWAY BULLETIN

Vol. IX—No. 4 Shop Number January, 1917

PUBLIC
SERVICE
COMPANY
NEAR SIDE
ST NOW

COVER OF ONE ISSUE OF THE TRAMWAY BULLETIN

The subjects treated in this company public organ cover all manner of topics, from discussions of "our wife" and the "assistant editor" (Mr. Davidson, Jr., eight months old) to straphanging, tramway history, municipal ownership, painting and cleaning tramway cars, putting the vent in ventilator, etc. But no matter how far removed from street railways a story may seem to be in opening, before the reader knows it he is thinking about and interested in something about the tramway company. Naturally, improvements in the service are featured, and then there is much information as to car service, owl-car schedules, transfer privileges, etc., that is of personal value to the riders. One of the features which helps to make the paper readable and lively is the interpolation of small cartoons, which with humorous exaggeration visualize and drive home the point being made.

DISTRIBUTION OF TRAM-O-GRAMS

Fifty thousand copies of Tram-O-Grams are printed to serve the 250,000 population of Denver, which pays 150,000 cash fares a day to the tramway company. These 50,000 copies have been carefully estimated to have 150,000 readers, because of the number left on the cars and reread and the number taken away which are found in offices and homes and read by the wives and young people. On Saturday morning, twice a month, the paper is issued and the conductors distribute copies to the passengers on all inbound cars. At first the edition was divided 150 to a car, but this was soon found to be unsatisfactory, and accurate traffic figures for each run were made the basis of the number supplied to each car. For instance, a certain car and trailer made so many trips and carried a total of so many passengers. This number divided by two was determined as the proper number to assign to that run to realize the maximum value. After the first day, the remaining copies are placed in the "take one" box, and they usually disappear in a few days. Any left over are taken out of the boxes. These were formerly distributed in automobiles, barber shops, etc., but now with only 1000 or 1500 left over they are put in boxes at the interurban and central loops in the downtown district where five and sixteen car lines respectively turn back, and the left-overs disappear without the need to throw any away.

Latest photo of the Shop Editorial Board in the trenches. Grover Woolums, N. C. Harvey and Harry Newberry, who are responsible for the meaty contents of this issue of The Bulletin. The hammer is simply a gentle hint of what may happen to anyone who doesn't agree that this is the best number ever published.

EDITORIAL BOARD FOR FEBRUARY

SPLIT MEN

N. R. Rogen, South Division
W. C. McFarlane, Central Division
J. J. Hammil, North Division
J. C. Cash, East Division

PHOTOGRAPH OF EDITORIAL BOARD FOR THE SHOP NUMBER AS IT APPEARED IN THE BULLETIN

Evidences of the appreciation and popularity of Tram-O-Grams have been constantly forthcoming. On one occasion the printer was late in getting out the issue, and almost every conductor, as he came to his division headquarters, anxiously inquired where in the world Tram-O-Grams was, and asked that it be hurried up so he could keep his passengers quiet. All during that day, after the papers had appeared about three hours late, there was excellent evidence of the demand. Other indications of the interest in the paper are afforded in the fact that as high as 10,000 replies to contests have been received.

All in all, this little publication is considered by the company to be the best and at the same time the cheapest publicity it can get. In the year and three months

Tram-O-Grams has been published relations of the public toward the company have changed from antagonistic to reasonable to favorable. And why? There is only one answer, simple as it is. The company has been frank, honest, open to criticism, ready to admit deficiencies when they existed and willing to improve conditions when within its power, and it has educated the public through intelligent publicity to understand and appreciate its situation. Confidence has been gained that the best service possible is being given, or if not that the company is ready to go more than half way to meet the public in any request. So, as is always the case where this formula for public friendship is applied, the complaints have turned mostly to suggestions, many of which are of real merit.

THE COMPANY-EMPLOYEE PUBLICITY

So much for the company-public publicity, but that is not all the publicity manager has to keep him away from the ball game, with an annual pass in his pocket. Besides Tram-O-Grams, there is the Tramway Bulletin, a 9-in. x 12-in. magazine issued monthly for the 1500 to 1700 company employees. This is a magazine edited by the company employees and the editor and is made to be the gossip and news among the employees and not talk "at" them. If the company has any orders or instructions to issue to the men, these are delivered usually by word of mouth, or through the bulletin boards. In other words, the Tramway Bulletin is not the official mouthpiece of the management to the employees, but is rather the "keep-acquainted" organ of the employees themselves, a magazine of the employees for the employees, a medium for the dissemination of information and the discussion of any subject of particular interest to the employees, but not a place to "air" personalities of course.

The unique feature of this paper is the scheme the publicity manager has for getting the employees themselves to write the paper. At each of the four divisions of the company there is a local social and athletic club. The presidents of these clubs appoint, or the club elects a man to represent it on an editorial board one month to get out the paper for the next month. This editorial board is rotated through the different departments of the company, appointments being made in other than the transportation department by the head of the department. When the names of the men elected or appointed to serve on the board for the next month are received by the editor, letters are addressed to them acknowledging their appointment and asking them to meet at a certain time for a conference with the editor. In the meantime they are asked to be thinking over possible subjects for articles, or to bring up subjects which may have been suggested by trainmen in club meetings, etc. They meet and talk over the issue from cover design to make-up and feature articles, and then who they can get to write the stories. With this decided, the editor puts it up to these men to induce their fellow employees to write the stories suggested.

As the final decision on the subjects to be treated is left to this editorial board, although it may be assisted by the editor, its members recognize their responsibility for the issue and their suggestions are then numerous and free. This group of four or five men actually do supply a good share of the material for their issue, even the shop mechanics. As a reward, the photographs of the editorial board for that issue are run each month, and the names of the men on the editorial board for the next month are printed.

By this scheme, the request to write something comes from one trainman to another, or from one shopman to another, and it is accorded a much different reception than would be the case if the superintendent or master mechanic or editor asked him to do it. This way he knows he doesn't have to do it, but he does it out of interest. By having them do the writing, the bulletin gives the viewpoint of the men in the ranks and supplies them with the kind of reading matter they want. The editor does not know and could not have this close knowledge unless he worked with them.

Once in a while an employee contributes something for publication which would reflect discredit on the company unjustly. If the editor cannot show him why it is wrong and why it should not be published, the matter is put up to the author's department head and finally to the general manager. If he still persists, the article is published, and with it a statement of the company's position, dependence being placed on the employees' sense of fairness to take the matter properly. In this, as in any other intra-company matter, Mr. Hild is perfectly willing at any time to put the matter up to the employees, since he has absolute confidence that their decision will be fair, if they have all the facts. If an employee wants to contribute something that the officials had rather not see in print, and he is right and insists, it is printed and the company takes its medicine. These are the policies which have made the magazine truly an employee's paper and have helped to bring about most amicable relations between company and employees.

It is the aim to publish everything sent in by the men, and the contributors are assured that their stories will be corrected as to grammar, spelling, punctuation, etc., but otherwise unaltered, so that they may tell their story without fear of being laughed at for lack of knowledge of writing. Like Tram-O-Grams, the Bulletin is enlivened by small cartoons and also by numerous half-tone cuts, and the reading matter is made as interesting and full of human interest and as vital to the employees as possible. Some advertisements are carried, principally local, but in keeping with the better thought of the times, advertising from companies selling equipment or material to the tramway company is being eliminated.

The personal items receive a good deal of space in the paper, for what employee does not delight at knowing what his friends are doing and live in anticipation of seeing his own name in print. These personals are supplied to the editor by a novel process, created for the purpose. One of the old trainmen, who knows the property like a book and most of the employees by their "front" names, was given the title of chief conductor, with duties to spend the forenoon of each day in riding the cars, especially those operated by the newer men, to assist them and diplomatically show them how to do better work. Then in the afternoon he comes into the editor's office full of news and gossip and acts as assistant editor and contributes his morning's "tid bits" to the personal and news columns of the Bulletin. This arrangement gives the editor a valuable reporter, with only half his time charged against the publicity department.

Thus the company magazine has a real place in the life of the employees and helps to bind them into a brotherhood and to lend interest and contentment to their work. In these respects it is very similar in its mission to Tram-O-Grams, for this is designed to bring out the community of interest in the street railway which exists between the public and the company, and to bind the whole population into a corps of enlightened citizens which knows something of the ins and outs, the ups and downs of the tramway business, and which would never tolerate any legislation to the detriment of the tramway company and hence to the transportation service.

Chicago Anti-Parking Ordinance Proves Effective Relief

Average of 3.7 Minutes Per Car Saved in Loop District During Maximum Half Hour and 2.2 Minutes Per Car During Full Peak Period, 4 to 7 P. M.

CHICAGO'S anti-parking ordinance which prohibits the parking of automobiles and other vehicles on any of the car line streets in the downtown loop during the hours of 7 to 10 a. m. and 4 to 7 p. m., became effective on May 1. Until recently no figures were available to show just how much saving in time was made to the Surface Line cars as the result of clearing the streets of standing machines. However, excerpts from a report submitted to the commissioner of public service, John P. Garner, and thence to the City Council, covering a traffic check made under the direction of T. E. Flanigan, acting transportation supervisor for the city, give a good approximation of the time saving and schedule improvements effected. Not enough men were available to make a complete check, but the figures published herewith are claimed to represent approximately 85 per cent of the total street-car traffic:

TRAFFIC CHECK BEFORE AND AFTER EXISTENCE OF ANTI-PARKING ORDINANCE

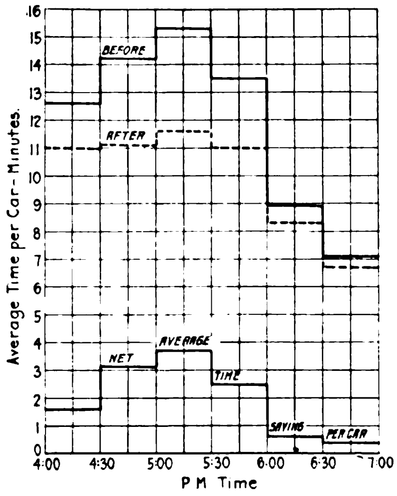
Half Hour Period	No. Cars Entering Loop	No. of Minutes Before	No. of Minutes After	Time Saving, Minutes	Average Minutes Per Car, Before	Average Minutes Per Car, After	Average Saving Per Car, Minutes
4:00 to 4:30	329	4,138.2	3,625.2	513.0	12.6	11.0	1.6
4:30 to 5:00	395	5,601.3	4,390.5	1,210.8	14.2	11.1	3.1
5:00 to 5:30	498	7,600.9	5,750.4	1,850.5	15.2	11.5	3.7
5:30 to 6:00	436	5,868.7	4,777.4	1,091.3	13.5	11.0	2.5
6:00 to 6:30	333	2,980.8	2,712.5	268.3	8.9	8.1	.8
6:30 to 7:00	268	1,913.8	1,828.2	85.6	7.1	6.8	.3
Total.......	2,259	28,103.7	23,084.2	5,019.5	12.4	10.2	2.2

The figures above were derived from a check made the fourth day after the ordinance became effective—May 4. At this time vehicle owners and drivers had not become thoroughly acquainted with the provisions of the ordinance, and its operation had no doubt not reached maximum efficiency. It is quite possible that a check made at the present time would show a slight increase in the time saved above that shown in the table.

The greatest individual line time saving was effected on Wabash Avenue and on State Street. During the half hour of maximum traffic, the average time for loop terminal cars to proceed north on Wabash Avenue from Van Buren Street to Washington Street and return was reduced 8.4 minutes. The average time of through routes No. 1 and No. 3 cars, northbound on Wabash Avenue from Van Buren Street to Lake Street and thence west to State and Lake Streets, was reduced eight minutes. Only a slight saving was made by southbound through routes No. 1 and No. 3 cars. This is an indication that the loop cars on Wabash Avenue, which enter the district practically empty from 5 to 5.30 p. m. and load very few if any passengers northbound between Van Buren and Washington Streets, were being compelled to creep along on the northbound track between these points principally because of the congestion caused by automobile parking. Similar conditions prevailed on State Street where the average time of loop cars from Van Buren Street north to the far side of the loop and return was reduced eight minutes, while the average time of northbound through route No. 6 cars, from Van Buren to Lake Streets, was reduced 8.2 minutes.

In general, a tremendous amount of time in the total is saved for the car riders through the benefits of this anti-parking ordinance. The time necessary for automobiles and other vehicles as well as street cars to move from point to point within the loop district has been materially decreased. Congestion along all streets between intersections has been greatly reduced, and there has also been a marked improvement in the movement of street cars, vehicles and pedestrians at intersections. This improvement, of course, lends itself to a more even distribution of load on the street cars. The facilitating of all traffic within the 2.5-square-mile district affected by the ordinance can reasonably be assumed to reduce the liability of accidents of all kinds.

As the result of this new ordinance, many automobile owners were summoned to court for violating the anti-parking feature. During May, 1917, the number of cases disposed of in the automobile court was 4090, as compared with 2720 cases in April, 1917, and 2067 in May, 1916. The large increase in the number for May, this year, is almost entirely attributable to the anti-parking ordinance under which arrests were made from the first day. No particular difficulty, however, was encountered in establishing the new traffic regulation.



GRAPHIC PICTURE OF CHICAGO TRAFFIC IMPROVEMENT

The New York papers a few days ago had a good deal of fun with the farewell appearance of the horse car in that city. The last car had been operated on a short downtown line. In 1916 it carried 3576 cash passengers and 1945 transfer passengers, with total receipts of $178.80. Last year it cost the New York Railways Company more than $1.50 to carry each passenger, and on July 17, 1917, the total receipts were 10 cents.

Lima, Peru, Has Enterprising Electric Railway System

Special Equipment Has Been Constructed in Company's Shop to Meet Local Needs

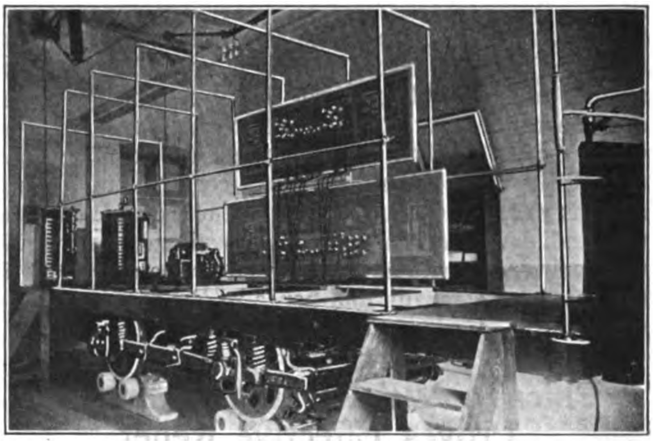
BY PHILIP S. SMITH
Special Agent United States Department of Commerce

THE electric railway system of Lima, Peru, is now generally conceded to be one of the best in South America. It is operated by the Empresas Electricas Asociadas, a company formed by the combination of the former lighting company and three electric railway companies. One of the railways operated cars in Lima, another between Lima and Callao, 9 miles, and the third between Lima and Chorillos, about 8 miles. The old English line between Callao and Chorillos, via Lima, is operated by the Empresas as a freight road. These lines as well as the several local extensions in the suburbs of Lima, having in all some 75 miles of single track, 135 passenger cars and six electric locomotives, are under the charge of Arthur H. Mann, resident engineer. Previous to taking up this work Mr. Mann was general superintendent of the Jersey Central Traction Company, Keyport, N. J.

Some Recent Large Shop Jobs

It is impossible to obtain good mechanics in the local labor market and so it has been necessary for the company to train its own employees for the various classes of work which have to be done. In this way the mechanical staff of the "factoria," or carhouse, has been trained to the point where it makes all repairs, including machine work, carpentry, casting and coil winding. One of the jobs recently completed consisted in sawing an eight-window car which had been damaged in an accident, into four two-window sections and inserting them into four other cars of similar type, thus materially increasing their capacity. The construction of complete new cars has also been undertaken successfully, two examples being shown in the accompanying illustrations.

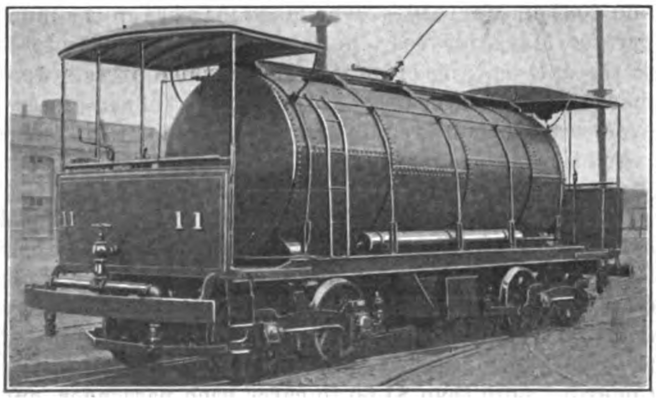
According to the franchise under which the company operates it is obliged to sprinkle all of the streets through which its cars run. In order economically to perform this service on the long interurban lines it was necessary to construct a car having twice the capacity of the small cars used in the city itself. One of the illustrations shows the completed car which is built of steel throughout. The frame is made of four 8-in. I-beams, connected to cross beams in five places by angles. The car itself is 30 ft. long and is mounted on McGuire trucks equipped with two GE-80 motors. The tank is constructed of boiler plate and is secured to the car frame by five holding-down straps. At one end a compartment has been formed by putting in a false head about 2 ft. from the end, and this serves as a storage reservoir for the air, which is maintained at a pressure of 90 lb. per square inch by means of a Westinghouse No. 3 compressor. A hand-operated valve, placed between the tank and the air reservoir, can be closed, thus retaining the pressure while the tank is open for refilling. The sprays are independent and can be operated from either end of the car through dashboard levers and quick opening valves. With full air pressure the spray on one side can be thrown 60 ft. A separate National Brake & Electric Company AA-1 compressor is used for the brakes.



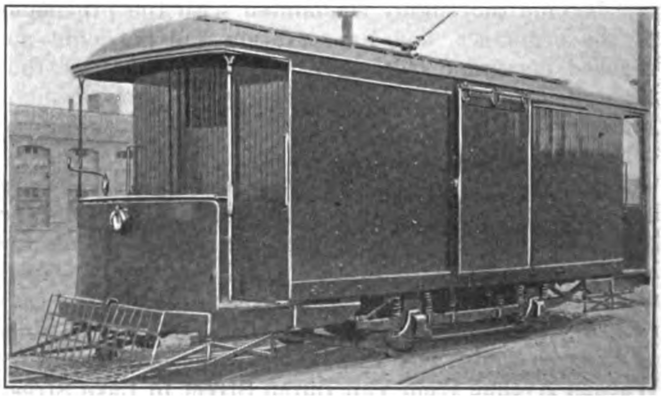
INSTRUCTION CAR USED IN LIMA, PERU, SHOPS

The franchise also calls for the free transportation of meat from the abattoir to the Central Plaza, or market place, and the car shown in the illustration below was built to replace the two old cars formerly used for this purpose. It has a capacity of twenty-four sides of beef and is well braced to provide against sagging on account of the wide center doors.

The unusual fenders on these cars are the design of Mr. Mann and are being used also on several of the regular cars. When in the operating position they are pulled forward and the apron is tipped back and hooked to the bumper. The iron braces drop into slots at each side, thus holding firmly until no longer required, when they are lifted out, the apron is dropped down and the whole fender is pushed under the car, clearing both coupler and bumper. It is shown in the latter position on the rear end of the car.



LARGE CAPACITY SPRINKLER CAR FOR USE IN VICINITY OF LIMA, PERU



MEAT CAR BUILT IN SHOPS OF ELECTRIC RAILWAY SYSTEM OF LIMA, PERU

To assist in teaching conductors and motormen an instruction car has been designed and installed as shown in the third picture. A car frame with two GE-54 motors is mounted on rollers permitting the wheels to revolve when power is applied. Blueprinted diagrams of the wiring arrangement of a two-motor car and of a four-motor car is attached to the framework of the side of the car, and on them all motors, resistances and controller connections are clearly shown. The motors are represented by groups of five lamps and the resistances by as many lamps as there are resistance points on the controller. The latter lamps are so connected that they are cut out one by one as the controller is notched up and the increased voltage on the remaining lamps causes them to burn brighter progressively, thus giving a visual understanding of the heating to which the resistances are subjected if the car is run with the controller on any of the resistance points. The air-compressor governor and rheostats are mounted above the car floor to facilitate the demonstration of the working details, and the other devices which have to be manipulated during the running of the car, such as signal lights and trolley, are installed as in the actual car.

The training of all men is the same so that motormen and conductors are practically interchangeable. It consists of instruction in running a car until proficient, two weeks in the pit, a day or two on the instruction car with a teacher and then another week in the pit. At the end of this time an examination is given by the master mechanic and if passed the student is put on a regular run, but if not he is kept in the shops and given another period of training and examination. The result of this thoroughness is that, although the raw material is not all that could be desired, the corps of operators so trained is reasonably competent and satisfactory.

The Human Nature of Publicity

Managers of Electric Railway Properties Should Study the Psychology of Publicity—Helpful Suggestions Are Given on the Way to Present the Facts Most Convincingly to the Public

By IVY L. LEE

ELECTRIC railway men can be classified roughly into four categories:

1. Those who believe that the public has no right to see what goes on inside their business, and therefore have no use for publicity.
2. Those who have no particular objection to publicity but think that, no matter what they might do, the public would not be in the least more favorably inclined in its attitude toward the business.
3. Those who believe the idea of publicity is a good thing but do not believe the public cares to know what their company is doing.
4. Those who believe in the public and are making great progress toward a better relationship between that public and their business.

With reference to the first class, I do not doubt but that the logic of events will be more than persuasive. The people now rule. In place of the divine right of kings, we have substituted the divine right of the multitude. The crowd is enthroned. This new sovereign has his courtiers, who flatter and caress precisely as did those who surrounded medieval emperors. These courtiers are sedulously cultivating the doctrine that to be weak is to be good and that to be strong is to be bad. The demagog is abroad in the land, and there are omens that cannot be disregarded.

One of the main reasons why the electric railway is not understood by the public is that electric railway managers have failed to take account of certain fundamental currents of human nature, which, from time immemorial, have been made most of by men who have influenced the action of crowds. Electric railway men have been standing aside content to be judged by the machines they were running, not attempting to have themselves regarded as human beings, not making it known that electric railways were but composites of human nature. Machines haven't the necessary red blood to draw multitudes.

I know that 999 men out of 1000 in the electric railway business are doing their work as well, if not better, than 999 men out of 1000 in other occupations. The electric railway business as a whole is to-day conducted as honestly and as efficiently as any other business in the world.

Why is it then that the good in electric railways has not always been appreciated? Why is it that the public immediately rises up in arms at the mere thought of an increase in fares? It is because electric railway men have neglected the human nature of the situation; it is because loud-tongued politicians have let their imaginations run rampant for the benefit of the multitude while electric railway men sat still, attended to their jobs and said nothing about what they were doing or of the difficulties they had to meet.

From the beginning of history, popular leaders have taken account of the fact that the people in the mass act upon impulses. Such leaders have not been disposed to exaggerate the influence of reason in determining the acts of mankind at large. If electric railway men then are to assume the place to which they are entitled as leaders of the public, they must consider these same elements in the psychology of the multitude.

MAINSPRINGS OF CROWD STIMULATION

These elements may be briefly described as follows:

1. In the first place, crowds do not reason—they proceed on impulses. It is impossible to induce a crowd to proceed toward any proposition on strictly logical premises. John C. Calhoun proved beyond dispute, as a matter of pure reasoning, that the Southern states had a right to secede, but Wendell Phillips came along and preached the doctrine that the slaves should be freed

and that the Union must be preserved. It would have been a logical thing to pay the Southern people for their slaves, but we all know that it was not possible to deal with the problem in that way. The dealing was with crowds.

2. Again, crowds are led by symbols and phrases. Joseph Chamberlain, when he was advocating the Boer War, achieved his purpose when he dubbed those opposed to him as "Little Englanders." We know that Bryan through the creation of that extraordinary phrase, "You shall not crucify mankind on a cross of gold," did more to advance the free silver cause than all of the other subtle and logical efforts that were ever made to advocate that idea.

3. Success in dealing with crowds, that success which we must attain if we are to solve the railway question, rests upon the art of getting believed in. Does anyone question that Mr. Roosevelt's supreme influence while he was President was due to the fact that the American people absolutely believed in him, believed in the purity of his motives and the elevation of his patriotism? Believing in him as they did, they paid no attention to his blunders or to criticisms of him.

4. The problem of influencing the people *en masse* is that of providing leaders who can fertilize the imagination and organize the will of crowds. Moses painted a picture of the Promised Land, and he induced the Israelites to spend forty years of extraordinary hardship under his leadership. Cæsar drew a picture of the conquest of Gaul and so infused the imagination of the Roman populace that they thrice offered him a crown. Napoleon's uncanny power in France was due to his resourcefulness in the appeal to these same elementary crowd-impulses.

These are some of the mainsprings of crowd stimulation. They are factors which statesmen, preachers and soldiers have from time immemorial recognized when they sought to lead peoples. My point is that in working out the electric railway problem we must take account of these same principles of crowd psychology.

BE CAREFUL OF THE TERMS USED

We can never be too careful in the terms we use. Some time ago, a certain public service corporation was in great financial difficulties; it could not pay its bond interest. Its president induced its bondholders to agree to a reduction of the rate of interest on the bonds. The president then announced to the public that there was to be "a readjustment" of the finances of the company. Now "readjustment of finances" sounded so much better than saying "Your company is bankrupt," and no one ever suggested that his company was bankrupt. It was a matter of terms.

There is often talk of "educating the public." Electric railway officers themselves are getting a good deal of very helpful "education." It is not a question of "educating the public," it is a very real question for the electric railway man of understanding the public and having the public understand him.

What we say to the public, it seems to me, must be with reference to the effect it will make and not primarily with reference to its logical sequence. You cannot argue with the public. It wants facts; not generalizations.

Again, I would suggest that there is no gain in pointing out the logical inconsistencies of other people's statements or arguments, however erroneous they may be. If we cannot answer what they say with something that will appeal constructively to the imagination or emotion of the public, with something which will supplant the erroneous statements, it is hardly worth while to go into the case at all. We may say what has been said of man, that "a crowd convinced against its will is of the same opinion still."

A public to be influenced must feel. Too many railway announcements are full of cold legal phraseology; they leave the public unmoved.

To make the public feel we must be concrete; we must tell of our work in language the layman can understand. He will not analyze figures. What he wants to know is, are you doing the best you can? Convince him of that and you don't need to argue details.

We should see to it that in all matters the public learns the truth, but we should take special pains to emphasize those facts which show that we are doing our job as best we can and will create the idea that we should be believed in. We must get so many good facts, so many illuminating facts, before the people that they will not magnify the few bad facts. There will always be some bad facts in every business, as long as human nature is frail.

DON'T NEGLECT HUMAN NATURE

Do not misunderstand me. Nothing is further from my thoughts than to suggest any attempt to prove things are good which are really bad. No one should condone the bad, and it should be, as I believe it is, the constant aim of nearly every electric railway man to make things better. What I do mean is that we should not neglect the human nature of the situation but should make the most of it; that we should tell our story, tell it frankly, tell it fully, and tell it with a view to its being understood and carrying conviction as to the essential truth.

Unless the electric railway men of the country are to be believed in, so that the public will take their advice as to what it should do with reference to electric railways, we are not going to make very much headway in the settlement of our railway problem.

The crowd craves leadership. If it does not get intelligent leadership it is going to take fallacious leadership. We know that the leadership which the mob has often received, not only in this country but in other countries, unless corrected is liable to produce disastrous consequences. Is it not supremely worth while, therefore, that electric railway officers should take account of those fundamental undercurrents of human nature; take practical steps to obtain the confidence of the public and assume the leadership which by right of character and ability they are entitled to exercise?

Men utilize skill to produce emotion and opinion in favor of reform and against the wrong. Why should not the same process be utilized on behalf of constructive undertakings, on behalf of ideas and principles which do not tear down but really build up?

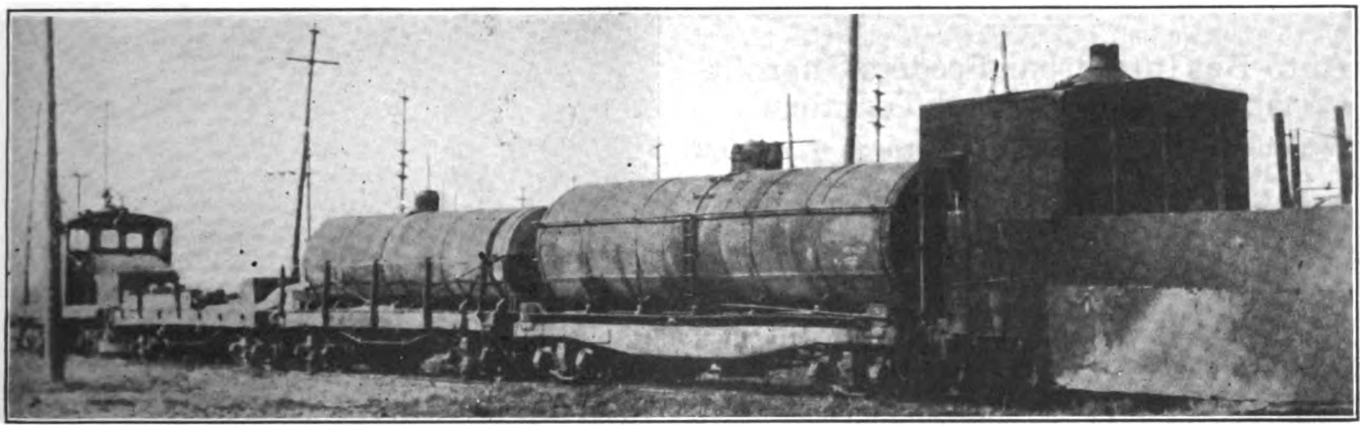
Is it not indeed likely, not only in electric railroading but in all industrial lines, not alone in this country but in all Western nations, where the same problems are pressing, that it will be by men of intelligence and ability, directing through such methods as these the great movements of the people along lines of health and greatness, that ours may be saved that decadent phase which no civilization has yet escaped?

Experience in Weed Burning on Pacific Electric Railway

At a Cost of $6 per Mile per Treatment This Company Wages a Successful Warfare Against the Weed Pest

BY CLIFFORD A. ELLIOTT
Cost Engineer Maintenance of Way Department, Pacific Electric Railway, Los Angeles, Cal.

CLIMATIC conditions in southern California render the abating of the weed nuisance a serious problem on the interurban lines of the Pacific Electric Railway. Success in this line involved the adoption of satisfactory methods for destroying the weeds and for keeping the track and right-of-way clear of them. The tedious hand method, involving constant pulling or cutting of weeds, is unsatisfactory. In southern California the mild climate gives the weed a continuous season for development. The heaviest rainfall occurs from December to March, during which period very little attention can be given to weeds. During the remaining nine months the work must be vigorously prosecuted.



WEED-BURNING OUTFIT USED ON PACIFIC ELECTRIC RAILWAY LINES

In fighting the weeds the company has for the last four years successfully used a burning outfit which was described in the issue of the ELECTRIC RAILWAY JOURNAL for June 28, 1913, page 1169. It comprises a train of four cars—the motor car, the oil-supply car, the water car, and the weed burner. The burner car contains, besides the burner, a boiler and water and fuel pumps. The oil is conveyed into a mixer, being forced through this to the burners as a combined crude oil and steam gas. Steel aprons and deflectors are provided on the sides of the burner to protect the car from damage and also to aid in the distribution of the flame. A light-grade crude oil is used in order to produce an intense heat.

During the first half year this machine was in service 628.4 miles of track were burned at an average cost of $5.12 per mile. The total costs, segregated into groups, were as follows:

Work train service	$1,142.80
Oil	812.31
Repairs, labor	295.77
Repairs, material	112.00
Track labor, following burner	633.18
Engineer and helper on burner	223.11
Total	$3,219.17

From June 1, 1913, to June 1, 1914, 1057.31 miles were burned, at an average cost of $5.37 per mile. From Feb. 1, 1916, to Jan. 1, 1917, 1637.64 miles of track were burned, at an average cost of $6.75 per mile. The increase in cost for 1916 over 1914 was due to increases in cost of labor, motor-car rental, and oil.

Owing to the frequency of service on the company's lines it is difficult to handle the weed-burner equipment on account of the numerous trips to sidings. On some lines the burning is done at night, but this is more expensive than daylight operation. The weed burner in use at present has a burning speed of from 4 to 6 m.p.h., but recent experiments in superheating the oil, gas and steam indicate that the speed can be increased to 15 m.p.h., with a resulting decrease in cost. Experiments with an improved burner are also being made which it is expected will lessen the amount of oil required.

Most of the company's lines are burned but twice a year, one at about 4 m.p.h., and again, after an interval of approximately ten days, at 8 m.p.h. Of course, conditions vary a great deal with the season and the location. On some lines there is heavy vegetation, comprising many varieties of weeds, and some seasons are dryer than others, so that the vegetation burns more readily. In a dry season, however, the expense for track gangs following the burner to eliminate fire hazard is greater. This precaution is necessary to protect the company's property and to prevent the flames from spreading to adjoining fields. In California, the most logical time for the first burning is after the first warm weather after the spring rains have terminated.

On the company's "close-in" lines, through thickly-settled districts, where the appearance of vegetation is objectionable, and there are strict municipal ordinances requiring the abating of the weed nuisance, it is the practice to burn twice a year. On more remote and less important lines, where appearance is not taken into consideration, one clearance a year is usually sufficient to keep the grass below the top of the rail so that wheels will not slide when the brakes are applied.

The water car, following the weed burner, is used to sprinkle the roadbed to extinguish the fires that may start in decayed ties, wooden culverts, cattle guards and trolley poles. A track gang follows the weed burner closely further to safeguard against fire hazard. Unless it is absolutely necessary, the burning is not done on right-of-way adjoining fields of ripe grain, but when it is done extra precautions are taken. Fortunately, most of the burning is done before the harvest season. Fruit trees are occasionally damaged near the right-of-way, especially where this is narrow, but damage claims in such cases have usually been very small.

Among the advantages of the burning method, as compared with the hand weeding previously used, the cost item is prominent. The average saving is about 65 per cent, and as high as $20,000 has been expended during nine months for this work by the old method. Again, the section forces can now devote their entire time to other items of track maintenance, the saving in labor being specially important in a time of shortage like the present. Further, the intense heat produced by the burner to some extent chars or sears the tops of the ties, tending to preserve them against the action of the elements. The burner also blackens the roadbed and track, eliminating glare, which is troublesome to the motormen and to some extent to the trainmen. This glare is particularly evident in rock-ballasted track.

The burning outfit which the company has been using was constructed in its own shops, under rights purchased from the inventor, E. E. Allen, and under his direction. These rights have now been taken over by the Wheelock Crude Oil Weed Burner Company of Los Angeles, Cal.

Auto-Bus Interurban Feeders Unprofitable in Puget Sound Territory

Washington Railway Interests Abandon Three Out of Four Routes When a Year's Trial Under Careful Management Shows Deficit Because of Sparse Population and Individual Competition

DURING the past two years the Puget Sound Traction, Light & Power Company has by means of a subsidiary organization, the Washington Auto Bus Company, furnished transportation to various communities not reached by its railway lines. This service as described in the ELECTRIC RAILWAY JOURNAL for Sept. 18, 1915 (convention issue) was inaugurated in order that the company might compile definite information on the cost of handling interurban traffic with autobuses and to see if good service could be maintained economically by this means.

After a year's experience with these buses a report from the subsidiary company states that it is still an open question whether it is better for a large corporation or a private individual to operate such bus lines. The large organization can buy at a slightly lower figure, but by far the largest item of cost in auto bus service depends primarily upon the individual driver and his care or abuse of the machine.

The questions of whether such service, in general, can be maintained economically by the large company is answered in the negative by the experience of the Seattle company. All four of the bus lines which were tried there accumulated a formidable deficit, and three have been abandoned as unsuccessful.

OPERATING AND DEPRECIATION COST

Of the several routes with which the company experimented, the shortest one, 3 miles long, showed an operating and depreciation cost of 11.14 cents per bus-mile. This route connects Edmonds, a town of 1600 people on the shore of Puget Sound, with the Pacific Northwest Traction Company's line from Seattle to Everett. When this service was started there was already in operation an auto-bus line running direct from Seattle to Edmonds and the Great Northern Railway through service connecting Edmonds and Everett.

A four-cylinder, ¾-ton Studebaker truck, seating eight passengers, was put on this run in June, 1915. This truck was replaced in August by a Ford bus, which operated until Oct. 1, 1916. The route was unpaved, and the grades were very steep.

The monthly earnings credited to the buses on this line varied from $41.20 to $124.25 and for the sixteen months from June, 1915, to September 1916, totaled $1,272.43. This corresponds to 3.78 cents per bus-mile on the basis of 33,657 bus-miles. Operating expenses ranged from a minimum of $173 to a maximum of $369 per month. It is interesting to note that the minimum occurred with the Studebaker and the maximum with the Ford. Depreciation for the Studebaker car was charged up at the rate of $42.36 per month and on the Ford at the rate of $21.36 per month. Interest on the investment was respectively $5.45 and $2.68 per month.

STUDEBAKER CAR ON AUBURN-BUCKLEY AND PUYALLUP-ORTING LINE

On this basis it cost from $220 to $280 per month to operate the Studebaker and from $202 to $383 per month to operate the Ford. The net monthly returns ranged from a loss of $108, using the Ford, to a profit of $97 also made by the Ford. On this run the net result for the sixteen months' operation was a slight profit, amounting to about $295. The total distance covered in this time was 33,657 bus-miles. The operating expenses amounted to 9.94 cents per bus-mile and the depreciation to 1.20 cents per bus-mile, or a total of 11.14 cents per bus-mile.

A ROUTE 20 MILES LONG

The bus line connecting the Seattle-Tacoma electric line at Auburn with Enumclaw and Buckley, two thriving little towns with a total population of 3000, was 21 miles long. The distance from Auburn to Enumclaw was 17 miles and Enumclaw to Buckley 4 miles.

When operation was commenced an irregular service had been maintained by private parties but without any relation to the schedule of the interurban trains. Although competitive fares were charged, the railway's buses secured a fair proportion of the business. The operation on this line was continued seventeen months. The route was unpaved at first and over very steep grades.

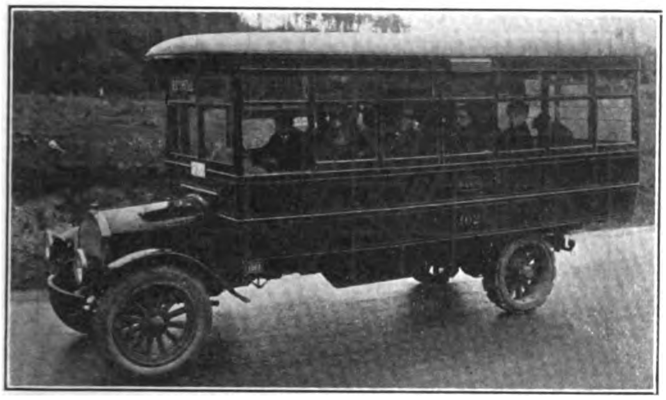
For the first six months two ¾-ton Studebaker trucks were used with specially built bodies arranged for eleven passengers. These were then replaced with ¾-ton White trucks with a seating capacity of twelve.

The total distance covered on this route was 130,134 bus-miles and the revenue was $12,839.61 or 9.86 cents per bus-mile. Operating expenses per bus-mile were 13.18 cents; depreciation, 1.76 cents, or an average total operating expense of 14.94 cents per bus-mile.

Monthly earnings varied from $661 to $1,177 and operating expenses ranged from $697 to $2,000. Depreciation for the seventeen months totaled $2,292 and interest on the investment $334. The net monthly earnings ranged from a loss of $1,364 to a profit of $172 and the net result from seventeen months of operation was a deficit of $4,524.

NO NOURISHMENT ON AN INTAKE OF 6.24 CENTS PER BUS-MILE

The Studebaker trucks taken from the Enumclaw-Buckley route were put on the 10-mile line connecting Orting with the interurban railway at Puyallup. This route was paved for its entire length and had no bad grades. Through bus service to Tacoma was already operating on this line, so that there was competition from the outset.



CAR ON BOTHELL LINE, INTERNATIONAL CHASSIS AND BRILL BODY

Operation was continued for eight months, during which time operating expenses were $6,557 and depreciation $995. These figures compared with the total earnings of $5,515 gave a deficit at the close of the period of operation of $2,136.

The total distance covered on this line was 59,879 bus-miles. Earnings averaged 6.24 cents per bus-mile, and operating expenses averaged 10.95 cents per bus-mile. As the depreciation was 1.59 cents, the total expense was 12.54 cents per bus-mile.

In the case of each of the three routes cited there was some form of auto-bus transportation already in the field. The new lines therefore had to meet competition from the start. It is believed that if the total available revenues from each route could have been taken in by one bus company there might have been sufficient business to make the venture profitable. However, there could be no profit with competition, it was pointed out. At present there is nothing to prevent a competing line from coming in—practically over night—and seriously injuring or destroying the business of the pioneer line.

LINE EARNS 17 CENTS BUT COSTS 19.23 CENTS PER BUS-MILE

The bus line between Seattle and Bothell, 16 miles apart, has been operating since the latter part of 1915. At the outset there was considerable competition between rival lines, but by the end of 1916 competition ceased, and since that time the Washington Auto Bus Company has had all of the trade. This line was originally intended to connect Bothell with the interurban line running from Seattle to Everett, but on account of bad roads the routing of the buses was changed, and connections are made at the interurban depot in Seattle.

When operation was begun on this line three buses were put in service. These buses have a "street car" body, built by The J. G. Brill Company, mounted on an International Motor Company's 2-ton Mack truck chassis. The seating capacity is twenty passengers, with six non-reversing cross-seats, two longitudinal seats of two passengers each, and one four-passenger seat extending the width of the body in the rear. These buses were described on page 164 of the ELECTRIC RAILWAY JOURNAL for Jan. 22, 1916.

The passengers carried on this line average 450 to 500 per day in summer and from 300 to 350 in winter, the average fare being 20 cents. All of the route is paved. Revenue and expenses for the calendar year of 1916 are recorded as follows:

Total mileage covered		113,040
Total receipts		$19,213.29
Operating expenses	$16,551.44	
Depreciation, etc.	5,193.30	
Total expenses		$21,744.74
Deficit		$2,531.45

On a bus-mile basis, receipts averaged 17 cents per bus-mile.

Total operating expenses (including depreciation), 19.23 cents per bus-mile.

Expenses per bus-mile, excluding depreciation, 14.64 cents.

The item of depreciation, which averaged $470 per month on the four buses, is based on an estimated three-year life for the cars. A recent check of this estimated depreciation shows that the charge is too high and that there will still be considerable value in the buses at the end of that period. At present the Bothell line is operating under favorable conditions and within the next few months it is expected that the accumulated deficit will be wiped out. All of the Bothell buses were overhauled in January, 1917.

The change in depreciation estimate on the Bothell line is not to be taken as probably also affecting the other three lines mentioned. In fact, it is now believed that the allowance made for depreciation on the three other bus lines was too low and that the exact figures for the operating expenses would show an even greater deficit for those lines than the figures given.

Traction Line to Aviation Field Completed

The Kankakee & Urbana Traction Company, Urbana, Ill., has completed a switch ½ miles in length running into the United States Aviation Instruction Field at Rantoul, Ill., 14 miles north of Urbana. The aviation field consists of a plot of land 1 mile square, which has been stripped of all buildings and fences, graded and leased to the Government for a period of from one to five years, with a privilege to the Government of purchasing the land at the expiration of the lease. The aviation field is served by both the Kankakee & Urbana Traction Company and the Illinois Central Railroad and is supplied with water, sewers and electric lights from the village of Rantoul.

The Mounting Costs of Railway Operation

Beaver Valley Traction Company Uses Graphics Liberally to Indicate the Upward Progress of These Costs

A REPRESENTATIVE of the ELECTRIC RAILWAY JOURNAL, calling recently at the office of W. H. Boyce, superintendent of the Beaver Valley Traction Company, New Brighton, Pa., noted a comprehensive set of charts which had been prepared to illustrate the superintendent's annual report. As the charts showed clearly the way in which costs have, on the whole, been rising during the last ten years, permission to reproduce some of them for the benefit of the readers of the JOURNAL was asked and granted. The accompanying illustrations are the result.

The charts are especially designed to show the percentage of the gross revenue and total operating expenses represented by the several items selected for illustration. Fig. 1, the most impressive of all, indicates an increase in ten years of about 14 per cent in the ratio of operating expenses and taxes to gross revenue in the face of a substantial increase in gross. This percentage excludes consideration of the year 1915, when the company had an exceptionally high accident account. This fact is indicated in Fig. 2, which shows also a similar condition in 1909.

The remainder of the charts were selected to show the percentage increases in cost in the four equipment departments, incidentally bringing out the magnitudes of these costs also.

The horizontal scale in each chart represents the fiscal years of the company, which end on March 31, and the

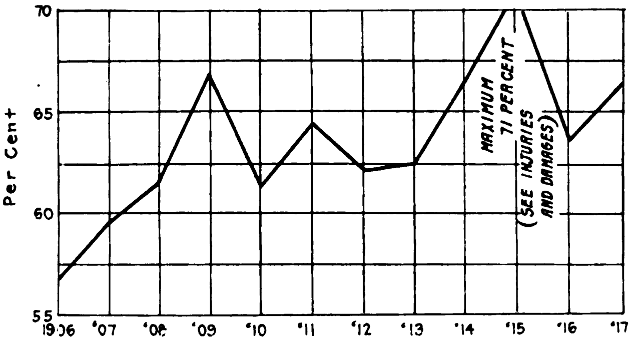


Fig. 1—Operating Expenses and Taxes, in Per Cent of Gross Revenue

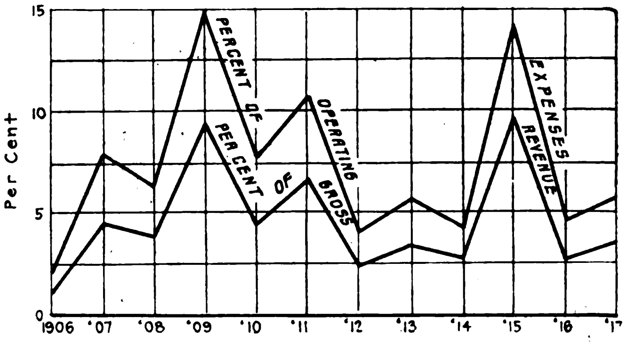


Fig. 2—Cost of Injuries and Damages, in Per Cent of Operating Expenses and Gross Revenue

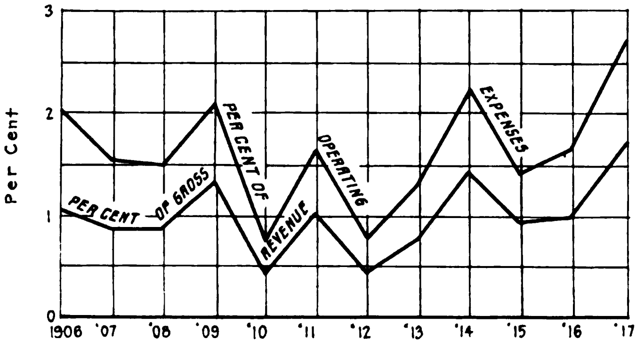


Fig. 3—Cost of Maintaining Overhead Lines, in Per Cent of Operating Expenses and Gross Revenue

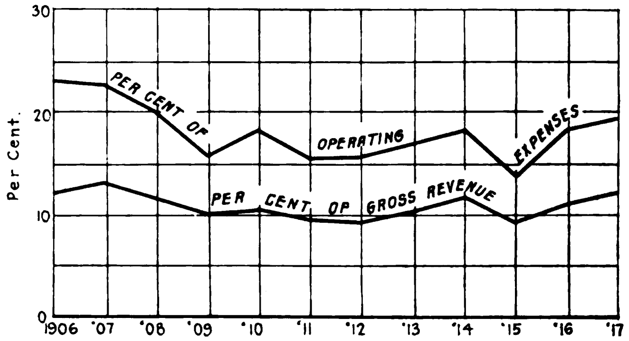


Fig. 4—Cost of Generating and Distributing Power, and of Maintenance of Power Equipment, in Per Cent of Operating Expenses and Gross Revenue

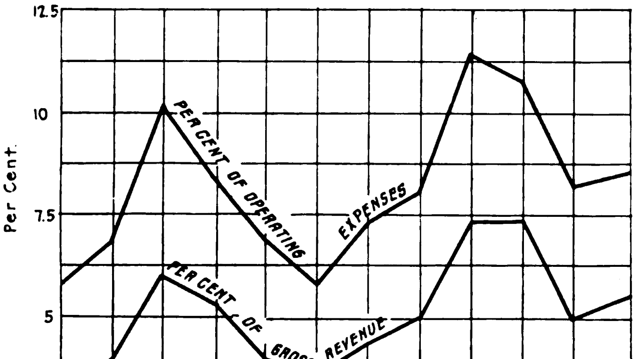


Fig. 5—Cost of Maintaining Way and Structures, in Per Cent of Operating Expenses and Gross Revenue

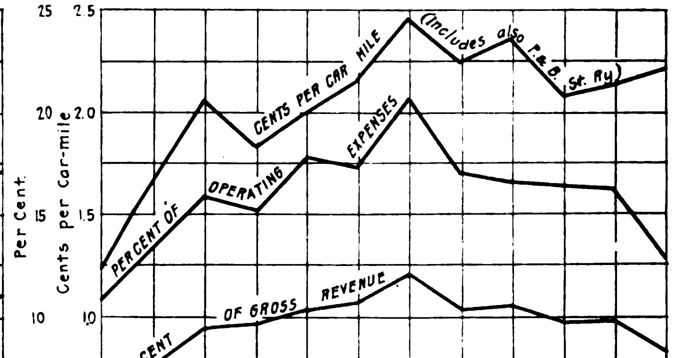


Fig. 6—Cost of Maintaining Rolling Stock, in Per Cent of Operating Expenses and Gross Revenue

OPERATING DATA IN GRAPHICAL FORM FROM BEAVER VALLEY TRACTION COMPANY SHOWING UPWARD TREND OF COSTS OF ELECTRIC RAILWAY OPERATION costs represented in the vertical scales are computed from the following accounts in the standard classification: Injuries and damages—No. 82 (*A* to *F* inclusive); overhead lines—Nos. 17 to 24 inclusive; maintenance, generation and distribution of power—Nos. 30 (*A*) to 31 inclusive, and 48 (*A*) to 56 inclusive; way and structures—Nos. 1 to 16 inclusive and 25; equipment (rolling stock)—Nos. 29 (*D*), 32 (*A*) to 36 inclusive, 38 to 41 inclusive, 66, 67 and 88. In Fig. 6 there has been included a graph of maintenance cost of rolling stock in cents per car-mile, as most equipment men are in the habit of comparing costs on this basis.

COMMUNICATIONS

Car Nosing

PHILADELPHIA HOLDING COMPANY
PHILADELPHIA, PA., July 30, 1917.

To the Editors:

I have read with much interest the article by S. A. Bullock, entitled "Car Nosing," that appears in the July 28 issue of the JOURNAL. My observation, based on several years of experience in the truck business, is that nosing is a negligible factor with well-designed and carefully-built double trucks, whether of the swing-bolster or rigid-center type. But some designs of trucks might be built by a watchmaker and still exhibit an excess of nosing because the design itself invites such trouble. A zeal for "flexibility" and "accommodation to the track" is at the bottom of the difficulty with these trucks. Such trucks do not avoid or minimize the effect of low joints and other track irregularities. On the contrary, they seek out these defects and register them in the car body—and the passenger body—with exaggerated emphasis.

The foregoing remarks apply to double trucks and to the so-called maximum traction trucks. There is another type from which no amount of gray matter devoted to design nor of care applied to construction will eliminate the objectionable features of nosing and galloping. I refer to the rigid single truck.

This truck was carried over from the four wheels and pedestals that formerly supported the horse car, and in the earlier days of electric traction its inherent unsuitability was not so noticeable—especially since the time when the modern "Public be pleased" policy was only a minor aim with railway managements. But the steady increase of schedule speeds and of car-body lengths soon brought to light the inherent limitations of the rigid single truck, and until the double truck came to be applied to city cars there was nothing to do but let "nature caper"—and "nose."

The one-man car is now the outstanding object in the electric railway industry. It promises to substitute black ink for red on the monthly statements of many a property. Are its full benefits to be realized when mounted on rigid single trucks? I believe they are not. A longer wheelbase than can be provided with such trucks is imperative.

One-man cars with 28-ft. bodies mean an overhang of 10 ft. 6 in. at each end when mounted on rigid single trucks. This involves a total overhang three times greater than the distance between true centers of support. Unless, meantime, the laws of nature have kindly revised themselves to meet the situation the earlier experience will be repeated and the unavoidable bad riding qualities of such equipment will be exemplified anew—if, indeed, they are not enhanced by modern speed demands and larger car bodies.

J. R. DICKEY.

Publicity Men and the Association

THE DENVER TRAMWAY COMPANY
DENVER, COL., July 27, 1917.

To the Editors:

Referring to the recent meeting of electric railway publicity men at St. Louis, I would like to ask that a small misunderstanding be cleared up.

In justice to the American Electric Railway Association it should be stated that none of the publicity men who first boosted the meeting, including the writer, had any intention in breaking away from the association and forming a separate organization or of affiliating with the Associated Advertising Clubs. There was no opposition whatever, so far as I know, to becoming a section of the A. E. R. A. This is particularly true in view of the very kind invitation from President Storrs and Secretary Burritt, received before the convention, to affiliate with the association.

When I suggested that the publicity "Round Table" be held at the Associated Advertising Club's convention in St. Louis, it was solely because the time and location of that convention seemed most desirable.

The fact that I, personally, have rather firm opinions about the location of the A. E. R. A. convention meetings and the desirability of publicity men not being so steeped in the worries and trials of the more technical operating departments of the business that they get a badly biased slant to their communication between the railway and the public has nothing whatever to do with affiliation and co-operation with the A. E. R. A.

I was in the midst of a two months' siege of illness when the St. Louis convention took place and consequently did not attend. Otherwise, the misunderstanding on this subject would have been settled then.

J. C. DAVIDSON, Publicity Manager.

Woman Labor on French Tramways

PONTOISE, FRANCE, July 4, 1917.

To the Editors:

Most of the French tramways have had to employ women to fill the vacancies in subordinate positions caused by successive calls for men since the beginning of the war. Women were first employed as conductors, and the results have generally been excellent, although the Compagnie Générale Française de Tramways (operating the lines in Havre), does not consider their work as satisfactory as that of men. Some other important companies are of the same opinion, although they have no special criticisms to make. In many commercial lines it is considered that the women do better work than men, notably as cashiers. The employment of women as "motormen" has come about only recently because the authorities were long opposed to it.

Certain large companies, for example, the Compagnie Générale Parisienne de Tramways, as early as the spring of 1915 requested authorization to employ women for electric tramway platform work, but it was not until eighteen months later, under pressure of circumstances and notably on account of the complete shortage of masculine labor, that the authorities finally recognized the necessity for permitting it. In a number of large cities in the province the hesitation had been of shorter duration because congestion of traffic was much less than in Paris and on this account the danger of accidents was smaller.

All of the Parisian railways, except the Paris-Arpajon Line, have employed women on the cars for more than six months, and they have given general satisfaction. The results obtained have very often exceeded expectations, because on certain lines (Compagnie Générale Parisienne de Tramways, for example) the women employees have by their alertness averaged fewer accidents than their masculine colleagues. These results can be attributed to the very rigorous examination required of candidates. In fact, they are subjected to two medical examinations, the first directed particularly to determine their physical capacity and soundness; the second covering their psychological capacity, notably the strength of their faculties of attention and courage. The candidates' apprenticeship is also conducted with particular care. LUCIEN PAHIN.

A Publicity Bureau for the Association

DETROIT UNITED RAILWAY
DETROIT, MICH., Aug. 1, 1917.

To the Editors:

Unless I have misread Mr. Burroughs of Baltimore, Mr. Carraway of the Southern Public Utilities Company, as well as my own views, we have been discussing the advisability of an organized department of publicity within the American Electric Railway Association because of our relationship with the public—not because of our relationship with our fellow employees in the transportation business.

It appears to me, therefore, that Mr. Brashears, director of the Public Utility Publicity Bureau of Chicago, in going to the valiant defence of the privately-operated publicity bureaus, in your issue of July 28, was fighting a man of straw with a war tank.

There come to my desk many interesting public utility magazines of varied formation intended wholly for distribution among the working force of the company circulating the respective publication. It is probable that the genius of the Chicago bureau is to be found in several.

But these are not for the public; they are not circulated among the patrons for the reason they do not discuss relationship with the car riders.

Mr. Brashears is correct in stating that courtesy and loyalty are the same in all places. The Sermon on the Mount reads just the same in Detroit as in wicked Chicago and probably instills its wonderful lessons as well in one place as another, although we are a busy city. Job-lot lessons and patent inside sermons may very nicely fill the bill in inculcating proper behavior, honesty and those other qualifications that are company employee problems. The thing to bear in mind is that these are not the public's problems; they are wholly company affairs. The public is not concerned as to just what lessons are given to motormen, conductors, switchboys, cashiers, trackmen, engineers and the host of other employees.

The passenger wants results as affecting him. Or he wants to know why.

The public deals with the company. The public holds the company, not the individuals, responsible and the only way the company can place its case before the public is, in lieu of individual talks, to have some method of publicity that will reach the public, whether by dodgers, by newspaper space, by posters in the cars or by publications distributed through the cars is a matter of the company managements to decide.

It is quite possible that through your privately distributed employees' publication you have converted Motorman Jones to the belief that your company is entitled to 6-cent fares, but how are you going to put up the arguments and convince John Doe the patron that he ought to pay more for the ride?

As you know, Mr. Editor, I have long and vigorously argued for the formation of a publicity section of the national association along the same general lines as are the existing sections. Whether there should be a distinctive bureau or whether the bureau work should be done in connection with the present organization is a mere detail. I do not for one minute imagine that any member company of the national body has any idea that the bureau work, if a plan is carried out, will do the writing for individual companies. Its work will surely be limited to the gathering and giving of information just as is done now. I fail to see where it is more "unfair and unwarranted" to exchange publicity ideas and information than it is to exchange ideas and information concerning pay-enter collections, methods of track construction and the thousand and one other things discussed between company members either directly or through the association headquarters. It is for such purposes the association is organized.

A. D. B. VAN ZANDT,
Publicity Agent.

Color Scheme of Signal Indications Changed on Pennsylvania

The new color scheme of signal indications, by which white lights will be eliminated altogether, was recently placed in effect on all lines of the Pennsylvania Railroad east of Pittsburgh. Owing to difficulty experienced in obtaining deliveries, nearly a year of preparatory work has been required to make this change possible.

The decision to eliminate white from the signal color scheme was reached on account of the increasing use of white lights of various kinds in buildings, driveways, roads and streets close or adjacent to the railroad's right-of-way. Under the new plan, green will replace white for "clear" or "proceed." "Caution" will be indicated by yellow. Red will mean "stop," as heretofore.

In addition to changing the glasses in all the semaphore signals, the following devices have been altered to conform to the new plan of color indication:

Marker lights on the rear of passenger and freight trains; switch lamps and targets; markers for track tanks; "slow" signs; "resume speed" signs, and hand lamps at interlocking and block signal stations.

No changes have been made in those short portions of the line which are protected by "position light" signals, the longest of which is the electrified section from Philadelphia to Paoli, Pa.

A Talk on Capitalization

Denver Tramway Company Issues Pamphlet for General Circulation, Outlining Some of the Elements of Railway Capitalization

SOME very interesting facts on the subject of electric railway capitalization, presented in rather a popular way, are given in a pamphlet just issued for general circulation by the Denver Tramway Company and entitled "Tramway Capitalization." The pamphlet, which contains twenty-four pages, begins by a reference to the time when "public utilities used to figure that their customers ought to get the Grand Prix Award for cantankerous dispositions and unreasonableness in general, and their customers had it all doped out that the 'soulless corporations' were corrupt and contemptible tyrants, ever hunting for chances to step on the necks of their customers, the people." In those days, politics played a large part in the affairs of public service companies, to the detriment of both the companies and the people, but those days have passed and the relations of the corporations and the public are coming more and more to be on a business basis, to be decided by facts and figures and not by "political flimflam and ossified oratory."

The pamphlet then gives a short sketch of a discussion at an informal meeting of some business men in Denver on the subject of "Overcapitalization." The statement was made by one that the Denver Tramway Company was overcapitalized, but when an official of the company, who happened to be present, began to point out the extent of the property which was not prominently in public view, the cost in dollars of some of the recent improvements and other facts which the original speaker had not considered when he made his charge, the criticism was withdrawn.

Figures are then quoted of recent appraisals of different electric railway companies. Detroit, Toronto and Minneapolis are mentioned as cases where recent appraisals showed the value of the company's property far in excess of the capitalization, and the San Francisco Municipal System is mentioned as an example of a brand new city transportation system which owns no power plant, no central loop, no central carhouse, no office building or represents no investment in older form of transportation but, nevertheless, cost to build $125,300 a mile.

The pamphlet is illustrated with a number of bright "thumbnail" sketches, and copies were sent to the State and city officials, members of the Legislature, the entire staff of each Denver newspaper, editors of all the Colorado newspapers, and members of different civic bodies.

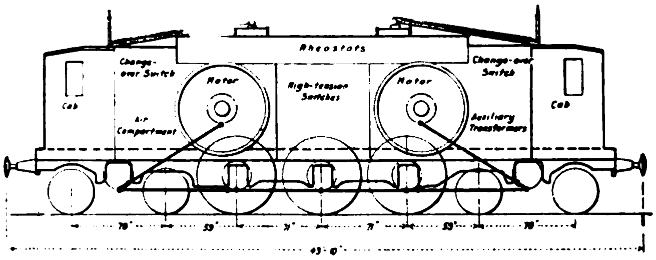
Subway Construction in Spain Begun

On April 23 work on the subway system in Madrid, Spain, was begun in the Puerto del Sol, which is the center of the Madrid business district. The engineers in charge propose to begin similar construction work soon in eight or ten additional places along the line of the proposed subway and it is calculated that the total number of workmen engaged in this connection will approximate 3000. The period within which it is expected the construction of the subway proper will be completed is fixed at eighteen months from the date work was first commenced and it is expected that another six months will be occupied in laying the rails and completing the stations. American manufacturers who are interested in this opportunity for the sale of their products should communicate in Spanish with the engineer in charge, sending such communications through the United States consulate at Madrid to insure their prompt delivery.

The New Three-Phase Locomotive for Italy

Provision Is Made for Four Running Speeds by Using Cascade Connections and Changing from Six to Eight Poles

MANY interesting features have been introduced in the new type of high-speed, three-phase locomotives recently furnished to the Italian State Railways by the firm of Brown, Boveri & Company of Milan. The traffic for which the engines are designed includes only fast service over heavy gradients and sharp curves, the maximum speed of 62 m.p.h. materially exceeding the average normally found on three-phase railways in Europe. In accordance with Italian practice the three-phase system under which the new locomotives are operated has a voltage averaging from 3000 to 3700 and a frequency ranging between 15 and 17 cycles. Two overhead wires serve as conductors for two of the phases, while the rails supply current in the third phase.



ITALIAN STATE RAILWAYS LOCOMOTIVE—ARRANGEMENT OF RUNNING GEAR AND ELECTRICAL EQUIPMENT

The locomotive has a gross weight of 102 tons and a weight on drivers of 55 tons. Two motors are provided and these operate three coupled pairs of driving wheels 64 in. in diameter. At each end of the frame there is a swiveling four-wheeled truck. Four synchronous speeds are provided. These are obtained by connecting the two traction motors in tandem or in parallel as well as by changing the number of poles. With a mean frequency of 16.7 cycles the following schedule shows the arrangements for each speed:

23 m.p.h.—Motors in tandem with eight poles.
31 m.p.h.—Motors in tandem with six poles.
47 m.p.h.—Motors in parallel with eight poles.
62 m.p.h.—Motors in parallel with six poles.

In all connections for changing poles the stator of the primary motor is invariably connected to the line direct. The secondary stator may either be fed direct from the line, or else, by putting the secondary rotor in series with the rotor of the primary motor, the stator of the second machine carries induced current. Both motors have their stator windings star-connected when they work with six poles in tandem and with either six poles or eight poles when they are in parallel. On the other hand, when the motors are running in tandem with eight poles the windings of the secondary stators are changed over to delta connection, so as to prevent the tension on the adjustable resistance exceeding 2000 volts during the starting period. The alteration in the number of poles is produced by suitably inter-connecting the windings, while the system remains permanently three-phase. This is in contrast with the method employed in the earlier types of Italian locomotives, in which, by suitable transformations, current was made either three-phase or two-phase for speed regulation.

A tractive effort of 20,000 lb. is exerted by the new locomotive at the two lower speeds, increasing up to about 21,000 lb. at the third speed and diminishing to 13,500 lb. at the maximum speed. At starting the maximum value of the tractive effort may reach 27,000 lb. The efficiency of the motors at the high speed is 93.5 per cent with a power factor of 85 per cent.

Provision of four running speeds in spite of the complication was considered to be desirable in order to deal with both express and local trains in heavy and light traffic. Apart from the time-table requirements, however, there were important technical reasons for the adoption of four normal speeds. Had there been only two speeds the losses in the rheostat would have been twice as great as those existing with the present arrangement. This would have entailed not only a considerably lower efficiency when the stops were frequent, but also the inconveniences of larger resistance units.

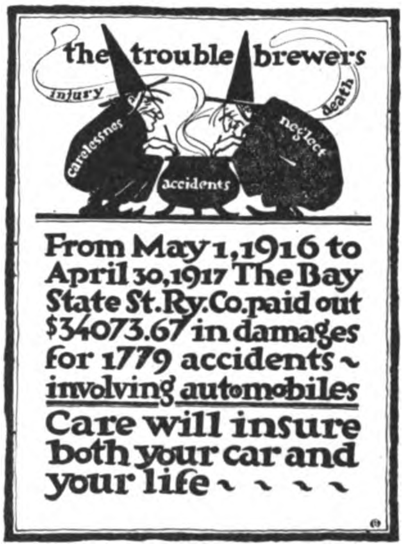
One of the main objects kept in view in the general design of the engine, which includes the use of a separate jackshaft for each motor mounted at the end of the locomotive frame and connected by horizontal coupling rods to the three pairs of drivers, has been to locate the traction motors above the frame and thus to raise the center of gravity of the engine. This position of the motor necessitated the transmission of power through inclined connecting rods to the jackshaft. In the direct-current locomotives used on some of the other lines of the Italian State Railways, the position of the jackshaft rendered it impossible to have a less inclination than 60 deg. for the connecting rod, but in the present three-phase design this inclination has been reduced to 33 deg. A material advantage arises from this reduced inclination since the stresses on the jacket-shaft and bearings are proportional to the sine of the angle involved.

The rods that connect the cranks on the motors with those on the jackshafts are provided with knuckle pins near the lower ends and single bearings are installed on the jackshaft cranks, these coupling together the diagonal motor rods and the horizontal main rods extending between the jackshaft and the first pair of drivers. Thus all of the connecting rods on one side of the locomotive are in the same plane. Spherical bearings are provided on all rods.

The essential difference in the electrical equipment of the present type of locomotives in comparison with former types used in high-speed service on the Italian Railways consists in retaining three-phase operation at all speeds, as before mentioned, instead of transforming from two-phase to three-phase at various speed values. Phase changing transformers are therefore not required, but on the other hand there is much additional apparatus for altering the number of poles. A further point of difference is the arrangement, when running with the motors in tandem, of coupling up two rotors in series, in preference to feeding the stator of the secondary from the rotor of the primary motor. Lastly there is the use of a metallic resistance instead of a liquid resistance for starting and for speed regulation.

Campaign to Reduce Collisions with Automobiles in Boston

The Bay State Street Railway is using some new posters this month in an endeavor to impress upon automobile owners the importance of co-operation in reducing collision accidents. The first poster, reproduced herewith, was placed a few days ago on the bulkhead windows of all Bay State cars, two posters to a car. These were to be kept up two weeks after which the hand lettering was to be routed out from the plate and new facts and figures substituted. The company expects to keep after the automobile drivers until school opens in the fall, when a campaign with school children will be inaugurated. The details of the children's safety campaign have not yet been worked out, but the company's larger posters will probably be reproduced on cards and distributed to the children in the schools. The automobile posters have been used in waiting rooms, etc., as well as in the cars, and copies are being sent to all the newspapers published in the Bay State territory, together with a letter from President P. F. Sullivan.



From May 1, 1916 to April 30, 1917 The Bay State St. Ry. Co. paid out $34073.67 in damages for 1779 accidents involving automobiles Care will insure both your car and your life

POSTER FOR USE IN BOSTON SAFETY CAMPAIGN
(Size 14 in. x 18 in.)

AMERICAN ASSOCIATION NEWS

"System" Discussed at Manila

At a meeting of Joint Company Section No. 5, held in Manila, P. I., on June 5, J. W. Earle, assistant to the auditor, read a paper on "System." In it he illustrated the importance of organization and an orderly and systematic personal and business life conduces to efficiency and success. Thirty-nine members attended the meeting, and three railway men and two lighting men were elected to membership.

Transportation Terms

During the past season the company sections have been considering a list of definitions of electric railway terms compiled for the purpose in the association office. These had been received from several committees of the Transportation & Traffic Association. Seven of the sections have now sent in comprehensive reports on these proposed definitions, assisting materially in the attempt to clarify the phraseology in an important division of the electric railway field.

EQUIPMENT and MAINTENANCE

HAVE YOU A GOOD WAY OF DOING A JOB?
—*Pass It Along*

In This Issue:
S. L. Foster Advocates Prevention Rather Than Cure in Overhead Work

Taking Down Feeder Cable by Rapid Means

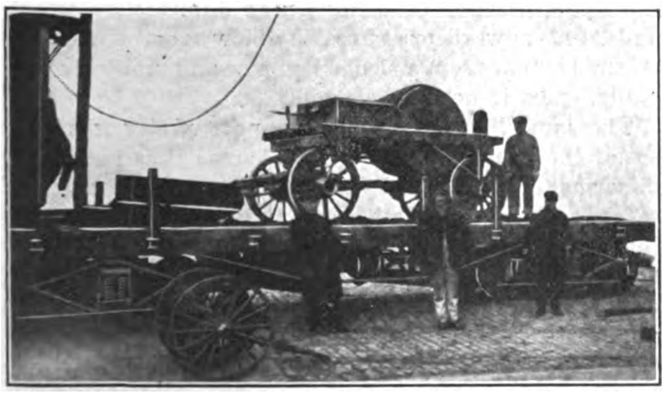
BY E. H. HAGENSICK
Superintendent of Electric Lines, Omaha & Council Bluffs Street Railway, Omaha, Neb.

Taking down of old cable on the Omaha & Council Bluffs Street Railway has been greatly facilitated by the use of a home-made motor-driven cable reel, which is mounted on an ordinary wagon running gear for easy transportation from one location to another. An old street railway motor is supported at the front of the built-up frame and connected by a train of gears to the reel mounted just behind the motor. The reel is large enough to take 1500 ft. to 2000 ft. of 500,000-circ. mil. cable at a time.

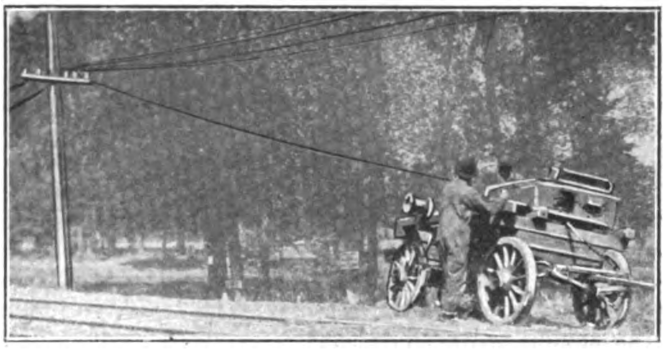
When any length of cable is to be removed it is taken off the insulators and laid on the crossarms. The end of the cable is fastened to the reel, and the motor, supplied with energy from the trolley, is used to pull the cable in and wind it up. The cable is allowed to slide over the crossarms in some cases, but usually it is pulled over idlers fastened to the insulator pins, snatch blocks being used on curves.

For cases in which it is not intended to put up the cable in another location at once, a scheme has been arranged for utilizing this same motive power to wind the cable onto a storage reel. For this purpose two channel arms, extending out behind the wagon, are fastened on the rear of the wagon frame. These support between them a shaft on which this storage wheel is mounted. This shaft is connected by a long chain and sprockets to the motor, and the cable may thus be wound directly on the storage reel.

This outfit also finds many other uses in the line work. A "niggerhead" is mounted on the end of the reel shaft, and is used for raising and setting steel poles, and any gin-pole work, etc. With these various uses the outfit comes into play frequently. By virtue of this, and its great time-saving features, the investment tied up in it is readily justified.



POWER-DRIVEN CABLE REEL MOUNTED ON WORK CAR



REELING UP FEEDER CABLE

Keep-Up versus Pick-Up in Overhead Maintenance

Better to Keep Up Rather than to Rush Out and Pick Up the Overhead Construction

BY S. L. FOSTER
Chief Electrician United Railroads of San Francisco

Maintenance of the trolley wire in approximately continuous service consists either in extremely rigid and repeated inspections and renewals, or in the use of many emergency crews with their numerous expensive essentials, or in some combination of these two.

In cities where great extremes of temperature exist and destructive sleet storms occur possibly many emergency line crews are justified; but in San Francisco, where there are 250 miles of single track with about 600 heavy four-motor cars and the most numerous and steepest grades of any city in the world, not even one day-emergency line crew is maintained. The numerous Eastern crews, idle much of the time, therefore seem inefficient to us. In San Francisco the policy has been to keep up rather than to rush out and pick up the overhead construction. We also expect linemen to do only line work.

The existence of idle men at the scattered houses of a city's fire department is justified since about 75 per cent of the fires are of incendiary origin and no amount of house-to-house inspection could produce results likely to justify the cost of the work. The failures of overhead wires, however, are seldom or never of malicious origin, and to a great extent they can be anticipated by continual, conscientious inspection and renewal of the worn parts.

Three crews of linemen, two with horse-drawn Trenton tower wagons and one with a tower car, cover the 250 miles here and attend to all the construction and maintenance, except the pole setting and painting, on which a small crew of Italians is employed. These linemen are never idle winter or summer, being continually occupied in going over and over the lines according, roughly, to a car-mileage basis. Their work is almost exclusively done in the daytime. The foremen call up the office by telephone at regular short intervals, and one of these crews is usually nearer a reported emergency call and more alert than if the men had remained in the quarters waiting for the call. On exceptionally rainy days they overhaul the construction in and about the various carhouses of the company. A three-man night emergency crew is kept at headquarters from 5 p. m. to 7.30 a. m., but the men sleep calmly through much of their watch more often than otherwise. All their repair work is done with a high-speed tower car.

On five days of the week the three day crews inspect, overhaul and repair span by span the lines assigned them. On Saturdays two of the crews in line cars cover all the outside lines in a general patrol and inspection. On Sundays and holidays two small day emergency crews cover ten hours in two eight-hour overlapping watches and usually sit about idly through the day or polish up their equipment.

Possibly this everlasting combing and recombing may cost a bit more sometimes than the laissez-faire and pick-up method would, but the interruptions to the revenue car service are certainly kept down to a reasonable figure.

In the last month of available records, that of May, 1917, the number of trolley-wire breaks causing interruptions to the service was 1.5 per million car-miles. There were a few more breaks at the ends of section insulators, but, being held up by the single-end strain ears, the trolley wire did not fall to the ground and no interruption to the car traffic resulted. Two of these three trolley-break interruptions were from burn-offs of full-sized wire by foreign wires crossing them.

Certain features of San Francisco practice may explain the above policy and results. There is neither snow, sleet, ice nor lightning to contend with. The strain insulators used are made of porcelain under compression, are incombustible and almost infallible and have a long life. The most casual visual inspection will reveal their physical and electrical condition, whereas the more expensive composition strain insulators used in the East have only a limited life and their electrical condition cannot be learned except by an electrical test.

There are no such things as "hot" iron poles in San Francisco, no matter what the weather, as there are always two, usually three, and very often four, insulators in series between the trolley wire and the pole. No solder is used on the trolley wire except for a few short single-end strain ears installed just beyond the ends of section insulators.

Home-made 15-in. clinch ears and solderless splice ears, holding each trolley wire end by one set-screw, simplify the repairs. Cheap steel replaceable wearing plates, often made from the master mechanic's waste from car construction or repairs, are standard for the under side of frogs, and cam-tip ears for the ends of frogs. Section insulators and crossings are also looked upon with favor as reducing the number of unexpected breaks in worn as well as nearly full-sized hard-drawn trolley wire at the ends of these overhead devices. Phono-electric wire is found economical at points of greatest wear and is being utilized in increasing amounts.

Electric track-switching devices are all connected so as to have ample drainage directly to the sewer, and these devices, together with electromagnetic signaling apparatus and automatic sectionalizing switches, are given a thorough overhauling each month by the shop crew.

When worn trolley wire is taken down it is annealed and used in the fabrication of special underneath rail bonds so that painstaking and possibly dangerous economy in the renewal of worn trolley wire is not so important as it would be if the wire taken down had to be sold as scrap. The anchor guys from wood poles to ground are made of ½-in. extra-galvanized steel strand, twice paint-dipped. The diameter of span wires is ⅜ in., and that of pull-offs 5/16 in. and ¼ in. No trolley strain guys are used. Nothing smaller than ¼-in. strand is employed anywhere, nor is any solid iron wire used.

During the linemen's strike, when great success was being achieved by us with green men, one of the strikers ruefully admitted the explanation and incidentally complimented the department when he said: "You put up your work too damn strong." The excess in size of the strand used here over usual practice is on account of our damp climate and proximity to the ocean. This difference, however, forms only a trifing increase to the total cost of constructing an electric road and is well justified as a premium in insuring freedom from interruption to revenue traffic.

A modern double-track trolley road may easily cost $100,000 per mile, with the overhead construction costing $5,000 of the total, or 5 per cent. Of this $5,000, the span wire, if ¼-in., which is used in many places, will cost, at 5 cents per pound, $12.65. This is one-quarter of 1 per cent of the 5 per cent or one-eighth of 1 per cent of the whole. To substitute ⅜-in. for the ¼-in. will increase the cost of this $100,000-per-mile road just $20.38 or one-fiftieth of 1 per cent. In saving this one-fiftieth of 1 per cent by retaining the ¼-in. strand for span wires and maintaining emergency crews to rush out to repair it when broken by wild trolley poles, instead of adopting ⅜-in. wire for this exposed part of the overhead and practically eliminating broken spans, seems a very short-sighted policy, even if the lost income from interruptions to the revenue cars and disorganization of schedules be not considered. With the latest practice of using heavy 6-in. trolley wheels and 30-lb. upward pressures the blow from a wild pole resembles that from a sledge hammer and really justifies ⅜-in. spans if nothing else does.

The same line of argument applies pretty generally to all the overhead construction, since it is subject to abnormal stresses and justifies abnormal factors of safety both in construction and maintenance. Considering the fact that the overhead costs only 5 per cent of the initial cost of the construction of the whole road, and absorbs less than 1 per cent of the company's maintenance expense to keep up, and more especially considering the deadly effect its failures have in reducing the company's cash income and in rendering futile the far heavier expenditure for platform men, power generation and maintenance of tracks and cars, it is plainly an extremely important element in the operation of the road and fully earns these factors of safety.

When a generator burns out it can be disconnected from the busbars and another thrown on the line. When a car breaks down it can be withdrawn from the street and another one brought out. If a rail or a crossing breaks, the operation of the service can be continued, but when a trolley wire breaks the whole system of interdependent elements of operation is paralyzed.

The wisdom of an engineer of many years' experience is apropos here. "If you do a cheap job," he said, "you receive very little credit and get condemned forever afterward as the weaknesses in the construction develop. If you do a good job, you may get a going-over on account of the cost at the time, but you never hear of that piece of work again."

It should be added that some of the few men around the linemen's quarters normally engaged on design, construction or upkeep of appliances, concrete poles, electromagnetic block signal devices, electric track switch parts, etc., are competent to tie up a fallen wire temporarily, and occasionally do this while awaiting the arrival of the line crew. The efficient inspectors of the operating department and busy mechanics from the various carhouses also are of great assistance in emergencies in maintaining the car schedules until the linemen come. In other words, everybody works all the time here except the Sunday and night emergency crews. These emergency men are intelligent and energetic, but these units are inefficient simply because there are not enough breakdown jobs to keep them occupied all the time.

This system of perhaps overdoing the keeping up of the overhead also makes it possible to take all the members of this department off the maintenance work for weeks at a time and concentrate them on a construction job without the car operation suffering appreciably. The necessity for intermittently putting on and laying off men is thus eliminated.

Track Maintenance in War Time*

High Cost of Material and Labor Requires Conservation and the Introduction of Many Labor-Saving Devices

BY P. NEY WILSON
Roadmaster New Haven Division the Connecticut Company, New Haven, Conn.

When one stops to consider that the maintenance of way costs are often 20 per cent of the total operating expenses of a railway, he is convinced that the importance of this department is generally underestimated. Way engineers and men of the field delight in construction work, but the steady grind of track maintenance is not so pleasant, although many times it is of greater importance; and it should be emphasized that careful thought and planning in the maintenance service saves much trouble and money in the end. Also the abnormally high cost of labor and material at present makes it necessary to resort to labor-saving machinery and new methods in order to meet the pressure along lines of reducing operating expenses. With these facts in mind the writer desires to mention briefly some new developments in maintenance and construction of electric railway tracks.

The conservation of old rails in newly-paved streets, intelligently accomplished, has meant the saving of many dollars to some companies. In the past it has seemed unwise to allow old rails to remain in a newly-paved street, particularly on account of the conditions of the joints. Even if they had been formerly welded, the grinding necessary to remove depressions in the rail ends would leave a sharp vertical curve in the surface at each joint, and these cups would quickly cause loose joints, due to the wheel loads dropping into them. However, with the aid of the arc-welding machine, the cupped rail ends may be built up, ground to a true surface by rotary and reciprocating track grinders; and so long as the rails remain tight, a good joint may be maintained. Innumerable repairs may be made on frogs, switches, curved rails, broken rail joints, etc., where in the past replacement was necessary. Instead of discarding a broken switch or frog, it is frequently possible to repair it by welding, consequently avoiding the expense incident to the purchase of a new piece. It has been definitely shown that in four weeks' constant use the saving effected by this machine has paid for itself outright. The electric arc-welding machine is not a cure-all but it is certainly a valuable machine to any electric railway company.

The kind of rail joint used and the character of the foundation on tangents in paved streets almost entirely governs the life of the structure except, of course, those removals due to relocation, new pavement, etc. The life of a T-rail in paved streets is practically indefinite if the foundation is permanent and the tracks made jointless by welding. These features are worthy of any engineer's best efforts, for a real solution of the problems connected with them insures practically an ideal track.

Since there is no mechanical joint connection that will absolutely hold the rail ends rigidly to the surface and alignment for an indefinite period, one is led again to the consideration and use of welded joints when laying new track. It is also good practice to grind all joints immediately after a track is laid, assuring a smooth even joint at the beginning, since loose joints and attendant pumping action of rails on pavements are avoided when the ends of the adjoining rails are at the same elevation. The International twin steel tie supported by either ballast or concrete foundation presents many good features. It should be emphasized that more care be given to the bearing power of the subsoil because, as previously stated, the foundation is very important. Foundations should be drained wherever possible.

A saving of fully 50 per cent in cost may be attained by substituting pneumatic tie tampers for hand labor. This type of tamper is fast gaining prominence. The introduction of machine drills many times allows a saving in cost of 75 per cent over that of hand labor and the use of a power shovel in excavating for track work as compared to hand labor shows a saving in favor of the power shovel of at least 60 per cent.

While the removal of snow from city streets has little to do actually with the construction and maintenance of track, it has a very great influence on the operating expense, and is one of the responsibilities of the maintenance-of-way department. Through the co-operation between the city of New Haven, Conn., and the Connecticut Company, permission is granted to dump snow into the sewers in specified locations. This method of disposal is fully 30 to 40 per cent more efficient than the ordinary method used.

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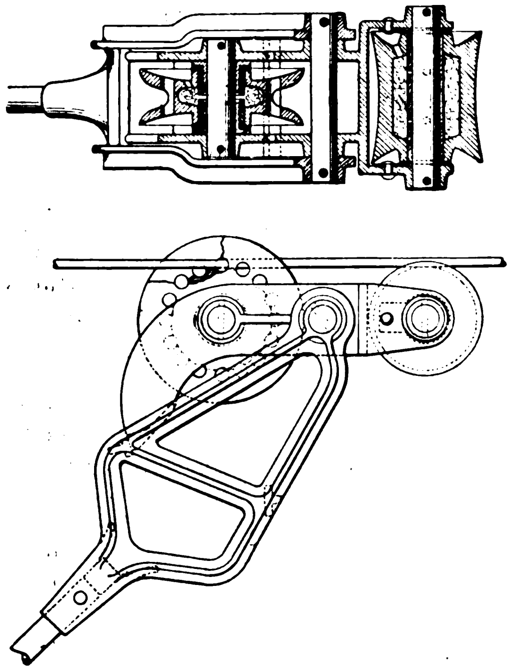
*Abstract of a paper read before the Connecticut Society of Engineers.

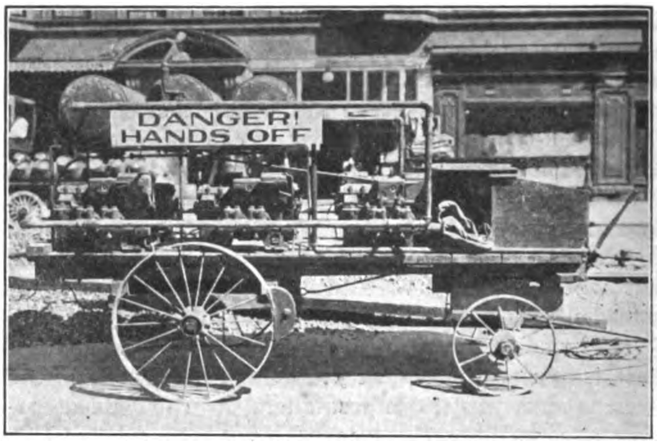
Double-Wheeled Trolley Harp on Cleveland Railway

A current-collecting device which has two wheels, one of which may be used for ice cutting, is shown in the accompanying drawings. It consists essentially of a pilot wheel and the trolley wheel proper. The pilot wheel has the V-shaped periphery of an ordinary wheel, whereas the main current-collecting wheel or roller has only a slightly concave surface. The two wheels are supported in an equalizer frame which is pivoted on a shaft in the harp. Current is collected by both wheels. The pilot wheel serves primarily to keep the trolley on the wire while the roller insures a good contact when the trolley is traveling over special work. The frame rotates somewhat around the pivot shaft to allow the two wheels to follow sudden changes in the elevation of the wire. The movement is limited by stops on the harp, but the tendency is to force one wheel against the wire when the other wheel bounds away.


TWO-WHEELED CURRENT-COLLECTING DEVICE, CLEVELAND (OHIO) RAILWAY

The pilot wheel is removable and may be replaced by an ice-cutting wheel. This is of the same shape as the pilot wheel, but it has a number of transverse holes at the base of the groove which bring sharp cutting edges in contact with the wire and strip the ice from it. The ice-cutting wheel is insulated from the supporting frame, leaving the back roller as the current-collecting wheel.

This device was invented by James Scott, superintendent of overhead, Cleveland Railway, and has been used to some extent on this property.



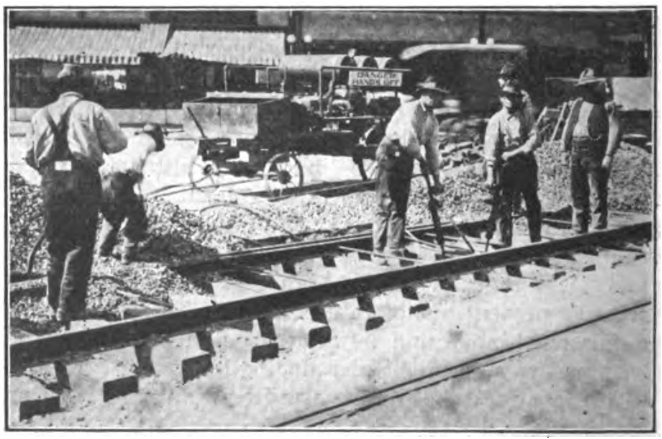
HOME-MADE PORTABLE AIR COMPRESSOR FOR USE WITH TIE TAMPERS

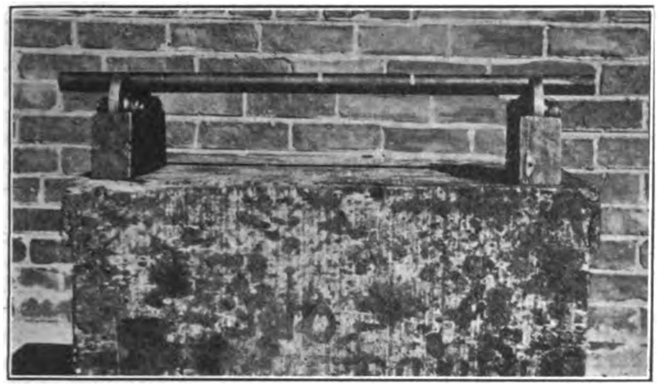
Home-made Compressor Outfit Increases Tie Tamper Savings

When the matter of using pneumatic tampers was brought to the attention of the San Francisco-Oakland Terminal Railways, the first cost was a prime consideration owing to the widespread need of retrenchment. It was happily suggested, however, that the cost of the compressor, say $500 or more, could be saved by using some old railway compressors.

The suggestion was carried out by mounting a battery of six 11-cu. ft. capacity pumps on a truck as shown in the illustration. The actual capacity required for the two Ingersoll-Rand tampers used is only 32 cu. ft., but double capacity was installed because the old machines were not good for continuous service at more than 50 per cent loading. These tampers have proved particularly successful in tamping heavy special work. On this railway the machines have allowed six men to do the work which formerly required sixteen. Of the six men one is stationed to flag vehicles while another handles the connection to the trolley wire, leaving the remaining four to do the tamping.

With labor at $2.50 a day, the relative costs are: Air tamping, $15; hand tamping, $40—a saving of $25 a day. As a matter of fact the tampers paid for themselves within ten days. These tampers are also used for flat tamping of ballast in advance of concreting. They are fitted with chisels when wanted for clipping concrete and with cutters when used in stripping out asphalt.


TIE TAMPING AT OAKLAND, CAL.



SHAFT MOUNTED FOR ECCENTRICITY TEST

Device for Testing Bent Axles and Shafts

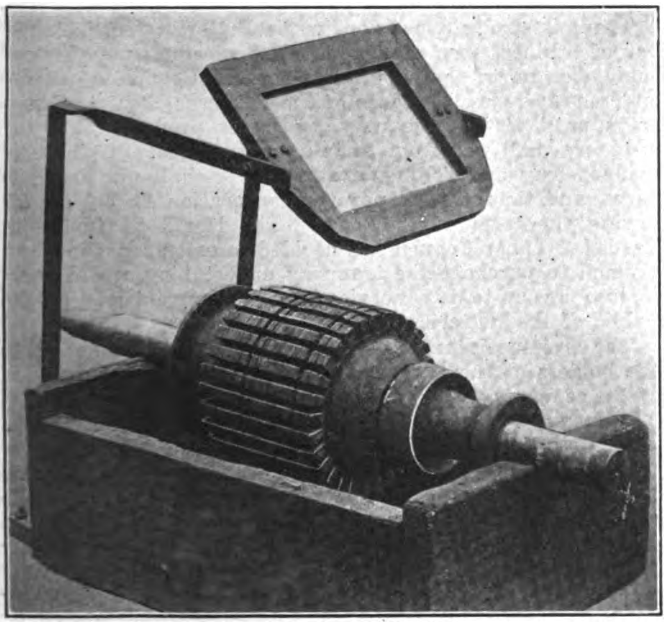
Instead of using the customary method of putting armature axles and the like in a lathe to determine whether or not they are bent, W. C. Duggan, machinist, Knoxville Railway & Light Company, Knoxville, Tenn., uses the device shown in the accompanying illustration, which he finds accomplishes the same purpose in much less time.

Two pairs of accurately machined 3-in. wheels are mounted on two blocks, and the axle or other shaft to be tested is placed so that it is supported on each end by a pair of wheels. It is then rotated by hand and tested by holding a piece of chalk close to the revolving shaft.

Wireglass Guard Which Did Its Bit for Safety First

BY HENRY MEYER
Master Mechanic Beaver Valley Traction Company, New Brighton, Pa.

In grinding out the laminated cell slots of armatures the grinding wheels must be of light construction on account of the narrowness of the slot, and this makes them liable to frequent breakage. A guard consisting of a wooden frame which holds a pane of wireglass has been rigged up as shown in the accompanying illustration. As will be seen, the glass is cracked, showing that it has already done its bit in stopping a broken section of grinding wheel.



GUARD FOR USE IN GRINDING ARMATURE SLOTS

Outdoor Switch Houses for Industrial Loads

An open type of switch-house construction has recently been brought out by the Westinghouse Electric & Manufacturing Company to provide the maximum of accessibility. In the switch house shown in Fig. 1 the oil circuit breaker is mounted on a specially constructed bracket and the meters are mounted on a slate slab. The bracket is so designed that it will take different sizes of breakers. This method of mounting the circuit breaker permits easy inspection of wiring, removal of oil tanks, inspection of contacts and replacement of fuses which are used for the purpose of protecting the voltage transformers.

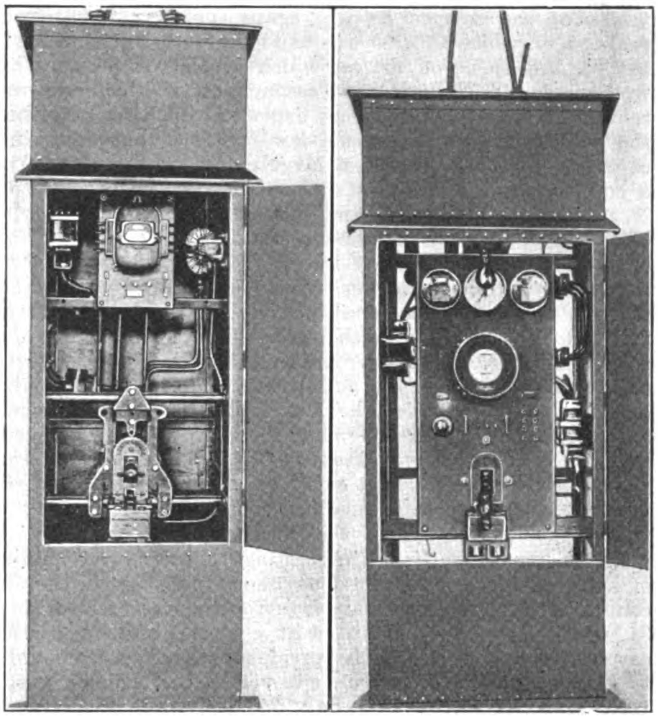


FIG. 1—OUTDOOR SWITCH HOUSE WITH BRACKET-MOUNTED CIRCUIT BREAKER. FIG. 2—OUTDOOR SWITCH HOUSE WITH PANEL-MOUNTED CIRCUIT BREAKER

A ground-mounted switch house with panel-mounted circuit breaker is shown in Fig. 2. The circuit breaker and instruments are all mounted on one slate slab. While the construction is not as open as that previously described the equipment presents a very neat appearance.

The Detroit United Railway, having found that sprinkling the roadbed of its interurban lines with road oil is a satisfactory means of killing vegetation and laying the dust, has just put in service a 8000-gal. tank car. This car is equipped with a motor-driven pump by means of which oil is pumped from steam railroad tank cars into the railway's car. In operation the car is drawn by one of the motor construction cars, and the oil is distributed over the roadbed by a sprinkler pipe arrangement.

London Letter

Objection to Glasgow War Lottery—Glasgow Surplus for Year £160,000—Bulk Production of Electricity Proposed

(From Our Regular Correspondent)

The Corporation of Glasgow is threatened with an action in a court of law to test the legality of its prize-drawing scheme in aid of war charities. The question is whether or not the scheme is a lottery within the meaning of the acts of Parliament which render lotteries illegal. It is understood that the Lord Advocate has advised that it is contrary to statute, and the Secretary for Scotland, acting on this opinion, is believed to contemplate raising the point by an action at law. Passengers on the Glasgow tramcars are invited to buy as many tickets as they please at a penny each. The bulk of the money realized is devoted to war charities, a small percentage being retained for prizes which accrue to the holders of certain tickets drawn by lot and declared to be the prize winners. In the first eleven weeks of the scheme an aggregate sum of £16,881 was realized, on which £12,500 was handed over to various charities, £3,278 spent on prizes, which consist of pictures by well-known artists and war savings certificates, and the remainder placed on temporary deposit at the bank. Neither the popularity of the scheme nor the fact that deserving charities have benefited to a large extent has any force in a court of law. The question confronting the corporation is its legal standing in the matter. That seems to be settled by statutory enactment and legal precedent. The only legal form of lottery in this country is that known as the Art Union Drawing, which is specially exempt by the act of 1846 from penalty. The matter has been referred to a committee which has decided to discontinue the sale of the tickets for the present, but is making efforts to interest the necessary authorities in order to have the drawing legalized under the Art Unions act. The scheme as it stands is illegal and must therefore be discontinued, but the benefits derived from it in the interests of war charities are so great that every effort will be made to renew the scheme in some modified form which will bring it within the law.

In the meantime, it is interesting to learn that details of a record revenue for the department are given in the accounts of the Glasgow Tramways for the year ended May 31, which have been submitted at a special meeting of the corporation committee. The surplus for the year amounts to £160,984, and will be handed over to the common good. Last year the surplus was only £43,548, while the largest previous surplus was £68,000, in 1911. On the expenditure side of the accounts there is an item of £92,645, charged to the European war. This represents payments to dependents of employees on active service and war bonuses to workers.

A scheme for the bulk production of electricity for the whole country is now under consideration by the special committee appointed by Sir Albert Stanley, president of the Board of Trade, last March. The form which this scheme will probably take will be the division of the whole country into seven areas, one of which is the metropolitan area. The idea is that a company shall be formed to purchase the existing undertakings in each area and amalgamate them.

Considerable interest is being manifested in the use of coal gas as the propelling power for motor buses. The Bath Electric Tramways, Ltd., is experimenting with vehicles which run from Bath to Frome and from Bath to Midsomer Norton. W. E. Hardy, the general manager and engineer of the company, estimates that 300 cu. ft. of gas are approximately equivalent to 1 gal. of petrol. The cost of the former is 1*s.* 2*d.* and of the latter 2*s.* An important factor in the cost of the adoption of coal gas is the expense of the purchase of the holder. Each gas holder costs between £30 and £40. The use of gas gives more trouble than petrol, and Mr. Hardy regards it as being distinctly a war-time expedient. The innovation has also been introduced on a line between Bishop Auckland and Durham by the United Automobile Services, Ltd., whose headquarters are at Lowestoft. With petrol cut down, and the use of substitutes forbidden, there was no alternative for the company but to fit up its cars to use ordinary town gas, such as is used in many gas engines, direct out of the town mains. Gas-driven tramway cars have been in use at Neath, South Wales, for more than two years. On the whole, the system is fairly satisfactory. With modern engines of a lighter type there are many advantages in favor of gas-driven cars. The cost works out at 9*d.* a mile at Neath, and as the gas is obtained from the Corporation Gas Works, it furnishes the ratepayers with a substantial source of revenue. The storage cylinder on the Neath cars is carried on the chassis under the floor of the car. It is recharged after each journey of 4 miles by means of a flexible coupling connected to steel cylinder receivers in the compressing room.

The directors of the Edinburgh Tramway have arranged to confer with the tramway committee of the Town Council regarding the threatened strike of tramway workers in connection with their demand for a war bonus of 7*s.* 6*d.* a week. The company, as lessees under the corporation, will make a representation of the position in which it finds itself at present owing to depleted staff and increased costs, and as it is affected by the demand of the employees. The company desires a reduction in the rent paid to the corporation and a reduction in other charges, or a revision of fares. Apart from this conference, there have been no other developments in connection with the dispute.

The action of the Council of Birkenhead in raising the tram fares on all the routes in the borough has been received with mixed feelings. The 3-halfpenny fares on various routes had become popular, no objection being taken to the odd halfpenny. The argument for the increase is that the town is thriving and there is no shortage of money. Capital is required to rehabilitate the overhead equipment and relay the track. The outlay of funds for both kinds of work is computed at £35,000, according to the lowest estimate submitted.

The Council of Bootle has decided to enter into a new agreement for a pediod of twenty-five years from July 1 with the Liverpool Corporation for the repair and maintenance of the Bootle tramways. The agreement provides that Liverpool shall pay a rental of £500 a year for the first six years and £1,000 a year for the remaining period for the use of the tramways. The Liverpool Corporation will be responsible for the upkeep of the rails and paving within the tramway limits, the corporation of the Bootle to do the final reinstatement work. With regard to the overhead equipment, the Liverpool Corporation is to allow Bootle a sum of £43 a mile a year for maintenance. The equipment is to be handed over to Bootle at the end of the period in usable condition.

There is strong opposition in the Potteries from a number of business men and from all the leading members of the Labor party to the proposal of the Council of Stoke-on-Trent to renew the lease of the Potteries Electric Tramways until 1932. The new agreement proposes that the company shall carry out certain improvements in the permanent way and rolling stock, that it shall not increase fares, and that it shall pay the corporation £1,000 a year during the term of the lease. The North Staffordshire Trades & Labor Council has decided to call upon the Town Council to purchase the tramway undertaking and convert it into an up-to-date service for the convenience of the public of the Potteries.

The circular issued by the London United Tramways to the holders of the first debentures shows that the position of the company with respect to that security is very serious. The earnings so far this year have barely covered expenses, and in consequence of the failure to keep the track and the rolling stock in good physical condition the earning capacity has decreased steadily. It is both difficult and expensive to secure labor and materials to maintain the property, but if renewals had been properly attended to before the war the position would have been infinitely better than it is to-day. The shareholders may have to submit to a scaling down of their capital before the undertaking is placed on a sound financial footing.

A. C. S.

News of Electric Railways

Traffic and Transportation
Financial and Corporate Personal Mention Construction News

Seattle and Tacoma Strikes Settled

Arbitration Agreement Reached on Aug. 1 and Service Resumed on Aug. 2—Agreement to Run One Year

The strikes of the railway employees of the Puget Sound Traction, Light & Power Company in Seattle and Tacoma, Wash., terminated on Aug. 1. Cars in both cities resumed operation on Aug. 2. The men are to be permitted to organize and affiliate with any union. The company agrees that there shall be no discrimination against union employees, and the men agree to work with non-union employees. The company agrees to reinstate the discharged Seattle employees. The seven discharged Tacoma employees will be reinstated providing the arbitration board of Tacoma railway employees sees fit. The settlement of matters relating to wages and working conditions will be submitted to an arbitration board consisting of Dr. Henry Suzzalo, C. J. Franklin, representing the company, and James A. Duncan representing the employees. The findings of this board or a majority of it are to be effective from Aug. 1 and to be binding on the company and the employees for one year.

DEVELOPMENTS PREVIOUS TO THE SETTLEMENT

The city of Seattle, on July 26 was still without street railway service, although for the first time since the men walked out on July 16, both sides had agreed to conferences. Concessions made by the strikers' general committee on July 25 opened the way for the first actual conference between the railway officials and the strikers. Through the efforts of the King County Council of Patriotic Service, the strikers' general committee was induced to agree to a conference at which five men from Tacoma, five men from the Seattle force, and the officials of the Puget Sound Traction, Light & Power Company, including A. W. Leonard, president, A. L. Kempster, manager, at Seattle, and Louis H. Bean, manager at Tacoma, were present. This conference, held on July 26, lasted about two and one-half hours, and was held behind closed doors. Officials said that nothing definite had been accomplished, but that progress toward peace negotiations was being made. Company officials felt that they gained a point by the conferences, as one of their most persistent demands was that they be permitted to meet a committee of employees without the presence of outsiders.

Following the signing of an alternative writ of mandate by Judge Boyd J. Tallman, noted in ELECTRIC RAILWAY JOURNAL of July 21, directing the company to resume operation, the company made an attempt on Friday, July 20, to operate two cars on the downtown streets. A crowd of strikers and sympathizers surrounded the cars, and bombarded them with bricks, rocks and other missiles. The windows in the cars were broken, and the motormen and conductor were badly injured. A second attempt was made on Saturday to operate a car.

Following the riots of July 20 and 21, the company applied to Federal Court Judge Jeremiah Neterer for an injunction restraining strikers and others from interfering with the operation of its cars. Judge Neterer in an opinion rendered on July 26 stated that the situation called for executive action, not judicial, and denied the injunction. The company's petition asked that a sufficient number of U. S. marshals be appointed to protect the company and its employees. Judge Neterer, in his opinion, stated that the company was asking the Federal Court to do what should be done by the executive branch of the State and city, or in other words to "police the city." He declared that this was not the proper function of the court. He also pointed out that "the right to employ labor, and the right of labor to be employed is inherently and universally recognized by the courts." The opinion concluded: "The court regrets that in times of stress, in an enlightened community of patriotic citizenship, the parties may not, in spite of the provision of the company's franchise, arbitrate all disputes and grievances."

Before taking up the company's application for an injunction, a hearing was given on the city's motion to remand to the State court the city's case asking for a mandate to compel the company to operate cars or submit to the appointment of a receiver. The case was taken under advisement after arguments in behalf of the city.

Mayor Hiram C. Gill stated that he would afford all the police protection possible when the company put forth a serious effort to resume service. He said that every policeman available would be utilized, although he was inclined to the belief that he should not be expected to place men on screened cars operated on Second Avenue, one of the main business streets. On that point he was quoted as follows:

"That is just a mild invitation for disorder that may result in bloodshed. It isn't a *bona fide* effort to resume service. At the present I am inclined to take such steps as are in my power to prevent a recurrence of the riots of July 20 and 21. If the company intends to attempt to resume service on all of its lines, serving the outlying as well as the business districts, I am inclined to believe that I would afford all of the cars such police protection as can be made available."

From July 17 to 23 the police records show that there were 181 accidents in which fifty-three persons were injured, resulting in the death of three. This was the toll taken by the automobiles, motorcycles and trucks which made an effort to transport the population of the city. Forty-three arrests for speeding were made in less than a week.

Division A of the Seattle Municipal Railway reaped a harvest during the strike. Passenger revenues, which have ranged from $38 to $45 a day for several years, jumped to about $340 daily.

On the tenth day of the strike in Tacoma the Tacoma Railway & Power Company was operating seventeen cars on downtown streets. On July 25 Manager Louis H. Bean stated the cable line would be operated immediately. Each car carried an armed guard, but no violence was reported.

Mr. Bean has reiterated his stand on the matter of meetings and conferences with the strikers. He said:

"I will meet at any time and talk upon any subject with present or former employees of this company, but I have absolutely no business with any representative of the Amalgamated Association of Street & Electric Railway Employees of America."

A suit to compel the Tacoma Railway & Power Company to resume service was brought in the Pierce County Superior Court on July 23 by the State Public Service Commission, represented by Attorney General W. V. Tanner, and city of Tacoma represented by City Attorney U. E. Harmon. The filing of a petition for a writ of mandamus or an injunction compelling the company to provide adequate and safe service was followed by a formal order by Superior Judge Easterday, fixing July 26 as the time of hearing of the summary proceedings. The action was brought in the name of the State of Washington, on the relation of the State Public Service Commission and E. F. Blaine, A. A. Lewis and Frank R. Spinning as commissioners. In addition to the Tacoma Railway & Power Company, between 200 and 250 of the strikers, including the seven men whose discharge by the company precipitated the strike, were named as respondents. The employees were made parties to the action in order that they may state their side of the controversy in the hearing that will decide whether or not the company must proceed with the operation of its cars. Attorney General Tanner concludes that the commission has power to act upon the city of Tacoma's demand that it take a hand in the matter.

When the hearing came up before Judge C. M. Easterday in the Superior Court on July 26 an affidavit of prejudice was filed against Judge Easterday by attorneys for the company and the hearing on the application was set for July 27 in Judge William Chapman's court.

Charging conspiracy and intimidation, the Tacoma Railway & Power Company, in connection with the suit brought by the State Public Service Commission, on July 26 filed in the Superior Court injunction proceedings against F. A. Hoover and Edward McMorrow, international organizers of the Amalgamated Association. The company charges in its complaint that on July 16 union organizers entered into an unlawful conspiracy to compel its employees to cease working, and by threats of violence and other methods of intimidation, induced a large number of men men to go out on strike.

The company further charges that the two organizers are engaged in a conspiracy to prevent the operation of the company's cars, and asks that Hoover and McMorrow be enjoined in common with the striking employees named in the original suit.

Strike in Springfield, Ill.

Violence Follows Strike by Which Men Seek to Enforce Demands for Union Recognition and More Pay

A strike was declared on the Springfield (Ill.) Consolidated Street Railway on July 25. Many of the men not long in the employ of the company were induced recently to join a local branch of the Amalgamated Association in that city and they went out to enforce demands made on the company for recognition and for an increase in wages. Most of the men who have been with the company for a long time remained loyal, and with them as a nucleus an effort was made to restore service at once. Considerable disorder followed as a result of the strike. One man was shot and at least two others are known to have been injured.

Shortly after midnight on July 25 A. D. Mackie, manager of the company, obtained an injunction through Circuit Judge E. S. Smith, restraining the strikers from interfering with the company's employees or the operation of cars. A warrant was also issued for Jerre Burdette, a union organizer, charging him with malicious mischief. The following day Burdette was arrested. In the meantime, however, a motorman of the company had been shot, presumably by strikers or strike sympathizers.

The men in Springfield now receive 21 cents an hour for the first year and are advanced until they reach the maximum of 30 cents an hour. The men who went out have demanded recognition of the union and a scale of wages calling for 23 cents an hour as the minimum pay and 35 cents as the maximum.

Extension of Railway in Madras

A project for the extension of the electric railway in Madras has been under consideration for some time past and although not definitely decided on as yet, it seems likely that it will be eventually undertaken. The following from a recent issue of the Madras *Mail* may be of interest in this connection:

"We understand that the extension of the Madras tramways down the Mount Road and along the Bodyguard Lines depends very largely on the question of the widening of the Government House and Penitentiary bridges. Designs for doing this are now being prepared, but up to the present time nothing has been settled as to how the work is to be financed."

Any firms interested in the foregoing should address the chief engineer of the Madras Electric Tramway, Ltd., Vepery, Madras.

Norfolk Booming

Government Activities in and Around Norfolk and Portsmouth Affect Virginia Railway & Power Company

Government activities in and around Norfolk and Portsmouth have resulted in an enormous demand on the Virginia Railway & Power Company for additional service. The community has been transformed over-night from a fairly progressive and thriving municipality to a beehive of industry. Thousands of workers and great crowds of pleasure seekers have forced the company to place into service every available piece of equipment. Lines which heretofore were running through sparsely settled suburban districts on a forty-five minute schedule are now being operated on a two-minute headway.

TWENTY NEW CARS TO MEET DEMANDS

Foremost among the government's enterprises was the taking over of the site of the old Jamestown exposition, situated on Hampton Roads, about 10 miles out of Norfolk, and transforming it into a naval base for use in training the new army. Work of preparing this base was begun on July 5. About 2500 men are employed by the various contractors and it is the contractors' intention to increase this force as fast as the men become available. Travel between Norfolk and the naval base has become enormous. Lines that had been built for the purpose of serving the Jamestown exposition, and since the closing of that attraction used but little on account of lack of patronage, have been overhauled and service is now about on a par with that rendered during the exposition. Rush order has been placed for twenty new steel cars of the latest design, for use on these lines, to take care of the heavy traffic, and it is hoped that this new equipment will be delivered in time to provide service for the section of the new army which is to occupy the site in September.

In addition to the many men employed at the naval base, the navy yard on the Portsmouth side of the river has more than doubled its force in the past few months, and the government has also undertaken extensive repairs and additions to its naval hospital, marine barracks and naval magazine, all on the Portsmouth side, and thousands of men are engaged in these activities. Additional service has been installed on practically all lines to take care of these workers, and it has also been necessary to put on earlier service on some lines to accommodate the men who are reporting for work an hour earlier than usual.

The company has had to meet terrific demands from all sources for increased transportation facilities, and labor troubles for the past two weeks interfered more or less with the elaborate plans for taking care of the situation. However, with the settlement of the strike and the return of the men to work, the program of the company is rapidly maturing and practically all demands for service are being met.

Hearings on St. Louis Compromise

The Board of Aldermen of St. Louis, Mo., on July 27 adjourned until Sept. 21. after a fight to hold it over until Aug. 17. At the meeting on July 27 the public utilities committee reported it would not be able to submit its recommendations regarding the two pending bills to compromise the United Railways litigation for at least six weeks. Mayor Kiel was instructed, in the resolution of adjournment, to call a special session upon ten days' notice if the public utilities committee reported either bill favorably before Sept. 21.

The first public hearing on the two bills that have been proposed for the settlement of the differences between the city and the company was held on July 25. President McCulloch of the United Railways said that the ordinances had been prepared by the representatives of the city. He favored the ordinance providing for the partnership arrangement with the city, being quoted to the effect that "with the city's help we can do many things that we cannot do alone." It is expected that the public hearings will be continued during the summer despite the adjournment of the Council until the fall.

Richmond Company Seeks Relief

The so-called Grundy resolution came up for consideration before the finance committee of the Council of Richmond, Va., on July 17. It was voted to reject the resolution. The measure had for its purpose the granting of relief to the Virginia Railway & Power Company from some conditions under which it operates that have become quite burdensome to the company. The Grundy resolution called for a straight 5-cent fare on all cars, the elimination of school and labor tickets as well as the strip of six tickets sold for a quarter. In return it was proposed by Mr. Grundy to place a franchise license tax of 10 per cent on the gross receipts of the company. T. S. Wheelright, president of the company, said that he was not prepared at this time to report the proposal favorably to the board of directors of the company. He said that the 10 per cent tax would mean about $100,000 in revenue to the city, but would make the fare return 4½ cents instead of 5 cents. He referred to the jitneys that were cutting into the receipts of the company and suggested that something might be done by the City Council in this direction.

In commenting on the matter in an editorial headed "Our War Time Traction Problems," the Richmond *Leader* said in part:

"Though Colonel Grundy's ordinance died a-borning it does not follow that the city will refuse to remedy any serious injustice from which the Virginia Railway & Power Company may show itself to be suffering by reason of the war. For while we have both corporation baiters and corporation worshippers, in Council and out, we have thousands of citizens in Richmond who will insist upon a square deal for every man and every man's property. These citizens will act the moment they are convinced."

Testimony in Buffalo Arbitration

Conductor Abandons Car in Busy Street—Threat of Strike Unless He Is Reinstated

Considerable testimony has been taken by the board of arbitration appointed on July 21 to hear the grievances between the International Railway, Buffalo, N. Y., and its union platform employees. All of the testimony was in connection with the discharge of a union conductor, who is an officer of the union, for an alleged violation of two company rules. The first charge is that he abandoned his car in the street without waiting for his relief conductor and the second charge is that he neglected to turn in his day's receipts after completing his run.

Bert L. Jones, vice-president and general manager of the Niagara Gorge Railway, Buffalo, N. Y., represents the International Railway on the board; John B. Kolb, a motorman, appears for the union, and Frank X. Schwab, a wholesale liquor dealer, was agreed upon as the third arbitrator. Thomas Penney, vice-president and general counsel of the International Railway; John O. Weigel, general superintendent of transportation of the company; E. G. Connette, president of the company, and George W. Barker, superintendent of the Cold Spring carhouse, appeared for the railway. The union was represented by its business agent.

It developed during the taking of testimony that the discharged conductor had completed his day's run about 2.30 o'clock on the afternoon of May 31 and left his car standing in the street at a busy intersection without waiting for his relief conductor. The discharged man then went into a near-by lunchroom and ordered lunch. He did not turn in his day's receipts until almost nine hours later when he was located by one of the company's division superintendents. The man was discharged by Edward Schlant, assistant city superintendent of the company, upon the recommendation of company officials.

The union of which the discharged conductor was a member demanded the man's reinstatement. This was refused by the company. A vote was taken and the men agreed to strike on July 21. The company suggested that the entire matter be referred to W. D. Mahon, international president of the union. The union refused to allow its international officer to arbitrate the matter, and it was agreed to appoint a board of three to arbitrate the grievance.

City Dads Sorry

Electric Railway Built Around Town on Refusal of Franchise Renewal

One of the first interurban franchises to be granted in Ohio was that through the town of Berea to the Cleveland, Southwestern & Columbus Railway in 1892. This was the first franchise that the company received and was the first to expire. More than two years ago the Southwestern Company began negotiations with the town for a renewal of the contract, but any grant the town officials were willing to make was so restricted with paving, sprinkling and various other burdens upon the company that E. F. Schneider, general manager of the company, decided, after all negotiations had failed to bring about a reasonable settlement, to build a line around the city. Accordingly before the negotiations for the renewal of the grant ceased the company began to secure options on right-of-way. The town officials evidently thought the company was not sincere in its threat to build around Berea. Finally the options were exercised and track was laid on a 3-mile route encircling the city. All through cars now traverse the line without running into Berea.

A small section of line within the town is operated under a separate franchise and the company is required to run a few cars a day over this. Only certain local cars are backed into the town, but the station located on this piece of track has been closed and a new station built on the new right-of-way. The work of tearing up the tracks of the company within the town was begun by the company, but this was stopped through an injunction secured by the town officials.

BEREA ISOLATED

Berea, with a population of about 3000, is now without a railroad station. Freight which was formerly brought into the center of the town by the interurban must now be hauled a distance of more than half a mile. Property values along the line have declined 25 per cent. Naturally, the people of the town are very much concerned and several attempts have been made to renew negotiations with the company, but the latter has no intention of changing its policy. So far as traffic is concerned, the company has not felt any decrease from cutting Berea off its line. The construction work for the new right-of-way cost the company $125,000, but it would have been necessary to spend $60,000 in track renewal had the franchise within the town been renewed.

Fire in Coal Bunkers

A fire which started from spontaneous combustion of the coal in storage in the Newport power station of the Cincinnati, Newport & Covington Railway, Covington, Ky., recently, proved to be very hard to extinguish and resulted in a loss to the plant of about $10,000.

About 420 tons of coal had been stored for several months in the two bunkers over the boilers, one covering ten boilers and the other four. Natural gas is used as fuel, and the coal is used only in an emergency. The fire was discovered about 9.30 p. m. and was not under control until about 2 a. m. It was almost impossible to get at it with any water until the entire roof and coal-carrying structure over the bunkers had been burned away. The fire departments of Newport, Covington and Cincinnati responded to the call. The boilers were kept in operation during the fire, but the station was otherwise shut down and isolated.

Through the timely work of soldiers stationed nearby considerable damage to the engine room was avoided. Several lines of small hose manned by the soldiers were run from the fire pumps in the station to the engine room, and as the fire broke through the eaves and roof at various times it was quickly extinguished. Meantime the soldiers had torn up tents and spread them over the machines in the engine room to protect them from damage by water. About one-half of the coal in the bunkers was consumed before sufficient water could be got into the bunkers to extinguish the fire. The two-motor electric coal carrier, the telpher over the bunkers, the skylights and roof structure over the bunkers were completely destroyed.

Cleveland to Initiate Terminal Grant

The machinery for initiating the subway and underground terminal ordinance of Mayor Davis of Cleveland, Ohio, has all been arranged. It will be necessary to secure the names of 5000 voters to the petition for submission of the ordinance to the electors.

Munson A. Havens, secretary of the Chamber of Commerce; E. H. Roberts, secretary of the Cleveland Advertising Club, and Fielder Sanders, street railway commissioner, constitute a committee to prepare advertising matter and instructions for those who circulate the petitions.

The plans provide for the presentation of the petitions to the City Council on Aug. 27, the first meeting after the summer vacation. If the Council fails to act favorably on the ordinance before Oct. 6, the question will be submitted to the voters at the regular election on Nov. 6.

The members of the Council who voted against the ordinance on July 16 are basing their arguments on the request of the United States Government that cities should not undertake improvements that are not absolutely needed or issue bonds for non-essential things.

New Contract with Men in Everett

The likelihood of an electric railway strike in Everett, Wash., disappeared July 26 when a three-year working agreement with the Puget Sound International Railway & Power Company, a subsidiary Stone & Webster corporation, operating in Everett, was signed by a committee of the trainmen, and Manager D. C. Barnes, in behalf of the company. The agreement will not expire until July, 1920. The company and the men issued the following statement:

"For the purpose of assuring a continuous and uninterrupted public service to the citizens of Everett and vicinity and to adjust all questions arising between car service men and the company, a three-year contract has been negotiated in which the men agree not to strike in consideration of the wage and working conditions agreed to by the company. No man was asked to sign by any one selected by the company, or by any man with authority over others. Submission of the agreement to the individual men was handled entirely by representatives elected by a majority of the men. Our mutual relations have been entirely harmonious in the past and this agreement insures a continuation of this condition in the future."

Toronto Wage Board Meets

The board of conciliation appointed to adjust the question of wages and conditions of service at issue between the Toronto (Ont.) Railway and its employees held a preliminary meeting at the city hall, Toronto, on Monday, July 30. It was expected that regular sittings would be commenced during the week. The board consists of three members, Duncan McDonald, Montreal, representing the Toronto Railway; D. A. Carey, Toronto, appointed by the men, and Judge Colin G. Snider, Hamilton, who was chosen by the Minister of Labor, Ottawa, and appointed chairman of the board.

Nickel-Penny

The caption above indicates how the Salem *News* announced the recent fare increase on the Bay State Street Railway, Boston. The *News* said:

"A very pretty wedding, the culmination of a romance that had its inception at the State House some months ago, took place in this city Sunday, when Nickel, the youngest son of Mr. and Mrs. Silver, was married to Penny, the youngest daughter of Mr. and Mrs. Dollar. The single ring service was used. The wedding was performed by the Massachusetts Public Service Commission on the Bay State cars. The wedding was a public one and was attended by thousands of people as the young couple were very well known here, having visited this city in more prosperous times. The bride was becomingly attired in a copper colored gown. After a brief wedding trip the newlyweds will make their home in this city."

Increase in Wages in Savannah. — The Savannah (Ga.) Electric Company has increased the wages of its trainmen 2 cents an hour.

Jersey Company Increases Wages.—The conductors and motormen in the employ of the Jersey Central Traction Company, Keyport, N. J., have received an increase of 2 cents an hour and will receive time and a half for all overtime.

Increase for Geneva Men.—The Geneva, Seneca Falls & Auburn Railroad, Inc., Seneca Falls, N. Y., has granted an increase in wages to all car men of 2 cents an hour, bringing the scale to 24, 26 and 28 cents an hour. Carhouse men receive an increase of $5 a month.

Service Resumed in Watertown.—The Black River Traction Company, Watertown, N. Y., has replaced its employees who went on strike recently and has resumed service. The company refused to meet the demands of its old men for recognition of the union.

"Journal" Editorial Republished.—The *Tramway Bulletin*, published by the Denver (Col.) City Tramway, has republished in its issue for June the editorial "What Is Ahead of the Electric Railway Industry?" which appeared originally in the ELECTRIC RAILWAY JOURNAL of June 23, page 1127.

New Offices for Bay State.—The Bay State Street Railway, Boston, Mass., has moved its offices from 84 State Street to 245 State Street, a new office building overlooking the harbor. By the elevated line on Atlantic Avenue, which passes the door, the offices are but a few minutes from South Station.

Cleveland Railway Protests New Tax Valuation.—Again the Cleveland (Ohio) Railway has taken the valuation made by the State Tax Commission to the Common Pleas Court. The commission set a tax value of $27,048,000, but the company claims its taxable property will not amount to more than $20,000,000.

Service Resumed at Lima.—Threatened trouble on July 27 caused H. G. Gilpin, general manager of the local lines of the Ohio Electric Railway at Lima, Ohio, to withdraw the cars at night, after operating them successfully through the day. A policeman rode with the motorman on each car. No trouble occurred during the day.

Another Coal Purchase Reported. — The Commonwealth Power, Railway & Light Company, Grand Rapids, Mich., is reported to have purchased a three-quarter interest in a coal mine in Logan County, W. Va., the other quarter being owned by Columbia Power, Railway & Light Company. Production is running at the rate of 300,000 tons a year. Reserves are estimated by engineers at between 9,000,000 and 10,000,000 tons.

Increase in Wages on Syracuse & Suburban Railroad.—The wages of the trainmen in the employ of the Syracuse & Suburban Railroad, Syracuse, N. Y., have been advanced 1½ cents an hour retroactive to May 1. This advance is the same as that fixed in the conciliation award for the men on the Syracuse, Lake Shore & Northern Railway and the Syracuse & Northern Electric Railway, Inc., referred to in the ELECTRIC RAILWAY JOURNAL of July 21, page 116.

Increase in Pay on Utah Line.—Under the terms of an agreement reached between W. A. Whitney, general manager of the Ogden, Logan & Idaho Railway, Ogden, Utah, and a committee of seven employees, the men will receive an increase in pay, varying from 12 to 40 per cent. Changes in working conditions have also been agreed upon. The increase in pay goes to the interurban and city line employees and the shop men. The schedule of the increase will be arranged according to the agreement.

Partial Service Only.—E. E. Downs, president of the Alton & Jacksonville Railroad, Alton, Ill., announced recently that owing to the weakened condition of some of the bridges of the company between Godfrey and Jerseyville and the need for exchanging heavy cars for lighter cars, it would be necessary to discontinue passenger service between Alton and Jerseyville until further notice. The hourly service between Alton and Godfrey will remain practically as it is at the present time, omitting the tripper, which leaves at 5.30 o'clock in the evening.

Increase in Wages by Washington-Virginia Railway.—The Washington-Virginia Railway, Washington, D. C., on Aug. 1 put into effect the following increased wage scale for motormen and conductors: Less than one year, 26 cents an hour; second year, 27 cents an hour; third year, 28 cents an hour; fourth and fifth years, 29 cents an hour; sixth and seventh years, 30 cents an hour; eighth, ninth and tenth years, 31 cents an hour; over ten years, 32 cents an hour. This is the fourth increase in wages since July 1, 1914.

Richmond Bonus to Men Increased.—Announcement was made on July 13 by the Virginia Railway & Power Company, Richmond, Va., to the effect that the bonus of 2 cents an hour to motormen and conductors would be increased to 5 cents an hour, effective on July 16. This is the third raise which has been made voluntarily by the company since the war began and the second increase within the last four months. This last action taken by the company will make an additional increase in the payrolls of approximately $125,000 for the year.

Women Likely to Replace Men in Detroit.—It is quite likely that in the shifting condition due to the war more women will be employed by the Detroit (Mich.) United Lines. In fact the company now has more women in service than formerly through placing several of them in positions as cashiers in the carhouses, where they are performing the work in a most satisfactory manner. Women may in fact eventually be employed as cashiers on the trail cars—preferred employment because of the ease of the work and the remunerative return for services—if war conditions seem to justify it.

South Bend Strike Declared Off.—The strike of the employees of the Chicago, South Bend & Northern Indiana Railway Company, South Bend, Ind., has been declared off. The strike has long since been a thing of the past so far as the company is concerned. The issues involved were reviewed in the ELECTRIC RAILWAY JOURNAL for May 5, page 839; May 12, page 885; May 19, page 930; May 26, page 975; June 2, page 1019. Only the men on the local South Bend lines were affected. A board of mediation appointed by the Governor failed to bring about an agreement between the company and the men.

Organization of Pacific Railway Club.—The Pacific Railway Club, which was organized early this year with headquarters at San Francisco, Cal., has commenced the publication of its proceedings in monthly pamphlet form. A. H. Babcock, consulting electrical engineer of the Southern Pacific Company, is president, and G. H. Binkeley, valuation engineer United Railroads, San Francisco, is first vice-president of the club. The governors include W. R. Alberger, vice-president and general manager of the San Francisco-Oakland Terminal Railways. Headquarters have been opened in the Phelan Building, San Francisco.

Philadelphia Negotiations Progressing.—Negotiations are said to be progressing favorably toward a settlement of the differences between the city of Philadelphia, Pa., and the Philadelphia Rapid Transit Company over the terms for the operation of the city's new high-speed lines by that company. Many of the conditions of the new lease have been considered in conference between W. S. Twining, director of transit for the city, and A. L. Drum, consulting engineer for the company. Nothing official has been made public. The first regular session of Councils will be held on Sept. 20. It is understood, however, that the advisability of calling a special session of the Councils has been discussed.

Transfer Interchange Suggested.—The Port Commission of Seattle Wash., has instructed Attorney C. J. France to draw up a resolution, offering interchange transfer privileges with the public ferry systems to the East Waterway, the West Waterway and West Seattle, to the Lake Burien division of the municipal electric railway and the Puget Sound Traction, Light & Power Company. The Port will retain 40 per cent of the fares, giving 60 per cent to the other parties to the proposed arrangement. The commission is now providing two regular ferry services on Elliott Bay, one to West Seattle, and the other to the West Waterway, while a third service is being furnished to the East Waterway, to accommodate the 2000 workers at the Duthie shipbuilding plant.

Use of Women for Conductors in Newark Not Yet Formally Considered.—In answering an inquiry put to him by the Newark *Call* about the possibility of the Public Service Railway using women conductors, John L. O'Toole, assistant to the president of the company, is reported to have answered: "You can make as good a guess as we can. The possibility of such an emergency as would call for the employment of women on the back end of cars has been thought of by Public Service Railway, and has been mentioned among the officials in an informal manner, but that is as far as it has gone up to this time. We are just about like every other big concern in these uncertain times, when war happenings may change one condition after another over night. We do not know what is ahead of us, in the same sense that we were able to look ahead in normal times and prepare accordingly. Therefore we must be ready to meet any new condition that may arise in the conduct of the many and varied ramifications of our business."

Promoting Athletics in Baltimore.—Announcements have already begun to be made by the United Railways & Electric Company, Baltimore, Md., in connection with the promotion of social activities among the employees of the company, referred to originally in the ELECTRIC RAILWAY JOURNAL of June 23, page 115. The company has canvassed the tastes of the employees with respect to their preference in regard to athletics and an announcement has been made with respect to swimming. Announcements in regard to tennis and quoits will be made later. A blank was sent to the employees with the different amusements listed, and those who were solicited were requested to note on the blank the extent of their interest and the extent of their training T. A. Cross, president of the company, has expressed a willingness to provide suits and bathroom accommodations at Bay Shore Park for those who take up swimming. Novices and beginners will be instructed and contests will be arranged. Entries for swimming have been divided according to sex and then classified as expert swimmers, good swimmers but not experts, beginners and finally those who have not yet tried swimming. Entries in one class will be permitted to qualify for another class.

Stock Offered to Employees.—The Cities Service Company, New York, N. Y., put a new profit-sharing plan into operation on Aug. 1. The management has set aside $2,000,000 of preferred and $1,000,000 of common stock for subscription by the workers on terms governed by the length of service of the subscribers. An employee who has been in the organization less than a year may subscribe for stock equal in par value to 50 per cent of his yearly income, with increases from this level as the period of employment in case of other employees lengthens. An employee, for instance, who has been with one of the subsidiaries between three and four years, may take stock equal to 80 per cent of his income. Limitations have been placed on the high-salaried men to prevent too large subscriptions. The money invested by a subscriber will be used to buy both preferred and common stock. Payments will be due in sixty equal monthly instalments, making the stock fully paid for in five years. The employee who subscribes gets the common stock at par, which has a current market value of about $280 a share, and the preferred, with a current value of $85 a share, is also taken at par. An investment of $300 on these terms gives a subscriber stock with a market value of about $450.

Program of Association Meeting

National Association of Purchasing Agents

The annual congress of purchasing agents, under the auspices of the National Association, will be held at Pittsburgh, Pa., on Oct. 9, 10 and 11. The program includes business sessions for the mornings and visitation and inspection of industrial work during the afternoons. The secretary of the association is E. B. Hendricks, 129 Lafayette Street, New York, N. Y.

Financial and Corporate

Annual Report

Northern Ohio Traction & Light Company

The comparative income statement of the Northern Ohio Traction & Light Company, Akron, Ohio, for the calendar years 1915 and 1916 follows:

	1916		1915	
Operating revenue:	Amount	Per Cent	Amount	Per Cent
Railway department	$3,981,588	77.0	$3,127,035	80.4
Electric department	1,188,853	33.0	763,714	19.6
Total	$5,170,441	100.0	$3,890,751	100.0
Operating expenses, taxes and depreciation:				
Operating expenses	$2,602,837	50.3	$2,092,499	53.8
Taxes	268,141	5.2	220,511	5.6
Depreciation	295,000	5.7	60,000	1.6
Total	$3,165,978	61.2	$2,373,010	61.0
Gross income	$2,004,463	38.8	$1,517,741	39.0
Income charges	619,520	12.0	628,309	16.1
Net income	$1,384,943	26.8	$889,432	22.9

The gross earnings of the company in 1916 showed a gain of $1,279,690 or 32.9 per cent, while the operating expenses, taxes and depreciation advanced $792,968 or 33.4 per cent, so that the gross income increased $486,722 or 32.1 per cent. In addition to the $295,000 for depreciation of road and equipment included in expenses, a profit and loss charge of $350,000 was made for this item. Similar provision was also made for $290,000 for injuries and damages, in addition to $198,616 included in expenses, and $30,000 was set aside for contingencies. Refinancing costs written off totaled $94,929. After taking in the prior surplus, making such charges and paying $271,106 in preferred and $450,000 in common dividends, the surplus as of Dec. 31, 1916, amounted to $1,106,624.

The increase in gross earnings was mostly caused by a gain of $782,732 or 26.7 per cent in passenger earnings, $30,590 or 28.0 per cent in freight earnings and $425,137 or 55.6 per cent in light and power earnings. All divisions of expenses showed increases, the amounts being as follows: Maintenance of way and structures, $244,206 or 79.3 per cent; maintenance of equipment, $12,132 or 3.4 per cent; power operation and maintenance, $244,699 or 61.5 per cent; conducting transportation, $122,750 or 17.9 per cent; general, $121,549 or 29.2 per cent, and taxes, $47,630 or 21.6 per cent.

The total expenditures for additions and improvements during 1916 were $1,483,753. In this amount was included $348,902 for track, roadway and structures, $501,060 for power houses, substations and equipment, and $357,498 for cars and equipment. The gross railway earnings per mile of road in 1916 were $22,547, and per mile of single track, $16,296.

Duluth Company Liable for Paving

The Supreme Court of Minnesota announced a decision on June 29, holding that the Duluth Street Railway must pay the extra cost in paving streets in cases where an additional width in the pavement was made necessary by reason of the presence of the street railway tracks and the operation of cars. The test case was brought on the Ninth Street paving job. This pavement was laid 42 ft. wide from curb to curb where the electric railway tracks are. For a portion of the distance paved there are double tracks and over the rest there is a single track. The court held that the company was liable to pay for 10 ft. of the 42 ft. paved where it had double tracks, and for 5 ft. where it had a single track. The city had contended that the company should pay for 16 ft. where a double track was laid. The sole question raised was the construction of the company's franchise of 1881. Section 6 provides that in cases "where other than animal power are used the company shall be required to pay only so much of the expense as is made extra by reason of the street railway company." The city contended that the company should be required to pay for the additional width of the street pavement made necessary by reason of the presence of the tracks and operation of the railway. The company contended that it should be required to pay only the extra cost of the pavement over what it would cost to lay the same pavement if the rails were not there. Since 1881 the company has made payment on the theory that it was not liable for any additional width of the street than that around the rails. The franchise, under which the test suit was brought, covers the downtown, west end and east end sections. The company is operating under separate franchises at Lakeside and West Duluth, and the conditions that obtain in these portions of the city were not involved in the suit.

Suit Over Cars Withdrawn

The Public Service Commission for the First District of New York has been advised by its counsel that the writ of certiorari, obtained by the New York Railways for the purpose of reviewing the determination and order of the commission upon the application of that company for approval of an issue of bonds to finance the acquisition of 175 new "stepless" cars, has been withdrawn by the company and the proceeding instituted by the service of the writ has been discontinued. The matter has been held open pending the making up of a detailed balance sheet of the company, inasmuch as there was unadjusted a large number of unsettled claims growing out of the receivership, the value of which was indeterminate. It was said at the offices of the commission that it was deemed not unlikely that the New York Railways will later apply for leave to present additional evidence, covering matters which have come to its knowledge in connection with the making up of that balance sheet, as basis for approval of the issuance of more than $640,000 of bonds thus far approved. The company has lately expressed its interest in the establishment of a fair and adequate rule whereby the 4 per cent bonds may be used for needed development of the property.

Suit Over Bridge Rights Likely

Seattle Mayor Directs Corporation Counsel to Enforce Collection of Part of Cost of New Bridge

Mayor H. C. Gill of Seattle, Wash., has directed Corporation Counsel Hugh M. Caldwell to bring action "as soon as possible" to enforce collection from the Puget Sound Traction, Light & Power Company of the $60,917 fixed by the City Council as the company's share of the cost of the construction of the new Fremont Avenue Bridge, and the two other charges assessed, the $333 a month for the operation of the bridge and the 1 cent per kilowatt-hour for power consumed by cars in crossing the bridge. The Mayor charges that the Puget Sound Traction, Light & Power Company has refused to comply with the provisions of the ordinance specifying what the company should pay and that although it has used the bridge continuously since its opening on June 15, "it still refuses to recognize its obligations to pay."

The offer of the company to pay $625 a month and one-third the cost of operation to the city as a rental for the use of the new Fremont Avenue Bridge was refused. The proposal that the rental be submitted at once to arbitration was also rejected by the special committee of the Council. Mayor Gill and Councilmen Moore and Erickson joined in making the suggestion that the company accept the compromise of $900 a month rental, the city to furnish the current to be used in operating the cars across the bridge at 1 cent per kilowatt-hour. A. W. Leonard, president of the company, and James B. Howe, general counsel, declared that this amount was much too high, particularly in view of the low return that the company has received for many years past on its investment. President Leonard's proposal that it be made a condition of the arbitration that a decision be reached within thirty days after the appointment of the board, and that his company meanwhile would make a payment of $1,000 as the first month's rental was rejected by the committee.

Albia Light & Railway Company, Albia, Iowa.—The Albia Light & Railway Company, which was reorganized last year by Guy M. Walker by issuing to the holders of the old bonds 70 per cent of their holdings in new bonds and 30 per cent in 6 per cent preferred stock, has declared the first quarterly dividend of 1½ per cent on the preferred stock, and announces that the funds are already on hand out of which to pay the second dividend three months from now. Bondholders, who deposited with the protective committee, are now getting practically the same income return from the new securities as they were getting from the old securities before the receivership.

Boise (Idaho) Railway.—The Boise Railway has been incorporated with a capital stock of $200,000 by B. W. Oppenheim, W. E. Pierce, Thomas R. Hamer and Donald Miller as the successor to the Boise Railroad, Ltd., the property of which was sold under foreclosure recently as noted in the ELECTRIC RAILWAY JOURNAL of July 21, page 120, to David Miller and W. E. Pierce. Mr. Miller owns 1996 of the 2000 shares of stock. Mr. Miller is president of the company, Mr. Pierce vice-president and Mr. Hamer secretary and treasurer.

Boston (Mass.) Elevated Railway.—The Massachusetts Public Service Commission, which on May 21 authorized the West End Street Railway to issue $1,581,000 of three-year 6 per cent bonds to meet a similar issue which matured on Aug. 1, has sanctioned an increase to 7 per cent in the interest rate because of the inability of the company to find a ready market for the 6 per cent bonds at par. The board said: "Under the terms of the lease of the West End Street Railway by the Boston Elevated Railway all issues of bonds of the West End Street Railway must be sold at not less than par. It now appears that the West End Street Railway, after inviting bids, has been unable to sell the bonds at the rate of interest authorized by the order of May 21, and since it appears that in order to enable the company to sell bonds the rate of interest must be increased." The bonds are being offered by Lee, Higginson & Company at 102 and accrued interest, to yield 6¼ per cent.

Chambersburg, Greencastle & Waynesboro Street Railway, Waynesboro, Pa.—The directors of the Hagerstown & Frederick Railway, Frederick, Md., have voted to acquire control of the Chambersburg, Greencastle & Waynesboro Street Railway and its allied interests, including the Waynesboro Electric Light plant and the Mercersburg, Greencastle and Waynesboro turnpike.

Cleveland & Chagrin Falls Railway, Cleveland, Ohio.—Common Pleas Judge Phillips at Cleveland has appointed Robert D. Beattie, secretary and general manager of the Cleveland & Chagrin Falls Railway, receiver for the company. The appointment was made at the request of the Guardian Savings & Trust Company, Cleveland, Ohio, representing the holders of $251,900 of first mortgage 6 per cent bonds of the company. The trust company alleged that the continuous operation of the road would be interrupted if a forced sale of the property were permitted. The trust company makes the claim that the railway is not in a position to pay the judgment of $50,000 awarded to a Mrs. Stroup and that the case in which it was rendered is pending before the court of appeals in a proceeding to have the common pleas ruling reversed. The $50,000 verdict, which precipitated the receivership, was obtained by Mrs. Stroup in a damage suit to recover for personal injuries, which she said she sustained on July 19, 1915, when an automobile in which she was riding was wrecked by a car of the railway.

International Traction Company, Buffalo, N. Y.—E. H. Rollins & Sons and Parkinson & Burr, New York, N. Y., are offering for subscription at 98¼ and interest, to yield 6.65 per cent, $2,000,000 of collateral trust 6 per cent three-year gold notes of the International Traction Company, dated Aug. 1, 1917, and due Aug. 1, 1920. The International Traction Company owns the entire stock of the International Railway. The notes are authorized to the amount of $5,000,000 and are outstanding to the amount of $2,000,000. The outstanding notes are further secured by a supplemental indenture made by other interests pledging with the trustee $2,667,000 of refunding and improvement mortgage 5 per cent gold bonds of 1962 of the International Railway.

Lisbon (Portugal) Electric Tramways.—The result of operations of the Lisbon Electric Tramways, Ltd., for the calendar year 1916 was a net profit of £51,020. During the year the company carried 76,620,194 passengers as compared to 67,101,249 in 1915. The operating expenses increased cut of all proportion, however, owing to the higher cost of coal and other supplies and labor. Efforts were made to secure an increase in fare, but owing to city and government opposition the attempt was temporarily abandoned. Steps in this connection are being taken this year.

Northumberland County Traction Company, Sunbury, Pa.—By a decree of presiding Judge Cummings Field in the Northumberland County Courts, the property of the Northumberland Traction Company is ordered to be sold unless a mortgage of $400,000 is satisfied before Aug. 6. The Philadelphia Trust Company, trustee for the bondholders, is the plaintiff. Interest accrued amounts to $89,055 and sale is ordered to be made in Philadelphia.

Rochester, Syracuse Eastern Railroad, Syracuse, N. Y.—The sale of the Rochester, Syracuse & Eastern Railroad, which was included in the system of the Empire United Railways, Inc., will take place on Aug. 28. It is expected that the property will be bid in by the bondholders and the reorganization take place at once. The bondholders' protective committee's plan for reorganization has been accepted.

Southern Illinois Railway & Power Company, Harrisburg, Ill.—The property of the Southern Illinois Railway & Power Company, of which John I. Beggs, St. Louis, Mo., is president, has been sold to the Middle West Utilities Company for $720,000, subject to $740,000 of first mortgage 5 per cent bonds. The company operates railway lines between Eldorado, Wasson, Muddy, Harrisburg, Domstock, Ledford and Carrier Mills, Illinois. It owns 17 miles of track.

Steubenville, East Liverpool & Beaver Valley Traction Company, East Liverpool, Ohio.—The Ohio Public Utilities Commission has approved the consolidation of the Steubenville & East Liverpool Railway & Light Company, the East Liverpool Traction & Light Company and the Ohio River Passenger Railway under the name of the Steubenville, East Liverpool & Beaver Valley Traction Company. The Steubenville & East Liverpool Railway & Light Company and the East Liverpool Traction & Light Company are authorized to dispose of their lighting plants to the Buckeye Power Company, and the latter is authorized to issue $3,750,000 stocks and bonds for the purchase of the plants of the two companies. The proposed consolidation plan was referred to in the ELECTRIC RAILWAY JOURNAL of July 7, page 343.

Electric Railway Monthly Earnings

HUDSON & MANHATTAN RAILROAD, NEW YORK, N. Y.

Period		Operating Revenue	Operating Expenses	Operating Income	Fixed Charges	Net Income
1m., June,	'17	$503,651	*$245,200	$258,450	$217,165	$41,285
1 " "	'16	476,959	*210,273	266,686	217,661	49,025
6 " "	'17	3,134,312	*1,455,087	1,679,224	1,303,145	376,079
6 " "	'16	2,961,214	*1,290,407	1,670,807	1,291,038	379,769

PADUCAH TRACTION & LIGHT COMPANY, PADUCAH, KY.

1m., May,	'17	$23,265	*$18,201	$5,063	$7,472	†$2,409
1 " "	'16	24,203	*16,706	7,496	7,158	337
12 " "	'17	310,441	*231,374	79,067	86,778	†7,712
12 " "	'16	299,054	*182,072	116,982	88,806	28,175

PENSACOLA (FLA.) ELECTRIC COMPANY

1m., May,	'17	$25,313	*$15,644	$9,669	$7,801	$1,868
1 " "	'16	23,844	*13,373	10,471	7,709	2,762
12 " "	'17	291,587	*170,101	121,485	92,990	28,495
12 " "	'16	274,438	*152,313	122,125	88,147	33,978

PHILADELPHIA & WESTERN RAILWAY, UPPER DARBY, PA.

1m., June,	'17	$52,185	$27,948	$24,237	$12,526	$11,711
1 " "	'16	45,420	20,295	25,125	12,530	12,595
12 " "	'17	538,137	266,770	271,366	150,472	120,894
12 " "	'16	491,488	234,818	256,669	150,349	106,320

PORTLAND RAILWAY, LIGHT & POWER COMPANY, PORTLAND, ORE.

1m., May,	'17	$474,433	*$265,308	$209,125	$177,102	$32,023
1 " "	'16	445,223	*256,694	188,529	181,925	6,604
12 " "	'17	5,647,205	*3,057,131	2,590,074	2,178,108	411,966
12 " "	'16	5,457,872	*3,068,941	2,388,931	2,196,617	192,314

PUGET SOUND TRACTION, LIGHT & POWER COMPANY, SEATTLE, WASH.

1m., May,	'17	$762,662	*$460,938	$301,724	$191,342	$110,380
1 " "	'16	644,795	*415,238	229,556	184,454	45,101
12 " "	'17	8,689,133	*5,290,269	3,398,863	2,248,576	1,150,287
12 " "	'16	7,670,305	*4,911,848	2,758,457	2,196,064	562,392

*Includes taxes. †Deficit.

Traffic and Transportation

Compromise in Fare Case

Middlesex & Boston to Give Six Months' Trial to Modified Fare Schedule Establishing 6, 7 and 8-Cent Fare Units

At a hearing before the Massachusetts Public Service Commission on July 26 it was announced that the Middlesex & Boston Street Railway, Newtonville, Mass., and most of the leading municipal representatives who appeared in the pending fare case had agreed to give a modified rate schedule a six months' trial. The conferees included representatives of Wellesley, Framingham, Lexington, Newton, Waltham and Ashland. General recognition of the company's need of additional income appeared to exist among the representatives of the principal cities and towns concerned, and the plan agreed upon is based upon the establishment of fare units according to the density of traffic. The hearing on this case, held on June 11, was reviewed on page 1114 of this paper for June 16.

The plan is not expected to solve the company's financial problem, according to a statement by A. A. Ballantine, counsel for the road, but it is accepted for the trial period as a step in the right direction. It is estimated that an increase in revenue of about $65,000 will result from the new schedule. Six, 7 and 8-cent fares are to be charged.

DETAILS OF THE TRIAL SCHEDULE

On the Newton Corner-Newton Lower Falls line, the Newton Corner-Norumbega Park line and on the six principal lines in Waltham the fare unit will be 6 cents, no tickets being acceptable. When transferring from any of these lines to a 7-cent line, 1 cent will be charged for a transfer. A free transfer will be issued to those who transfer from one of the 6 or 7-cent lines to another. On the main lines of the company in Commonwealth Avenue, Newton, running west of Lake Street, Chestnut Hill, and on the crosstown lines in Newtonville the fare unit will be 7 cents, with free transfers to the 6-cent lines. On the Newton lines books of twenty tickets will be sold for $1.20. No transfers will be given on such tickets.

On the Newton boundary-Needham Junction line and on the Needham-Wellesley line the unit of fare will be 8 cents with free transfers from the latter to the main line at Wellesley Square. On the Newton Lower Falls-Natick-Framingham line including the Framingham-Hopkinton line, the cash fare is to be 7 cents, with tickets sold at the rate of twenty for $1.20. No transfers are to be issued on these tickets and passengers wishing to transfer from the Wellesley line to the Needham line must pay 2 cents for a transfer. The fare on the Cochituate and Saxonville ends of the lines in this district will be 8 cents and also on the Westboro-Hopkinton line. The company desires to establish a 7-cent fare unit on the Lexington lines with an 8-cent unit on the Lexington-Woburn line. School tickets are to be sold on all lines at one-half the unit of fare.

Far-Western Jitneys to Secure Bonds

Jitney drivers in the State of Washington will soon be able to obtain the $2,500 bond required by State law, according to Stanley G. Morrison, president of the Morrison Company of Seattle, general agent for the Republic Casualty Company of Pittsburgh, who will write the bonds. Bonds have been issued in Spokane and Everett, and filed with the Industrial Commission at Olympia. No bonds were issued in Seattle and Tacoma before the electric railway strike ended, and the temporary methods of transportation ceased. They will be issued only to members of the Auto Drivers' Union.

The Republic Casualty Company has a capital stock of $500,000 and a surplus of $263,000. The admittance of the company to do business at this time is of unusual interest as the recent strikes in Seattle and Tacoma have opened a great field of activity to the jitney. The last company that handled jitney insurance business terminated in a receivership. The jitney men tried to organize a mutual company but were unable to furnish the required security.

Jitney men in Portland, Ore., are to be bonded by the Golden State Indemnity Company of San Francisco, a company organized by jitney, taxicab and "for hire" car owners about one year ago. It is a stock company organized under the laws of Oregon, and its bonds have been approved by City Commissioner Wells. E. W. Rossman, secretary-treasurer of the Chauffeurs' Union, states that the company is fully able to write the bonds of all the jitney men in Portland. He states that the report of the operation of the company for the past six months shows that it paid all indemnity losses and expenses and had a surplus of $4,242. The requirement of bond of $2,500 applies to all jitneys, taxicabs and "for hire" cars in Portland.

Two Fare Units Proposed

Springfield Street Railway Asks Massachusetts Commission for Right to Establish Intermediate 6-Cent Fare Zone

In a petition to the Public Service Commission of Massachusetts, filed on July 30, the Springfield Street Railway requested authority to establish a two-unit fare program, differing considerably from previous plans to increase revenue which have been submitted to that body. The present fare unit on the system is 5 cents. It is proposed to retain this unit in the urban center of Springfield within a radius of 2 miles. Beyond this general limit a 6-cent zone will be established, followed by a second 5-cent fare zone. Thus, the sections of higher traffic density will receive a lower rate, while the suburban territory lying between Springfield and the important surrounding cities of the central Connecticut Valley will bear its proper share of the cost of service. Retention of the 5-cent fare in the urban zone of 2-miles radius also will enable the company to meet jitney competition more satisfactorily, although efforts have been under way for some time to secure an ordinance which will put the jitney traffic under satisfactory regulation.

The proposed 5-cent fare limits outward from the city are the intersection of Berkshire Avenue and Boston Road, on the State Street trunk line; the New England Westinghouse plant, East Springfield; East Longmeadow town line; Agawam Bridge; Westfield line, fare limits as at present, but transfers to be withdrawn beyond town line; Chicopee city line and Springfield Country Club. The fare will be increased to 15 cents from Springfield to Holyoke, 10 cents being charged to the Holyoke city line. A second 5-cent fare is to be collected at the Connecticut State line on both the Springfield-Hartford interurban routes. For Chicopee and Chicopee Falls, where the regular fare is to be 10 cents, the company proposes to make a concession by selling commutation tickets in lots of twelve for 96 cents. In general, the fare unit is to be raised to 6 cents on the country lines.

PRESIDENT WOOD DESCRIBES COMPANY'S NEEDS

President C. V. Wood supplemented the petition by a statement to the effect that the company is now selling transportation at less than cost and that it must obtain increased revenue or go into bankruptcy. He pointed out the following percentage increases in the price of materials since 1914: Car axles, 145; car wheels, 26 to 40; coils, 87; cold-rolled steel, 208; high-speed steel, 345; trolley wheels, 67; wire, 135; steel poles, 130; rails and coal, 100 each. Mr. Wood's statement was, in part, as follows:

"By pocketing your pride you can make last year's old straw hat do for this year, but when our rail or wire is worn out we must replace them regardless of cost. To continue to sell transportation at less than cost means bankruptcy for us, which in turn means a receiver, who will only operate such cars as show a paying return. This means a large reduction in the service. To sell transportation at a fair profit means satisfactory service for you. It will attract investors, who provide the money for new equipment and extensions, all of which means prosperity for both of us. We need additional revenue and we need your co-operation in securing it; you need satisfactory service—think it over."

Atlantic Shore Asks Increase

The Atlantic Shore Railway, Sanford, Me., has applied to the Public Utilities Commission for authority to increase its revenue by adding three fare zones. The new schedule, which becomes effective on Aug. 18, provides for an additional fare zone between Biddeford and Kennebunkport town house, one between West Kennebuck and Sanford and one between Wells and York Beach. Under this arrangement the fare between Biddeford and Sanford would be increased 12 cents, and also that between Biddeford and Portsmouth, the fare in each zone being 6 cents instead of a 5-cent unit as formerly.

It is hoped by the management that the new schedule will reduce the road's deficit, which is increasing from month to month because of the high operating cost. The business of some parts of the Atlantic Shore line shows a steady increase, while on others it is falling off owing to the great increase in the number of automobiles that are owned and operated along its lines. Besides an increased cost of from 20 to 200 per cent for materials required in the service, the increases in wages have amounted to 31 per cent within a comparatively short time. These facts are held to be legitimate reasons for higher rates.

Regulation for Auto-Bus Lines

Regulations for the control of auto-stage lines competing with electric railways and steam railroads, and giving intermittent service in competition with established stage lines, were discussed recently before the Public Utilities Commission of Utah. It was argued on the part of established auto-stage lines that regulations should be made to limit competition with concerns and individuals engaged in regular service, and automobile owners should be prevented from engaging in transportation business except on particular occasions, such as on paydays at the mines and smelters. It was suggested that the commission establish a schedule of rates to be charged.

H. F. Dicke, general manager of the Utah Light & Traction Company, Salt Lake City, declared it to be unfair to allow the auto transportation companies to enter in direct competition with the electric railways and not require them to share a portion of the expense of paving. The matter of requiring the auto-bus companies to file a bond or to take out liability insurance for the protection of the public was also discussed. Liability insurance was held by some to be preferable to a bond on the ground that recovery for accident would be quicker and more assured.

Niagara Gorge Inquiry Closed

Engineers Find Failure of Retaining Wall Due to Improper Construction and Effect of Excessive Moisture

The Niagara County investigation into the wreck on the Niagara Gorge Railroad, Niagara Falls, N. Y., near the Whirlpool Rapids on July 1, which was reviewed, in part, on page 79 of the ELECTRIC RAILWAY JOURNAL for July 14, was closed on July 25. The last part of the testimony was introduced by Julius Freshee, city engineer of Lockport; Charles O. Gettman, a civil engineer of Buffalo, who has been retained by the railway to reconstruct the retaining wall at the scene of the washout, and other engineers who investigated the retaining wall after the wreck. All of the engineers agreed that "the cause of the wreck was due to improper construction of the retaining wall, and the effect on it of excessive moisture and seepage."

Mr. Gettman was the principal witness at the continuation of the inquest. He said he examined the embankment on the day after the wreck and found the soil on which the retaining wall was built to be crumbled rock and earth that through the years had slid from the sides of the gorge to the river to form the bank. He said there was practically no bedrock on which the wall could have been constructed and gave as the cause of the accident "instability of fill owing to excessive moisture." The fill behind the dry stone wall was Rochester shale, a plastic earth that when moist would seep through crevices. It was Mr. Gettman's opinion that the wall collapsed from the force of the moistened plastic fill and that it did not wash out from the base. He said there were slight traces of Portland cement. Charles R. Barnes, electric railway expert for the Public Service Commission, and his assistant, R. G. Winans of Albany, both asked Mr. Gettman if, in his opinion, it was good practice to use a dry stone wall in such a place, to which he replied in the negative. The witness said the company's tracks have been moved back farther from the water's edge since the accident and have been temporarily "shored up."

After the completion of the inquest officials of Niagara County and inspectors for the Public Service Commission made a trip over the Great Gorge route from Lewiston to Niagara Falls. The decision in the case has been reserved.

Pennsylvania Jitney Men Fined

The Public Service Commission of Pennsylvania has announced that it has imposed fines of $100 on ten jitney operators in Scranton who had failed to obey the order of the commission requiring them to cease rendering service. The commission announced that suit will be brought in the Dauphin County Court in case the fines are not paid.

These cases were called to the attention of the commission by complaints filed against the operators. Hearings were held and orders issued by the commission that the men cease operating. An appeal was taken to the Superior Court and at the May term the decision of the commission was upheld. The jitney operators in question have refused to obey the ruling and the commission is now proceeding to enforce its order. This action of the commission indicates the beginning of a vigorous policy on its part to enforce its determinations against jitney operators, and it is expected that it will be followed by similar action in other parts of the State.

Six-Cent Fare Hearing

A petition by the Norton, Taunton & Attleboro Street Railway, Norton, Mass., successor to the Norton & Taunton Street Railway, for authority to establish a general fare increase was heard by the Massachusetts Public Service Commission on July 27. Lothrop Withington of Boston represented the company. It is proposed to raise the fare unit throughout the system from 5 cents to 6 cents.

At the hearing the company introduced evidence to show that its finances are in an unsatisfactory condition. The gross operating revenue decreased from $66,261 in 1914 to $64,927 in 1916; gross operating expenses increased from $55,568 to $64,900; taxes rose from $1,655 to $1,732; maintenance of way increased from $6,009 to $10,724; maintenance of lines increased from $1,398 to $1,655, while the cost of conducting transportation increased from $17,458 to $17,812. General and miscellaneous expense increased from $3,908 to $7,236 and damages increased from $418 to $1,080. It was stated that the company's power plant is considered too large for its service and studies have been made of the cost of buying power.

The hearing was closed, and the commission suspended the proposed fare increase until Sept. 1, pending a decision in the case.

Charge for Transfers Likely.—The Fitchburg & Leominster Street Railway, Fitchburg, Mass., considers charging 1 or 2 cents for transfers instead of a 6-cent fare in order to meet rising operating costs, according to a statement made recently by W. W. Sargent, general manager of the company.

Service Reduced Because of Labor Shortage.—The operating schedule of the Cleveland (Ohio) Railway has been reduced seventy-five trips a day, most of which were run during the rush hours. Officials of the company state that this became necessary because of a shortage of men. Street Railway Commissioner Sanders said that it would mean quite a saving to the company.

UNIVERSITY OF CALIFORNIA

Bridgeton & Millville Fare Hearing.—The Public Utility Commission of New Jersey has fixed Sept. 13 as the date for a hearing on the application of the Bridgeton & Millville Traction Company, Bridgeton, to discontinue issuing strip tickets effective Aug. 6. The tickets are sold at the rate of six for 25 cents and fifty for $2. The commission also suspended the effective date of the proposed change till Nov. 6 unless it decides in the meantime that the increased rate is reasonable.

One-Man Cars Suggested in Muscatine.—One-man cars have been suggested for Muscatine, Iowa, by officials of the Clinton, Davenport & Muscatine Railway, Davenport, as a method of reducing operating costs in that city, and the matter is now being considered by the City Council. J. G. Huntoon, general manager of the company, states that the road is being operated at a loss and that some means must be found to relieve the situation. A more frequent service is promised in return for permission to operate one-man cars.

Railways Lose Against Auto Buses.—Judge Trexler in the Superior Court has upheld the Public Service Commission of Pennsylvania in its recent decision granting certificates of convenience for the operation of auto-bus lines between points in Schuylkill County. The Union Traction Company, Philadelphia, and the Pottsville & St. Clair Electric Railway, Pottsville, had protested against issuance of the certificates. The court held that the bus lines were justified inasmuch as the electric railway cars are seriously overcrowded during the rush hours.

Withdrawal of Tickets Refused.—The Supreme Court of New Jersey has decided against the Trenton & Mercer County Traction Corporation, Trenton, N. J., in its move to abolish the selling of six tickets for 25 cents. In an opinion by Justice Swayze filed in the Supreme Court of that State he upholds the jurisdiction of the State Board of Public Utility Commissioners. The ruling, however, can be appealed to the Court of Errors and Appeals. The company has pending in the federal courts an action testing the ticket sale on constitutional grounds.

Chicago & North Shore Adds Freight Service.—Freight service from Milwaukee to the Great Lakes Naval Station and intermediate points, including Waukegan, Racine, Kenosha, Zion City and Libertyville, was begun on Aug. 1 by the Chicago, North Shore & Milwaukee Railroad, Highwood, Ill. The freight traffic on this road from Milwaukee to Burlington and East Troy and intermediate points, which was begun about a year ago, is much heavier than was expected, and is opening to Milwaukee merchants a field not reached before. The traffic department expects also to announce soon such service from Milwaukee to Watertown.

More Skip Stops Proposed.—Resolutions presented to the Common Council of Detroit, Mich., and now in the hands of the committee on public utilities for consideration will, if adopted, give skip-stop operation on several of the main lines of the Detroit United Railways in addition to those now enjoying this time-saving plan. The resolutions provide for the extension of skip stops to the following lines: Grand River, Michigan, Gratiot, Baker and Mack. As noted recently in the ELECTRIC RAILWAY JOURNAL, this company put skip-stop operation into effect on its Fort line on July 1 and on its Hamilton line one week later. This form of service had been in use on two other lines of the system for several months.

Booklet to Commemorate Brady Medal Award.—The Connecticut Company, New Haven, Conn., has issued an attractive booklet describing the safety work of the company in commemoration of the award of the Anthony N. Brady medal to it last year. Data as to the company's operating conditions, and an account of the efforts made to reduce accidents both to the public and employees are the salient features of the text. By way of illustration a picture of the company's model steel car is inserted as a frontispiece and maps of the Connecticut Company's system are inserted in the back. The front and back covers contain respectively full-size embossed reproductions in gold of the two faces of the medal.

Universal Transfers Asked in Philadelphia.—The Northwest Business Men's Association has filed a petition with the Public Service Commission of Pennsylvania asking that a universal transfer plan be adopted by the Philadelphia Rapid Transit Company. It is pointed out that free transfers are issued at some points, while at a much greater number of intersecting points a 3-cent transfer charge is made and that this often works an unjust discrimination. The petition concludes that "the rate of fare to all passengers who find it necessary to transfer from one of the cars of the common system to another car of the common system, in order to make a complete journey, should be a charge of not more than 5 cents."

St. Louis Traffic Statistics.—The report of the United Railways, St. Louis, Mo., for the quarter ended June 30, filed in the office of the City Register, shows fewer trips, more mileage and more passengers carried than in the corresponding quarter of 1916. The number of trips was 1,622,314, which was 18,800 fewer than last year. The mileage was 10,197,198, an increase of 161,851. The passengers carried were 63,262,929, of whom 1,107,288 were half fares. There was an increase of 2,210,276 whole fares and a decrease of 154,289 half fares. The net increase is 1,055,987. On week days the average number of cars in use was 1278, against 1259 last year; on Saturdays 1184, against 1199 last year, and on Sundays 808, against 795 last year. The city's share of the mill tax is $63,262, against $61,206 last year.

Controlling Autoists in St. Louis.—A campaign against reckless speeding of autos has been started in St. Louis, Mo. The St. Louis *Star* is supporting the movement, which has the co-operation of City Judge Hogan, Judge Kruger of the Criminal Court and the coroner. Chief of Police Young has instructed all patrolmen to arrest reckless drivers, and car men of the United Railways have been asked to report the license numbers of such violators. Richard McCulloch, president and general manager of the United Railways, has suggested that licensing of all drivers be based on mental and physical examinations and that accidents be a cause for revocation of permits. Mr. McCulloch said also that the extensive parking of automobiles in the downtown section of the city is not justified and is a great menace to safe transportation.

Judgment Obtained for Jitney Accident.—In a recent decision of the Washington State Supreme Court, the Pacific Coast Casualty Company, a jitney bonding company, was held liable for the death of a little girl caused by a 5-cent-fare automobile. Richard Burner, father of the child, sued the owners of the machine and the Pacific Coast Casualty Company, which had issued insurance policy on the car, for damages. Judgment of $1,500 was obtained in the King County Superior Court, but the court ruled that the bonding company was not liable because, according to terms of the policy, it was responsible only to "persons injured." The Supreme Court held that the child was not guilty of contributory negligence, that the automobile was running faster than allowed by law, and that its brakes were defective. It held also that the bonding company was liable and affirmed the decision of the lower court in regard to the owners of the car.

Traffic Suggestions for Louisville.—A committee of the Louisville (Ky.) Automobile Club, working on a new traffic ordinance for Louisville, believes that if drivers of vehicles are permitted to make a right-hand turn when semaphores are set against them, congestion of traffic will be relieved. Now they must stop unless the semaphores register "Go." The same committee has recommended the following as a section of a traffic ordinance to control the glaring-headlight evil: "It shall be unlawful to use on a vehicle of any kind operated on the public streets of the city of Louisville, or on any street, alley or highway, whether the same has been dedicated to public use or not, within the limits of the city of Louisville, any lighting device of over 4 cp., equipped with a reflector, unless the same shall be designed, deflected or arranged so that no portion of the beam of reflected light, when measured 75 ft or more ahead of the lamps, shall rise above 42 in. from the level surface on which the vehicle stands under all conditions of load. Spotlights shall not be used except when projecting their rays directly on the ground or at a distance not exceeding 30 ft. in front of the vehicle."

Personal Mention

Charles Ruff, master mechanic of the Lincoln (Neb.) Traction Company, has resigned.

W. J. Trythall has succeeded C. B. Brunner as claim agent for the Phillipsburg (N. J.) Transit Company.

Donald Miller is president of the Boise (Idaho) Railway, which is the successor to the Boise Railroad, Ltd.

C. D. Rogers, Boston, has been elected president of the Bristol & Norfolk Street Railway, Randolph, Mass.

J. J. Callaghan has been appointed superintendent of the Oshawa (Ont.) Railway, to succeed D. A. Valleau.

William Hazen has been appointed roadmaster for the Sarnia (Ont.) Street Railway to succeed R. M. Miller.

R. J. Semsch has been appointed auditor of the Wisconsin Railway, Light & Power Company, La Crosse, Wis.

E. J. Lauder has been elected vice-president of the Grand Forks (N. D.) Street Railway, succeeding C. C. Cowran.

A. S. Guelich has been appointed auditor of the Charleston (W. Va.) Interurban Railroad to succeed H. G. Freed.

H. E. Clark has been elected vice-president of the Indiana County Street Railway, Indiana, Pa., succeeding S. L. Eyre.

A. W. Criss was recently appointed superintendent of maintenance of way for the Butte (Mont.) Electric Railway.

Thomas R. Hamer has been elected secretary and treasurer of the Boise (Idaho) Railway, newly incorporated as the successor to the Boise Railroad, Ltd.

M. S. Sloan, general manager of the New Orleans Railway & Light Company, New Orleans, La., has been made vice-president and general manager of the company.

J. B. Blaidlock has resigned as master mechanic of the Atlantic City & Shore Railroad, Atlantic City, N. J., to become connected with the Lincoln (Neb.) Traction Company.

Mrs. Sara W. Kulp has been elected president of the Shamokin & Edgewood Electric Railway, Shamokin, Pa., succeeding G. Gilbert Kulp. Mrs. Kulp is the widow of ex-Congressman Monroe Y. Kulp, who had considerable interest in the stock of the company.

Lawrence N. Siler, a mechanical and electrical engineer of The J. G. White Management Corporation, New York, N. Y., has been assigned to the engineering staff of the Manila Electric Railroad & Light Company, Manila, P. I., which is being operated by the Management Corporation. Mr. Siler is a graduate of Cornell University.

Byron T. Burt, who for the last two years has been vice-president and general manager of the Rutland Railway, Light & Power Company, Rutland, Vt., has been appointed assistant to the chief executive of the Mexican Light & Power Company, Mexico City, Mex. Mr. Burt will assist in the management of the engineering and operating departments.

H. K. Sherman, general storekeeper at the Albion shops of the Michigan Railway for the last three years, has been appointed purchasing agent to succeed G. B. Ross, deceased. Mr. Sherman was formerly purchasing agent of the Michigan United Traction Company and previous to that time was assistant to the purchasing agent of the Toledo Railways & Light Company, Toledo, Ohio.

H. R. Gore has resigned his position as auditor of the Eastern Pennsylvania Railways, Pottsville, Pa., to accept a position with Haskins & Sells, public accountants, New York, N. Y. Prior to being assigned to that company he served as auditor of the Kentucky Public Service Company, Bowling Green, Ky., both of these utilities being under the management of The J. G. White Management Corporation, New York, N. Y.

E. P. Peck, heretofore superintendent of the department of tests and repairs of the Georgia Railway & Power Company, Atlanta, Ga., has been assigned to the new office of superintendent of operation. Mr. Peck now has supervision not only over tests and repairs, but also over the electrical equipment and operation of all stations and substations in the Atlanta district, and has general direction of the load dispatching of the entire system.

H. H. Lunsford, who resigned on Feb. 1 as superintendent of the Southwestern Traction & Power Company, New Iberia, La., has accepted a position as district superintendent of the United States Insurance Association of Ardmore, Okla., industrial department. Mr. Lunsford was formerly connected for several years with the Shreveport (La.) Traction Company as superintendent. In his new position he will be located at Okmulgee, Okla., and have jurisdiction over several towns in that district.

W. C. Austin has been transferred from the staff of traveling auditors of The J. G. White Management Corporation, New York, N. Y., to the position of auditor of the Eastern Pennsylvania Railways. This utility furnishes railway and electric service in Pottsville, Pa., and vicinity, and is operated by the Management Corporation. For a number of years Mr. Austin was treasurer and auditor of the Otsego & Herkimer Railroad, now the Southern New York Power & Railway Corporation, Cooperstown, N. Y.

John Kelley, who for the past twenty-three years has been chief district claim agent for the Bay State Street Railway, Boston, Mass., with headquarters at Quincy, has resigned on account of ill health. Mr. Kelley was instrumental in the establishment of the Weymouth & Braintree Street Railway and was its first president. He was at one time town moderator of Braintree and is prominent in the veteran firemen's organizations. Mr. Kelley will be succeeded by Robert Jones, who will have his headquarters at Brockton.

August W. Munster has been appointed purchasing agent of the Boston & Maine Railroad, which operates the Portsmouth (N. H.) Electric Railway and the Concord & Manchester Electric Branch, Concord, N. H., with office at Boston, Mass., succeeding B. S. Hinckley, who resigned to engage in private business. Mr. Munster is a graduate of the Massachusetts Institute of Technology, class of 1904. He was formerly employed in the mechanical departments of the Northern Pacific Railway and the New York, New Haven & Hartford Railroad, and has been general storekeeper of the Boston & Maine since 1911.

G. W. Palmer, Jr., has resigned as first vice-president of the American Electric Railway Engineering Association on account of ill health. Mr. Palmer is electrical engineer of the Bay State Street Railway, Boston, Mass. He held a similar position in 1907 with the Boston & Northern Street Railway, when he was appointed chairman of the committee on car and car-house wiring of the Engineering Association. Since that time he has served on the committees on power generation, standards and power distribution and on the committee on electrolysis since its creation. Mr. Palmer was elected to the executive committee in 1913, second vice-president of the association in 1916 and first vice-president a year later.

Clyde Taylor, general counsel for the Kansas City (Mo.) Railways, has been elected vice-president of the company. Mr. Taylor has been general counsel of the Kansas City system since the resignation of John H. Lucas in April, 1916. He was formerly assistant counsel associated with Mr. Lucas during the receivership and reorganization of the Metropolitan Street Railway, Kansas City, the predecessor of the Kansas City Railways. Mr. Taylor was graduated from the University of Michigan. After practicing law for a time he acquired some experience in legal work for railroads, insurance companies and other corporations before he became connected with the Kansas City Railways. He will assume the duties of president in the absence of Col. P. J. Kealy, doing military service.

J. H. Prior, who has been chief engineer of the Illinois Public Utilities Commission, has left the service of the commission to open an engineering office in Chicago. He was assistant chief engineer of the commission previous to his appointment as chief engineer about two years ago. Mr. Prior was educated at the Armour Institute of Technology and the University of Chicago. In 1905 he was appointed engineer of design for the Chicago, Milwaukee & St. Paul Railway, and for the following nine years he was engaged in the designing of all classes of railroad structures for that company. During one year of that period Mr. Prior made valuations of the company's structures in Minnesota and South Dakota as required by regulatory bodies in those states.

Obituary

G. B. Ross, purchasing agent of the Michigan Railway, Jackson, Mich., died at Saginaw on July 18. He formerly served as purchasing agent of the Saginaw-Bay City Railway, and in April, 1914, he was transferred to Jackson as purchasing agent for the Michigan Railway and the Saginaw-Bay City Railway.

Jesse Hough, former storekeeper for ten years in the maintenance of way department of the Indianapolis Traction & Terminal Company, Indianapolis, Ind., died at his home in that city on July 23. At the time of his death Mr. Hough was sales representative of the National Lock Washer Company. He was fifty-seven years of age.

Frederick W. Mott, a pioneer in electric railway work, died at his home in St. Louis at the age of sixty-eight. Mr. Mott was born in New York, but moved to Missouri early in life and afterward became State Senator. He was vice-president and manager of a horse-car line in Carondelet, Mo., now a part of St. Louis, and later was instrumental in organizing the Carondelet Electric Light & Power Company.

Edward F. Wittler, one of the early electric railway promoters in Seattle, Wash., died on July 26 at his home in that city at the age of sixty-six. Mr. Wittler was connected with the Yesler cable line in Seattle before the fire of 1889, which completely destroyed the property. The line was immediately reconstructed by Mr. Wittler and his associates. He later organized the Union Trunk Line system, of which he became president. Mr. Wittler was born in Germany and came to the United States when fourteen years of age.

Albert F. Ganz, professor of electrical engineering in the Stevens Institute of Technology, Hoboken, N. J., died suddenly on July 28. Mr. Ganz was born at Elberfeld, Germany, in 1872. He was graduated from Stevens Institute in 1895 and became an instructor of physics and applied engineering there soon afterward. He was made professor and head of the department of electrical engineering in 1902. Professor Ganz contributed generously to the development of engineering and was widely known for his research work on electrolysis. He was a fellow in the American Institute of Electrical Engineers and a member of several other engineering societies.

Wilner E. Johnson, engineer of car construction, New York Municipal Railway Corporation, died of heart failure on July 27, after having had a sudden attack on May 23. Only those who were intimately associated with Mr. Johnson appreciated the ability of the man of quiet, unassuming disposition, who began his apprenticeship as a draftsman at the Fifty-second Street shops of the Brooklyn Rapid Transit Company fifteen years ago, and who rose in that period to the successive positions of chief draftsman in 1907, engineer of car equipment in 1911 and engineer of car construction of the allied New York Municipal Railway Corporation in 1913. What his employers thought of him is indicated by the fact that when his health failed in 1909 he received nine months' leave of absence with pay. In 1912, under the direction of his department head, W. G. Gove, Mr. Johnson made a most striking study of car design in relation to speed of passenger interchange—a study which has since become a model for many others. Mr. Johnson's largest achievements for his company were the detailed working out of the Brooklyn center-entrance surface car and the New York Municipal side-door car; but also as a member of the American Electric Railway Association's committee on equipment in recent years he spared no effort to make the committee's researches of real value to the industry at large. Mr. Johnson, besides being a member of the American Society of Mechanical Engineers, also took great interest in the American Society for Testing Materials, specializing in the manufacture and treatment of steel.

Construction News

Construction News Notes are classified under each heading alphabetically by States.

An asterisk (*) indicates a project not previously reported.

RECENT INCORPORATIONS

***Boise (Idaho) Railway.**—The Boise Railway has been incorporated as the successor to the Boise Railroad, Ltd., sold under foreclosure recently. Capital stock, $200,000. Incorporators: B. W. Oppenheim, W. E. Pierce, Thomas R. Hamer and Donald Miller.

FRANCHISES

Ithaca, N. Y.—The Ithaca Traction Company has filed a petition with the Public Service Commission asking permission to construct an extension of its railway in the village of Cayuga Heights and for approval of the exercise of a franchise received from that village.

East Cleveland, Ohio.—The East Cleveland Chamber of Commerce has recommended that the new franchise, approved by the City Council, be opposed by the electors at a referendum election. The Cleveland Railway, on the other hand, has stated that it will relay its track through the town and make all the improvements called for by the franchise as soon as possible, if a favorable vote is cast. The officers of the company desire to get the matter out of the way.

Salt Lake City, Utah.—A franchise for the construction and operation of a branch line of the Salt Lake & Utah Railroad has been granted the company by the Board of County Commissioners. The branch, in addition to connecting Magna with the main line of the electric railroad, will furnish means of transportation through sugar beet lands contiguous to the West Jordan sugar factory.

TRACK AND ROADWAY

San Francisco (Cal.) Municipal Railway.—The contract for the placing of ties and the laying of tracks for the Twin Peaks tunnel has been awarded to Eaton & Smith for a consideration of $81,000.

Valdosta (Ga.) Street Railway.—This company has started work on tearing up the line from Pine Park to the Strickland Cotton Mills in preparation to putting in the belt line which is to connect with the West Hill Avenue line at Pear Street and with the North Patterson Street line at Ann Street. The additions and changes in the lines will open up a large amount of territory in the western part of the city, which is thickly settled.

***East St. Louis, Ill.**—A company has been organized to operate an electric railway over the Free Bridge at St. Louis, Mo. The new company contemplates leasing the right-of-way of the Southern Traction Company, which is now in the hands of a receiver. The latter company has a franchise to operate from Belleville, Ill., to East St. Louis. The incorporators are William P. Launtz, Clyde Allen and Albert E. Meints, East St. Louis, and William B. Tate, St. Louis.

Rockford & Interurban Railway, Rockford, Ill.—This company is considering the extension of its city lines in Rockford for the use of the interurban lines so that the cars of the latter can obtain entrance to the Koehler Building, corner of Mechanic and Galena Streets which the company is desirous of leasing for a freight and passenger depot.

Terre Haute, Indianapolis & Eastern Traction Company, Terre Haute, Ind.—The city line of this company in Crawfordsville, Ind., will probably be extended south from Wabash Avenue to Crawfordsville Junction on Oak Street, a distance of about half a mile.

Frankfort, Ky.—P. C. Phillip, representing an Eastern corporation which is not designated, has just completed an inspection of the route and conditions relating to the proposed construction of an electric railway from Frankfort to Shelbyville, Ky. Two routes are proposed. Mr. Phillip made a thorough inspection, talked to representatives of organizations in both Shelbyville and Frankfort and returned East to report to his company.

Kentucky Traction & Terminal Company, Lexington, Ky. This company has completed the transfer of its track from the north side to the center of Georgetown Street as far as the city limits, and is now running cars over the new track.

Berkshire Street Railway, Pittsfield, Mass.—It is expected that this company's extension from Lee to Huntington will be placed in operation by Aug. 1.

Kansas City (Mo.) Railways.—Work will soon be begun by the Kansas City Railways on its line from Eighteenth Street and Central Avenue to Kansas Avenue. The new line will connect with the west factory center of Armourdale. It will cross the new Eighteenth Street viaduct.

United Railways, St. Louis, Mo.—The United Railways has begun cutting down trees on the De Mun tract, preparatory to building the extension of its tracks to the Hamilton Avenue line. The extension will give additional transportation facilities to Hillcrest, which is at the northwest corner of Skinker and Clayton Roads.

Southwest Missouri Railroad, Webb City, Mo.—It is reported that this company, which is constructing an extension from Galena to Baxter Springs, will extend its line to Oklahoma City.

Moncton Tramways, Electric & Gas Company, Ltd., Moncton, N. B.—This company is reconstructing some of its track in Moncton in connection with paving being done by the city.

Trenton & Mercer County Traction Corporation, Trenton, N. J.—An extension will be built by the Trenton & Mercer County Traction Corporation to the heart of Trenton Junction. The line now extends to the outskirts of the village and the Philadelphia & Reading Railway has granted the company permission to lay its tracks in a tunnel to be built shortly.

New York State Railways, Syracuse, N. Y.—An automatic block signal system has been installed by the New York State Railways on its East Syracuse line on the single track between Greenways and the factory of the Benedict Manufacturing Company. The installation represents an expenditure of about $3,000.

Black River Traction Company, Watertown, N. Y.—This company contemplates the construction of an extension of its system following the completion of the Court Street bridge. The extension may include a line up Washington Street with a loop to the State Street branch, provided the necessary consents can be obtained from the property owners.

Ohio Traction Company, Cincinnati, Ohio.—Hamilton County Commissioners and the Ohio Traction Company have reached an agreement to the effect that the Glendale line will be moved to the center of the Springfield Pike from Carthage to the north corporation line in Wyoming. In return for this work the company will be permitted to use the new bridge over Millcreek at Woodlawn, provided it pays the cost of the equipment. The matter of paving between the tracks is to be settled by the company and the village of Wyoming.

Wellston & Jackson Belt Railway, Jackson, Ohio.—A communication from the Hocking Valley Railway states that steam service has been substituted for electric on the Wellston & Jackson Belt Railway, a subsidiary company.

Youngstown & Sharon Street Railway, Youngstown, Ohio.—Work has been begun by the Youngstown & Sharon Street Railway reconstructing its track on East Boardman Street with "Trilby" girder rail.

Oklahoma Union Railway, Tulsa, Okla.—A communication from the Interurban Construction Company, which has the contract to build an extension of this company's line from Tulsa to Sapulpa, states that about one-third of the line is completed and it is expected that the entire line will be completed by Oct. 1.

Klamath Falls (Ore.) Municipal Railway.—Construction work has been begun by Robert E. Strahorn, Portland, on the Klamath Falls Municipal Railway from Klamath Falls to Dairy, 20 miles. [June 30, '17.]

Texas Electric Railway, Dallas, Tex.—The City Commission of Dallas has granted the Texas Electric Company the right to construct tracks and buildings for an interurban express station at Young, Market, Wood and Jefferson Streets.

Virginia Railway & Power Company, Richmond, Va.—Arrangements are being made by the Virginia Railway & Power Company for the reconstruction of a large portion of its trackage in the Barton Heights-Ginter Park section at an early date. Double-track work along First Street to the Barton Heights viaduct is practically completed.

Seattle (Wash.) Municipal Railway.—The construction of the proposed elevated municipal railway on Railroad, Whatcom and Spokane Avenues, from Washington Street to the West Waterway, Seattle, will require the vacation of franchises held by the Chicago, Milwaukee & Puget Sound Railway and the Oregon-Washington Railroad & Navigation Company on Railroad Avenue, from a point 100 ft. south of King Street to Yesler Way. A committee will be appointed by the Council to negotiate with the two companies for revocation of such franchise, and for acquiring common user rights on tracks owned by the Columbia & Puget Sound Railway. A report from the Seattle Municipal Street Railway states that it will construct an extension of Division "A" to Ballard within the next six months.

Washington Water Power Company, Spokane, Wash.—Heavy steel rails for restoring its tracks on Monroe Street between Riverside Avenue and the Monroe Street bridge will be installed at an early date by the Washington Water Power Company, preliminary to the paving of the street.

Tacoma (Wash.) Municipal Railway.—Work will be begun Aug. 1 on the construction of the new municipal line to the Todd shipyards.

SHOPS AND BUILDINGS

Sand Springs (Okla.) Interurban Railway.—Fire recently destroyed a large portion of the carhouse of the Sand Springs Interurban Railway, containing an electric motor car and six trailers. The loss is placed at $25,000.

Puget Sound Traction, Light & Power Company, Seattle, Wash.—The Department of Buildings, Seattle, recently granted to the Puget Sound Traction, Light & Power Company a permit for the construction of an oil storage tank, 100 ft. in diameter, at 1321 Greeley Street, to cost $28,000. The tank will be of reinforced concrete, and will have capacity of 15,000 barrels.

POWER HOUSES AND SUBSTATIONS

St. Joseph Railway, Light, Heat & Power Company. St. Joseph, Mo.—This company will probably be in the market for a locomotive crane and 400 ft. of coal conveyor for use in its coal storage yard. In March the company purchased two seven-retort Taylor stokers, in May six 500-kw. transformers, and in June soot blowers for twelve boilers, flow meters for five boilers and a 20,000-gal. water softener.

Trenton & Mercer County Traction Corporation, Trenton, N. J.—The City Commission of Trenton, N. J., has adopted a resolution giving the Trenton & Mercer County Traction Corporation until Oct. 15 to remove its transmission cables and poles throughout the city under penalty of seeking individual indictments by the Mercer County Grand Jury. The commission claims that the company has been maintaining the transmission cables and poles without having obtained the necessary franchises.

Western Washington Power Company, Seattle, Wash.—The Hebb power site on the White River, owned by the Mountain Development Company, has been purchased by the Western Water Power Company, a subsidiary of the Puget Sound Traction, Light & Power Company, at a cost of about $1,000,000. The plant will be held for the present as an auxiliary and a reserve plant.

Manufactures and Markets

Discussions of Market and Trade Conditions for the Manufacturer, Salesman and Purchasing Agent

Rolling Stock Purchases Market Quotations Business Announcements

Plain Talk About Deliveries

A Manufacturer of Electric Railway Materials Discusses the Problems of Meeting Deliveries

BY A RAILWAY SALES MANAGER

I have read with exceptional interest the article in the ELECTRIC RAILWAY JOURNAL entitled "Settling for Defective Equipment" (page 1211, June 30, 1917). Other articles on this important subject would be of service to manufacturers and purchasers. You have made a suggestion in the first article whereby the purchaser, if he compiles his losses accurately, is entitled to a fair adjustment for delayed shipments. I think, in fairness to the manufacturer, it would be well to bring out another phase of the manufacturing industry, which a great many of the purchasers do not appreciate.

RAW MATERIALS NOT CONTROLLED

The majority of manufacturers do not control their own raw materials and so they have to depend upon the purchase from other raw material producers, thus, when making promises of shipment, the manufacturers must base these on the promises given by the raw material manufacturers, and in most cases the delays of shipments of electric railway materials are due to failure to receive raw materials on time.

On the other hand, if a standardized product is being sold, then delivery failures are largely up to the manufacturer if he does not carry in stock reasonable quantities of the production materials. However, in the case of turbines, large railway motors, special control, etc., there is a belief among many of the manufacturing representatives, especially of the factory and engineering sections, that the railway industry as a whole should share pro rata with the manufacturers its portion of the development cost. Therefore if the manufacturer agrees to produce something that will effect considerable economies, he should not be penalized, if, due to no fault on his part, he did not meet the promised shipments.

It should also be borne in mind that manufacturers as a rule do not delay shipments merely because of lack of attention. Most manufacturers have to wait a long time for their money, and in order to turn over their funds as rapidly as possible, they are more anxious than the purchaser to make prompt shipments; but in a great many cases the raw material producers are working on a tonnage basis, and while they will give promises of shipments of special material, they do not apparently hesitate to incur delays of thirty or sixty days if it is found that in this way their tonnage rate will be maintained or increased.

SPECIAL DESIGNS CAUSE DELAYS

A great many of the raw material producers, during the past year or so, have been very slack in keeping to their promised shipments, especially so if the apparatus is any way special. This has imposed a very severe hardship on the manufacturers. Some producers when the manufacturer complains, will politely tell him that they would prefer to cancel his order and not bother further about it, etc. The best information or advice usually obtainable is—"We are quite sure that we can make shipment on a certain date, but in these times, this, that or the other may interfere with it, etc."

With this set of conditions confronting him the manufacturer in turn will allow a margin of thirty to sixty days on the producers' promise and will make promises to his customer that the fabricated product will be shipped at a certain time, only to find later on that he has been delayed several weeks and sometimes months by the raw material producers.

PENALTIES FOR DELAYS WON'T HELP

Of course, it might be argued that the manufacturers of the apparatus could in turn hold the raw material producers for damages, etc., but one must bear in mind that if the purchasers of the apparatus once started a systematic method of holding manufacturers for damages on account of delays in shipments, the manufacturers would naturally protect themselves in price and by longer deliveries. It is a well-known fact that the average factory will deliver according to promised shipping dates as nearly as possible. However shipping ahead of time in many instances results in holding up payment until the regular shipping date arrives because the purchaser had not provided for funds to make payment until he had received shipments. This works a financial hardship on the manufacturer.

I think the broad-minded spirit that you have suggested in your recent article is a splendid one, and I think a great deal could be written regarding the attitude of many purchasers on the question of claims of defects, etc., when as a matter of fact they are largely due to improper methods of maintenance and care, but the manufacturer has not backbone enough to tell the purchaser plainly where the difficulty lies, because he is immediately confronted with the statement that he is merely trying to step from under his responsibility and is making a big fuss over nothing.

Railways Near Cantonments Order Cars

Numerous Inquiries for Supplies—Prompt Deliveries Required on Rolling Stock Purchases—Large Demand for Second-Hand Equipment

The demands made upon electric railways in the vicinity of cantonments for immediate service, including in many instances the furnishing of light and power, are being met promptly. A number of the railways affected placed orders for equipment some time ago and are now receiving cars from the car builders. Other companies are now in the market for cars and a number of orders have been placed with deliveries promised in from four to five months. In cases where the companies cannot get deliveries in sufficient time for properly handling the traffic or have not the necessary funds to purchase new equipment, they are either remodeling old cars or buying second-hand equipment.

To take care of the traffic conditions that have been increased by the location of the new naval base at Pine Beach, the Virginia Railway & Power Company has just placed an order for twenty new steel cars. The contract calls for the delivery of these cars not later than Nov. 1. The Columbia (S. C.) Railway, Gas & Electric Company is building four semi-convertible cars for cantonment service and expects to buy four new cars. Among the companies which have purchased second-hand equipment are the Washington, Baltimore & Annapolis Electric Railroad. This company, as noted in the July 21 issue, has just purchased fifty-four trailer cars from the Long Island Railroad and has also placed an order for eight electric locomotives to be used for service to the cantonment at Admiral, Md. The Union Light & Power Company of Kansas City, Mo., recently purchased five trailers for its Fort Riley service and will place them in commission as soon as they are required. The Montgomery Light & Traction Company of Montgomery, Ala., has purchased six new all-steel, pay-as-you-enter cars and are therefore prepared to furnish a good service to the camp nearby. The San Diego (Cal.) Electric Railway is remodeling twelve 40-ft. cars and these are expected to be finished by the time the camp is opened. A number of railways have purchased passenger trailer cars, these companies including the Kankakee & Urbana Traction Company and the Scioto Valley Traction Company.

The majority of the companies are furnishing light and power and in most cases this necessitates the building of a transmission line and the installation of transformers, etc. Although in these times the railways are striving to get along on just as little as they possibly can, the railway supply men are receiving a number of orders on account of equipping cars for cantonment service, and all this helps to liven up what otherwise might be considered a quiet season.

Railways Acquiring Coal Lands

In addition to the railways noted in last week's issue as purchasing coal mines or coal lands, the Commonwealth Power, Railway & Light Company, Grand Rapids, Mich., is reported to have purchased a three-quarter interest in a coal mine in Logan County, W. Va., the other quarter being owned by Columbia Power, Railway & Light Company. Production is running at the rate of 300,000 tons a year. Reserves are estimated by engineers at between 9,000,000 and 10,000,000 tons.

According to the latest report of the United States Geological Survey on the weekly production of bituminous coal and the causes of loss of working time, a slight increase in the percentage of full-time capacity realized in actual output is reported for the week ended July 14. The output amounted to 77.4 per cent as compared to 76.5 per cent for the week ending July 7. The per cent of full time lost on account of car shortage for the week ending July 14 was 15.9, on account of labor shortage and trouble, 3.4, and on account of mine disability, 3.9.

Car Service Plans of War Board

Plans for the solution of present transportation problems have just been adopted by the Railroads' War Board, according to Fairfax Harrison, chairman of the board. It concerns the prompt movement of the thousands of cars required by the government to transport lumber and other supplies to the shipbuilding yards, the army cantonments and other mobilization points. The government will hereafter give advance notice to the War Board's Commission on car service whenever orders are placed for more than ten carloads of materials or supplies. It will also issue, where necessary, through its authorized representatives, orders to the railroads on which the supplies are to be shipped, instructing them to provide the number of cars ordered within the time specified and at the shipping points designated.

Effect of War on Canadian Exports

Reports were prevalent a few weeks ago that the entry of the United States into the war in Europe had stimulated to a considerable degree electrical trade with Canada. While such reports may have been true for other manufacturing industries, a careful investigation has disclosed no material increase in electrical exports to Canada. In fact, in some instances it was found that America's entry into the war was a signal for decreasing trade. A number of projects were scheduled for development shortly, but simultaneously with the entrance of America into the war these plans were either abandoned or postponed indefinitely.

Of course, it must not be lost sight of that some of the larger American manufacturers have established Canadian factories or have connections in Canada in which they have substantial interests whereby goods of Canadian manufacture but identical in design with American goods are marketed in Canada. These plants, which are largely financed by American capital and buy probably most of their raw materials from the United States, have been established in Canada as a means to compete in the Canadian market without the necessity of having to pay import duty.

Costs of Office Supplies Increase

A great deal has been written in these columns about the increases in the costs of electric railway equipment, but these costs are not the only ones which cause worry in the purchasing departments of the railways. One of the large railroad systems which operates a number of electric lines has called attention to the increases in office supplies. A good grade of water-marked bond paper two years ago sold for 7 cents a pound, but it is not possible to get this paper at double the price to-day. A few important items. all of which have been purchased in large quantities. are listed, showing prices paid two years ago, prices paid at the present time, and the percentage increase for the two years.

	1915	1917	Per Cent Increase in Two Years
Copy ink, dozen quarts	$2.25	$8.00	255
Blue ink, dozen quarts	2.00	4.50	125
French ink, dozen quarts	2.25	8.00	255
Mucilage, dozen quarts	2.50	4.40	76
Blotting paper, 100 lb.	7.00	14.60	108
Manila wrap	3.60	10.05	179
Plain, per thousand	.51	1.27½	149
Special mimo, per thousand	.55	1.25	127
Carbon, per thousand	2.50	3.80	52
Paste, dozen	2.75	5.20	89
Pencils, copy grade	3.00	6.00	100
Folders, cap size, thousand	3.40	7.20	112

$7,000,000 of Porcelain Supplies Purchased in 1916

The value of porcelain electrical supplies marketed in the United States in 1916 was $7,034,420, an increase of $2,363,218 over 1915, according to the United States Geological Survey Department of the Interior. These wares were reported from ten states of which Ohio was the leader, reporting wares to the value of $2,181,026. New Jersey was second, with $1,674,093, and New York third with $1,623,433. These three states reported 78 per cent of the value of the entire output.

NEW YORK METAL MARKET PRICES

	July 26	Aug. 3
Prime Lake, cents per lb.	26	29
Electrolytic, cents per lb.	26	29
Copper wire base, cents per lb.	36	36
Lead, cents per lb.	10¼	10⅞
Nickel, cents per lb.	50	50
Spelter, cents per lb.	8¾	8¾
Tin, Straits, cents per lb.	62½	63¾
Aluminum, 98 to 99 per cent, cents per lb.	57	56

OLD METAL PRICES

	July 26	Aug. 3
Heavy copper, cents per lb.	24	23½
Light copper, cents per lb.	21	20½
Red brass, cents per lb.	19	19
Yellow brass, cents per lb.	16	15½
Lead, heavy, cents per lb.	8½	8½
Zinc, cents per lb.	6	6
Steel car axles, Chicago, per net ton	$45.50	$45.00
Old car wheels, Chicago, per gross ton	$32.50	$31.50
Steel rails (scrap), Chicago, per gross ton	$43.00	$43.00
Steel rails (relaying), Chicago, per gross ton	$59.50	$60.00
Machine shop turnings, Chicago, per net ton	$17.50	$16.50

CURRENT PRICES FOR MATERIALS

	July 26	Aug. 3
Rubber-covered wire base, New York, cents per lb.	36½	36½
No. 0000 feeder cable (bare), New York, cents per lb.	36½	36½
No. 0000 feeder cable (stranded), New York, cents per lb.	33¾	33¾
No. 6 copper wire (insulated), New York, cents per lb.	33	33
No. 6 copper wire (bare), New York, cents per lb.	36	36
Rails, heavy, Bessemer, Pittsburgh	$38.00	$38.00
Rails, heavy, O. H., Pittsburgh, per gross ton	$40.00	$40.00
Wire nails, Pittsburgh, per 100 lb.	$4.00	$4.00
Railroad spikes, 9/16 in., Pittsburgh, per 100 lb.	$5.00	$7.00
Steel bars, Pittsburgh, per 100 lb.	$4.50	$4.50
Sheet iron, black (24 gage), Pittsburgh, per 100 lb.	$8.35	$8.35
Sheet iron, galvanized (24 gage), Pittsburgh, per 100 lb.	$9.55	$9.55
Galvanized barbed wire, Pittsburgh, cents per lb.	$4.85	$4.85
Galvanized wire, ordinary, Pittsburgh, cents per lb.	$4.65	$4.65
Cement (carload lots), New York, per bbl.	$2.22	$2.22
Cement (carload lots), Chicago, per bbl.	$2.31	$2.31
Cement (carload lots), Seattle, per bbl.	$2.60	$2.60
Linseed oil (raw, 5 bbl. lots), New York, per gal.	$1.12	$1.13
Linseed oil (boiled, 5 bbl. lots), New York, per gal.	$1.13	$1.14
White lead (110 lb. keg), New York, cents per lb.	12¾	12¾
Turpentine (bbl. lots), New York, cents per gal.	42	42½

ROLLING STOCK

St. Joseph Railway, Light, Heat & Power Company, St. Joseph, Mo., is in the market for twelve one-man cars.

San Diego (Cal.) Electric Railway is remodeling twelve 40-ft. cars to be used in connection with the cantonment near its property.

Northern Ohio Traction & Light Company, Akron, Ohio, through Hodenpyl, Hardy & Company, has placed an order for four 50-ft. freight trailer bodies and also for freight trailer trucks to equip these cars.

Virginia Railway & Power Company, Richmond, Va., has placed an order for twenty new steel cars with the St. Louis Car Company for delivery between Oct. 15 and Nov. 1. These cars will take care of the increased traffic caused by the location of the new naval base at Norfolk, Va.

Fort Wayne & Northern Indiana Traction Company, Fort Wayne, Ind., noted recently as being in the market for ten double-truck cars, has specified the following details for this equipment, which is being built by the St. Louis Car Company:

Number of cars ordered	10
Date of order	April, 1917
Date of delivery	Sept., 1917
Builder	St. Louis Car
Type	Semi-convertible
Seating capacity	52
Weight (total)	33,900 lb.
Bolster centers	17 ft. 0 in.
Over bumpers	42 ft. 0 in.
Over vestibule	41 ft. 0 in.
Width over all	8 ft. 7 in.
Rail to trolley base	11 ft. 3 in.
Body	Semi-steel
Interior trim,	Birch stained light cherry
Headlining	Agasote
Roof	Arch
Air brakes	West. D-H-10
Axles	Baldwin
Bumpers	Channel
Trimmings,	Bronze statuary finish
Conduits	Crouse-Hinds
Control type	West. K-12A
Couplers	None
Curtain fixtures	Ring No. 88
Curtain material	Pantasote
Dest. signs	St. Louis Car
Door mechanism	St. Louis Car
Fare boxes	Cleveland
Fenders	H. B. life guards
Gears and pinions	Nuttall
Hand brakes	Peacock, no staff
Heaters	Peter Smith Electric
Headlights	Ohio Brass ZP.
Journal boxes	Symington
Lightning arresters	West.
Motors	West. No. 506—C2, inside hung
Paint	Builders standard
Registers	International
Sanders	Keystone traps and Ohio brass valves
Sash fixtures	O. M. Edwards
Seats, style	St. Louis reversible
Seating material	Rattan
Springs	Standard steel
Step treads	Feralun
Trolley catchers	Ohio brass
Trolley base	U. S. No. 15
Trolley wheels	Moore Jones
Trucks, type	9 cars, Baldwin No. 66-18-C; 1 car, St. Louis Car No. 119-B.
Ventilators	Garland
Wheels	9 cars, 30-in. rolled steel; 1 car, 30-in. Davis
Special devices	Forsyth Bros. beadless brass sash, with brass side weather stripping

TRADE NOTES

J. H. Flynn has been appointed manager of the bucket department of the Blaw-Knox Company, effective July 1.

Thomas Henderson has retired from the Coxe Traveling Grate Company to become chief engineer for the Benjamin Iron & Steel Company.

Alfred Spangenburg has resigned from the S. L. Moore & Sons Corporation, Elizabeth, N. J., to accept a position as superintendent of the ordnance shop of the Mead-Morrison Manufacturing Company.

Stephen Gardner for thirteen years connected with the sales office of the Westinghouse Electric & Manufacturing Company, has resigned to accept a position as treasurer of Greenlee Foundry Company and its allied companies.

Davis-Bournonville Company, Jersey City, N. J., announces that on Aug. 1 it will open a school at its plant for the instruction in oxy-acetylene welding and cutting practise of purchasers of its equipment.

Singer, Reed & Taylor, Pittsburgh, Pa., have opened offices at 304 Wabash Building and will handle the sale of iron, steel, alloys and scrap metals.

National Association of Purchasing Agents, New York, N. Y., will hold its annual congress at Pittsburgh, Oct. 9, 10 and 11. The program includes business sessions for the mornings and visitation and inspection of industrial works during the afternoons.

John F. Card, for the last eighteen years superintendent and designing engineer of direct-current machinery for Fairbanks, Morse & Company at Three Rivers, Mich., has resigned to go into the manufacturing business on his own account.

W. J. Gillingham has been elected vice-president of the Hall Switch & Signal Company with headquarters in New York City. He has been connected with this company since 1900, holding the positions of general agent, resident manager and general sales agent respectively.

Phillips Wire Company, Pawtucket, R. I., announces that the business operated as the Phillips Insulated Wire Company will hereafter be conducted under the name Phillips Wire Company. The location of the business, policy and management will be the same as heretofore.

Ingersoll-Rand Company, New York, N. Y., announces that at a meeting of the board of directors on July 25, J. H. Jowett, formerly general sales manager, was elected vice-president and that L. D. Albin, formerly assistant general sales manager, was appointed general sales manager. Mr. Jowett and Mr. Albin will continue to make their headquarters at the company's New York office, 11 Broadway.

Laclede-Christy Clay Products Company, St. Louis, Mo., announces that it has recently acquired the long-established plant and good-will of the Beaver Valley Pot Company of Rochester, Pa., and will operate this department hereafter as the Laclede-Christy Company of Pennsylvania, Rochester, Pa. The company intends that its new product, L-C Beaver Valley Pots, shall enjoy an equal reputation with the L. C. company's tank blocks, bottom blocks, checkers and bonding clay.

NEW ADVERTISING LITERATURE

General Electric Company, Schenectady, N. Y.: A leaflet descriptive of automatic control for small direct current motors.

Crocker-Wheeler Company Ampere, N. J.: Bulletin 181 superseding bulletin No. 156. Contains detailed information on motor-generator sets for all classes of service to which they are applicable.

Portland Cement Association, Chicago, Ill.: A booklet on "Bulk Cement," advising the common sense and economy in the use of this product. Describes and illustrates the various uses of this material and includes a number of users of bulk cement.

Chicago (Ill.) Pneumatic Tool Company: Bulletin No. 137 on its Chicago giant rock drill. Contains dimensions, weight, shipping measurements, prices, details of parts and illustrations of a number of jobs which have been completed with this type of drill.

Edison Storage Battery Company, Orange, N. J.: Bulletin No. 600 on Edison storage batteries for industrial transportation. Describes and illustrates various applications of this battery. Contains general data and dimensions of batteries with details of costs.

Horne Manufacturing Company, Brooklyn, N. Y.: Bulletin on Sterling trolley bases, also a new bulletin describing miscellaneous electrical equipment that this company has acquired since taking over the Lord Manufacturing Company's business on the first of the year.

Crouse-Hinds Company, Syracuse, N. Y.: Bulletin No. 303 on Imperial floodlight projectors and reflectors. Gives in detail its type SD projector which is made in three sizes to be used with 9⅝-in. 12-in. and 16-in. reflectors and its type SC projector made only for use with a 16-in. reflector. Special and diffusing lenses are included. Mountings, lamps, resistances and special parts are described and listed. Full page illustrations showing scientific and practical arrangement of floodlight projectors for factory protection are given.

Westinghouse Electric & Manufacturing Company, East Pittsburgh, Pa.: Reprint No. 56 of the "Norfolk & Western Electrification from the Railroad Viewpoint." Contains two papers, the first "An Unusual Railway Electrification," by A. H. Babcock, consulting electrical engineer of the Southern Pacific Company. This paper was delivered before a recent meeting of the San Francisco section of the American Institute of Electrical Engineers. The second paper is by C. H. Quinn, chief electrical engineer of the Norfolk & Western Railway, which was read before the New York Railroad Club at its annual electrification meeting. In one of the final paragraphs on the results of electrification comparisons are given of electric and steam operation, showing the many economies in favor of the electrification scheme.

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City Parking Ordinances Should Be Encouraged

THE figures which we were enabled to publish last week on the results of Chicago's anti-parking ordinance throw a surprising light upon this phase of city operation, and it would be well if they could be brought to the attention of every city government in the country. In Chicago, the prohibition of automobile parking on every car-line street in the business district brought about a saving of no less than 25 per cent of the time formerly occupied by all cars in passing through the congested part of the city. This amounted to an average time saving of 3.7 minutes, but on several lines the gain actually exceeded eight minutes per car. Clearly enough, such a condition in general on a line with reasonably frequent headway would mean that cars entering the congested district would be bunched and moving on a short headway. For cars leaving the congested district, however, the reverse would take place, with the result that frequent headway would be given at points of light traffic and lengthened headway at the points where the maximum service would be desirable. On a line requiring sixty minutes for the round trip the maximum time saving effected at Chicago would cause a 13 per cent increase in service without increasing the number of cars on the line, provided only that the rush hour lasted for more than the round-trip time. The passage of such ordinances, like the introduction of the skip stop, is a measure of co-operation between a city government and a railway that results only in benefit to both, and at present an unequalled opportunity is afforded to establish such co-operation.

Fundamentals in the Practice of Publicity

MR. LEE, who contributed an article last week on the psychology of publicity, continues his treatment of the subject this week by a discussion on personality in publicity. In the first article he emphasized the necessity of not neglecting the human side of the audience addressed. The typical "lawyer's brief" may be a very convincing argument when presented before a court, but publicity material, if prepared in that form, would not prove very successful. In his article this week Mr. Lee extends his discussion of making publicity material "human" by advocating that personality be put into it. Still a third factor of successful publicity, which Mr. Lee has often dwelt upon, is continuity. The telling of the story should not be left until the pinch comes and when the company is in need. Publicity delayed loses greatly in value. Just now, for instance, electric railway companies are asking for increased fares. Until they decided to ask for greater income they had given the matter of rising costs and fixed fare very little publicity. Delayed until now it cannot possibly have the value that it could have had before these petitions were filed with the Public Service Commission. No matter how true the story of the electric railway may be of rising costs for labor, equipment and taxes, it is now discounted by many because it is being told in conjunction with an appeal for higher fares. The same story told last year, or the year before last and frequently since, would have made the task of convincing the public of the justness of the demand for increased revenue infinitely easier. The public mind would have digested the facts and argument. The present fare campaign will not have been in vain, if it has no other result than to teach electric railway companies this lesson in publicity.

Belated Publicity and Preventive Medicine

TOO many electric railway men think of publicity work as a last resort, a sort of emergency medicine. And they think of it as something in which they are not fitted to act. They realize perfectly that the public must be informed of the facts in a certain situation, but they don't know how to go about it. "I'm a railway man, not a writer," said one recently, "nor am I a speaker or advertising man. When my child is sick, I do not attempt to doctor it. I call a physician." Now, what the railway man said is true enough, but it calls for some analysis and comment which may show a better way to do things. It is true that the average railway man is not a professional writer. And, true again, he is not a doctor. But of late years we have come to learn that preventive medicine saves a great many more human lives than curative medicine. By preventing the breeding of mosquitoes we prevent the transfer of the yellow fever germ from a sick man to a well man, and yellow fever has lost its standing as a great human scourge. By keeping our drinking water, milk supply, etc., clean, we avoid typhoid fever. By vaccination we prevent smallpox. A public utility that waits until the day of trouble before seeking the good-will and sympathetic interest of the public is like the person who wants typhoid cured instead of having it prevented. The railway side of the question may be absolutely correct, but not all of a cold or uninterested public will accept it. But a public already the friend of the railway is prepared to give a ready hearing to what is said in its support. A person does not have to be a physician to screen his house to keep out flies and mosquitoes. He knows that is good policy so he engages a carpenter to do it. So with publicity. A company decides on keeping the public informed about the service it is directing in its behalf, and if necessary it gets some help to put the statement into form as advertisement, pamphlet, leaflet, or written statement. If only these statements are simple, direct and authoritative, the main objects are attained. And any man intelligent enough to run a good public service can get these qualities into his publicity material.

Electric Transportation of Farm Products a Benefit to All

In these days, when the steam railroads are bending all of their energies to the handling of through freight and the electric roads are striving to find those portions of the freight business which they can most efficiently take over, an excellent opportunity exists for the electric roads to develop the transportation of garden products from the farmer to the consumer. A bulletin just issued by the department of market and rural organization of the United States Department of Agriculture, points out some of the essential factors. They are, briefly, a fast but frequent stop service to pick up farm produce within the "commuting" distance, the location of a market for distribution purposes close to the railway terminal, an arrangement by which the shipper or his agent takes possession of the products immediately on their arrival at the terminal, and "organized efforts of the producing community intelligently directed in sympathetic co-operation with the carrier."

The rates charged on the steam railroads for service of this kind, according to the report just mentioned, are somewhat higher than first-class freight rates, yet the steam railroads do not seem to be anxious for it, even in normal times, because of the special features in equipment and treatment required. On the other hand, the chief handicap in the past to the substitution of electric service for steam in this class of transportation, according to the Agricultural Department, has been the lack of adequate and centrally located city terminals and the restrictions imposed on the running of freight cars through the streets. These, however, it seems to us should be merely temporary. If a real need exists for the service and the steam railroads are not in a position to supply it, it must perforce fall on the electric carriers. Freight terminals will be built, as they have been built in Indianapolis, Detroit, and Los Angeles, if there is need for them, and as the chief persons to be benefited by such improved facilities are the consumers, they should not hesitate long in granting freight rights. The bogie that electric freight cars should not be permitted on city streets in reasonable numbers and at reasonable hours might just as well be laid at rest. Electric cars for this service possess a great many advantages over automobile or horse-drawn trucks, and we know of no city where such rights have been revoked after once being granted. This shows that the community appreciates the value of the service rendered. In fact, the Massachusetts Public Service Commission has been conspicuous in advocating broader freight rights for the electric roads in its jurisdiction.

Do Competitions Always Stimulate to Increase of Production?

The passing of the date, Aug. 1, on which closes the competition for the medal awarded by the American Electric Railway Association for the best paper presented before a company section, suggests a review of the activities of the sections during the year and a query as to the probable effect which the medal competition has had upon these activities. A tabulation of the eighty or more section meeting programs shows a wide variety of method and material indicating a substantial year's work. There are comparatively few papers suitable for entry in the competition, but among these are several of excellent quality. We predict that the winning paper will be well up to the standard set by previous awards, but we doubt if the competition has directly affected their quality. The award will be more a recognition of good work well done because well adapted to local needs rather than a reward for special effort stimulated by the prospect or possibility of such recognition.

The programs indicate clearly that the sections are using their organizations for the laudable purposes of promoting fellowship among the members, familiarizing the employees with the operating problems of the several departments of each company and broadening the outlook of all with respect to local and national issues. Socials, patriotic gatherings and meetings at which company officials spoke, were conspicuous. Papers, as this term is generally understood, were relatively few. But there appears to have been a fine spirit animating the gatherings, especially at those where patriotism had a chance to manifest itself. The sections which do not get the medal may, therefore, take comfort in the realization that their gatherings were possibly best meeting the local situation even if they did not bring out any epoch-making papers. We wish to commend especially such features as the departmental talks in Washington, Connecticut, Denver, Milwaukee and Manila; the educational lectures in Chicago; the classwork in Toledo; the power plant visit in Newark and the sociability in Hampton, Portland and elsewhere. These things will not be recognized by medal awards but they are accomplishments to be proud of.

While it is the duty of section officers to send to the association office copies of all worthy papers presented at their meetings this should be done as a matter of course rather than in the spirit of rivalry for honors. The history of the Edison medal of the A. I. E. E., the Brill competition in car design, and presumably of others also, shows that production is not stimulated directly by hope of reward. For example, the Edison medal was at first intended to encourage worthy research work, but failing in this it is now awarded to honor men of signal accomplishment. Possibly the present or another association medal might be given to the section or the individual, or both, which contributed most to the development of the local members in efficiency and satisfaction in their work, if there was any way of determining how to make such an award.

Making the Public See the Other Side

FORCED to it by rising costs electric railway men now realize that they must teach the public to see their side of the increased fare problem. The 5-cent fare has maintained almost a prescriptive right to existence. It has been a convention, a fetish. It is a habit of mind with the public, and it must be changed. The electric railway man sees nothing sacrosanct in the nickel fare. He must provide for the public a street car service. He must sell the kind of a service the public prescribes, and his only customer is the public. Furthermore, this customer sets his own price.

There is no way in the world to get satisfactory business results out of such a situation except to have the public see that the electric railway company has rights and that its interests and the public's interests are interests in common. The public must be led to appreciate that when a company's expenses are growing faster than its receipts, not only is the company headed toward bankruptcy but the public will be the greatest sufferer from that bankruptcy. It will inevitably mean fewer cars, more crowded cars and cars in worse condition, even if it does not mean the disappearance of some car lines altogether.

Now it is principally the fault of the railway management if the public does not see both sides. It isn't enough that electric railway managers have correct ideas about the railway business. The public's ideas must also be correct. If the ideas of the railway men are right and those of the public are not, the companies simply haven't made the public understand the case. They either have not been frank about it or have not talked in the language that the average man understands.

There's no hocus pocus nor mystery about sound publicity. True, there's a certain technical experience necessary to the preparation of any story for publication, but the important thing, without which no amount of technical expertness will avail one whit, is to have an honest case, and then to state it frankly and persistently. And electric railway men have not appreciated the truth and importance of this. Much of the publicity attempted has been cold and formal. It lacked human touch, and its circulation has been confined practically to electric railway men. The public will sympathize with the railway when it sees the point, but no one in the world can make that point public property but the railway man himself.

The electric railway men haven't done this. They have not had the public's sympathetic interest. The proof of this statement is that every electric railway man feels that his business is under more or less public suspicion. They haven't had the public's sympathetic interest because they have neglected to do the things necessary to get it. This situation can be bettered only by persistent and frank publicity, backed directly and openly by men who are strong in the conviction of the correctness of their business methods and the justice of their case.

The Need for a "Billy" Sunday

THE electric railway business needs a "Billy" Sunday. It needs him to preach the gospel of service to the men in the industry itself. It also needs him to tell the people—in language that they can understand—what the electric railways are doing for them.

The people know "Billy" Sunday, and he knows them. He speaks their own language. He goes to the heart of a subject, not in a roundabout way but straight, fearlessly and without evasion. This explains what he has been able to do for religion.

What "Billy" Sunday has done for the church can be done for the electric railway business. It must be done if a nation-wide epidemic of receiverships is to be averted. There is no time to lose.

The electric railway industry to-day faces a crisis. It has reached the point where it must have more revenue, and it is meeting with opposition when it reaches out for it. Why? Because the public distrusts it!

For years, the industry, like every other ordinary sinner, has been its own worst enemy. It has tried to run its business without taking the public into its confidence. This is about as foolish as trying to run a church without revivals, which can be done, according to "Billy" Sunday, only when a gasoline engine can be run on buttermilk. Yet to-day there are traction managers who marvel that the public should protest when an effort is made to raise fares.

What if the additional revenue is needed? What if the company will go into bankruptcy unless the extra fare is granted? Can the man whose sole conception of the electric railway business has been gleaned while riding to and from work in crowded cars be blamed for protesting the extra charge? How is he to know that operating costs have practically doubled within the last five years?

When the industry finds its "Billy" Sunday, it will find a healthy answer to these questions. It will find, too, that the public, despite what seems to be a callous indifference to utility troubles, is at heart fair. All it demands is a square deal, with the cards face up on the table.

But the time is short. It behooves those who would avert financial disaster to get busy at once and do some "Billy Sundaying" on their own account. In so doing they should remember all the time that "Billy" is a "doer" as well as a talker. Talk without service is so much wasted breath.

In many cases, companies are already giving as good service as possible under unfavorable circumstances. But that fact is not going to be appreciated nor additional revenue made possible for the improvement of conditions until the public has been shown.

"Billy" Sunday has proved that the public is fair-minded at heart and can be reached with the right kind of a story, told in plain speech and backed up by performance. When that fact penetrates the minds of the electric railway managers, the outlook for the necessary increased rates will become brighter.

Southern Pacific Railroad Extends Oregon Electrification

Forty-two Additional Miles of Steam Railroad Line on This Company's Portland Division Have Been Electrified at 1500 Volts, Thus Providing Electric Service Throughout the Major Part of the Fertile Willamette Valley Extending South from the City of Portland

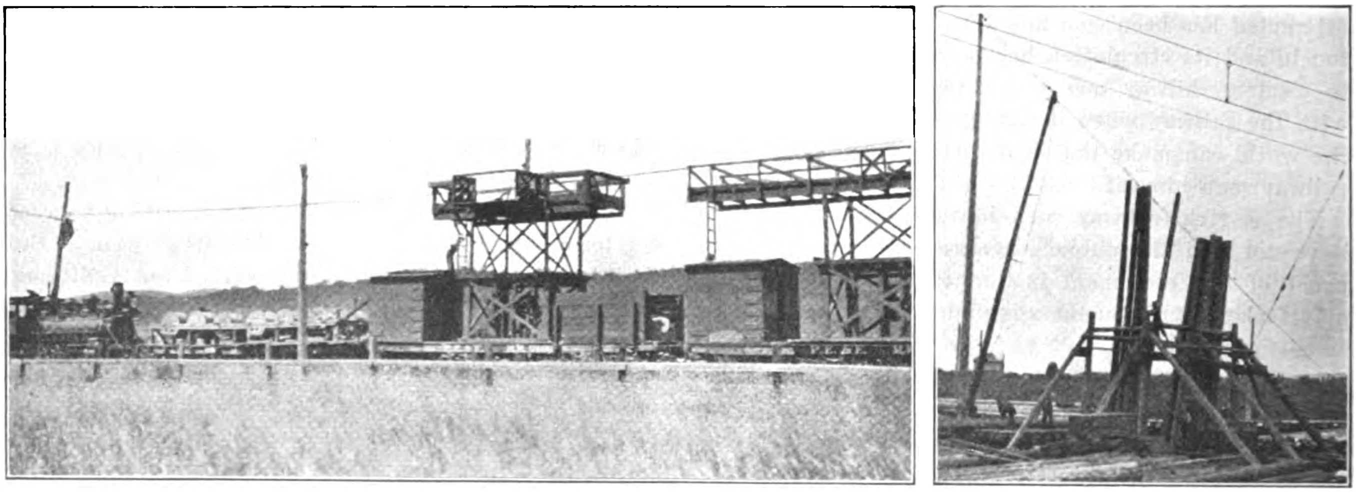
ON June 17, 1917, the Southern Pacific Company placed in service an extension of its electrically-operated lines in northwest Oregon whereby 42.3 route miles (47.5 miles of single track) have been added to the 1500-volt direct-current electrification of its Portland division. The new electrification, which runs almost due south from Whiteson to the town of Corvallis, brings within sight the completion of the company's ambitious plan, undertaken a half-decade ago, to have electric operation for every line in the fertile Willamette Valley, excepting a single steam railroad route for through traffic north and south across the State.

At the eastern side of the valley, which extends for about 100 miles south of the city of Portland, is the Oregon Electric Railway, while the western side is served by the line whose extension has just been completed. Of this latter electrification the first section to be changed over from steam to electric operation was placed in service in January, 1914. This section included the so-called West Side Branch, extending from Portland through the town of Forest Grove to Whiteson; also the Newberg Branch, extending from Portland via Newberg to St. Joseph, where it joins with the first-mentioned line. The section includes also the short Tigard Branch, which connects the two above-mentioned branches by a line between the towns of Beaverton and Cook, making a small loop about 10 miles southwest of Portland. These three divisions make up a total single track mileage of 120. With the latest electrification at the south end of this trackage, there is provided a through route from Portland to Corvallis, the distance via Newberg being 87.8 miles.

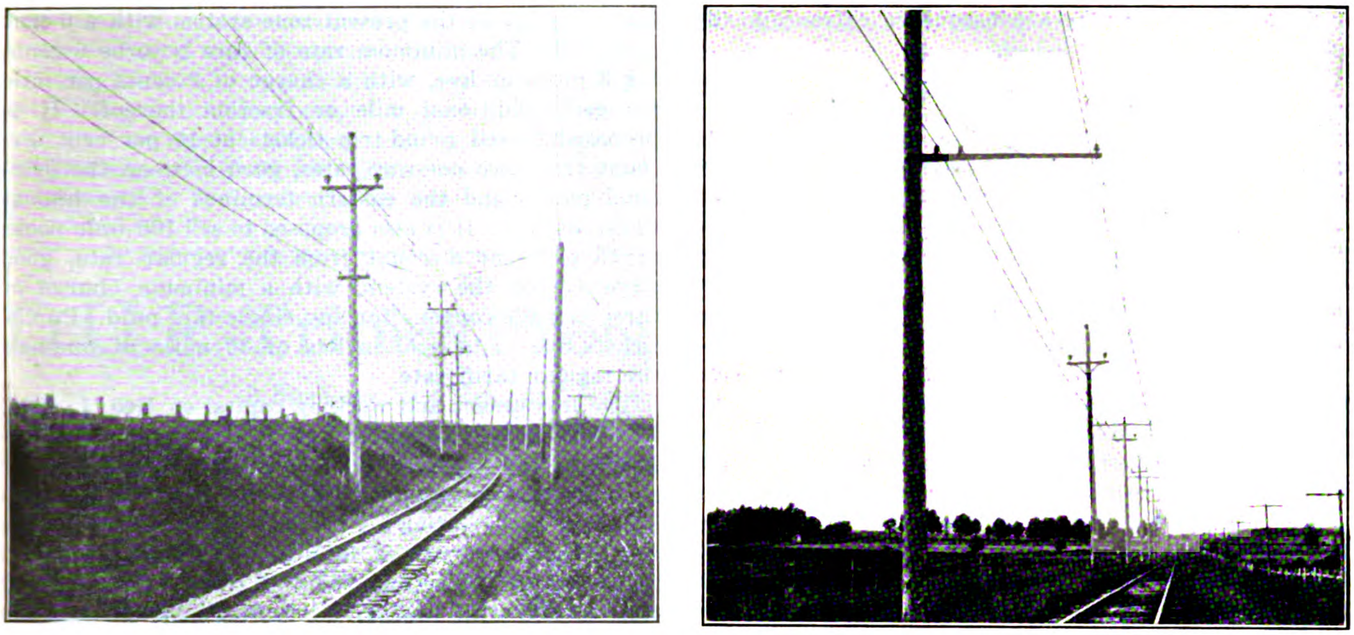
In general the new line construction, as shown in the accompanying illustrations, follows general customary catenary standards, similar to those which were used on the first section of the line to be electrified. Such modifications and refinements in details as have been made in connection with the new work are only minor in character and were made as a result of operating experience with the earlier construction. The contact system is made up of a single catenary which has a steel messenger wire supporting a copper contact wire by means of flexible hangers, the latter being in the form of a round steel rod bent into a large circular loop at the upper end and clipped solidly to the contact wire at the lower end. Wooden poles are used, and over part of the route these are extended to support a three-phase high-tension transmission line supplying energy for the two substations that have been installed.

In distributing materials and stringing the messenger wires, trolley wires and feeders, the fullest possible use was made of a work train drawn by a steam locomotive, and a heavy steam-operated locomotive crane with a specially long boom was kept steadily at work during the construction period for loading, unloading and seting the poles.

All of the poles that were used received an open-tank butt treatment with creosote at a temperature of 220 deg. Fahr., this being done by the company at a plant erected especially for this purpose. This plant is shown in an accompanying illustration which indicates the major features, consisting of a framework to hold the poles upright during treatment and a large derrick for handling the poles from the storage piles to the tank and thence to flat cars for distribution along the line. The total number of poles treated at this plant was 2300, and it was estimated that the savings which were made



SOUTHERN PACIFIC ELECTRIFICATION—WORK TRAIN WITH PLATFORM CARS ENGAGED IN STRINGING TROLLEY AND MESSENGER WIRE; TREATING PLANT CONSTRUCTED FOR CREOSOTING BUTTS OF POLES



SOUTHERN PACIFIC ELECTRIFICATION—TYPICAL OVERHEAD CONSTRUCTION ON TANGENTS AND ON CURVED TRACK

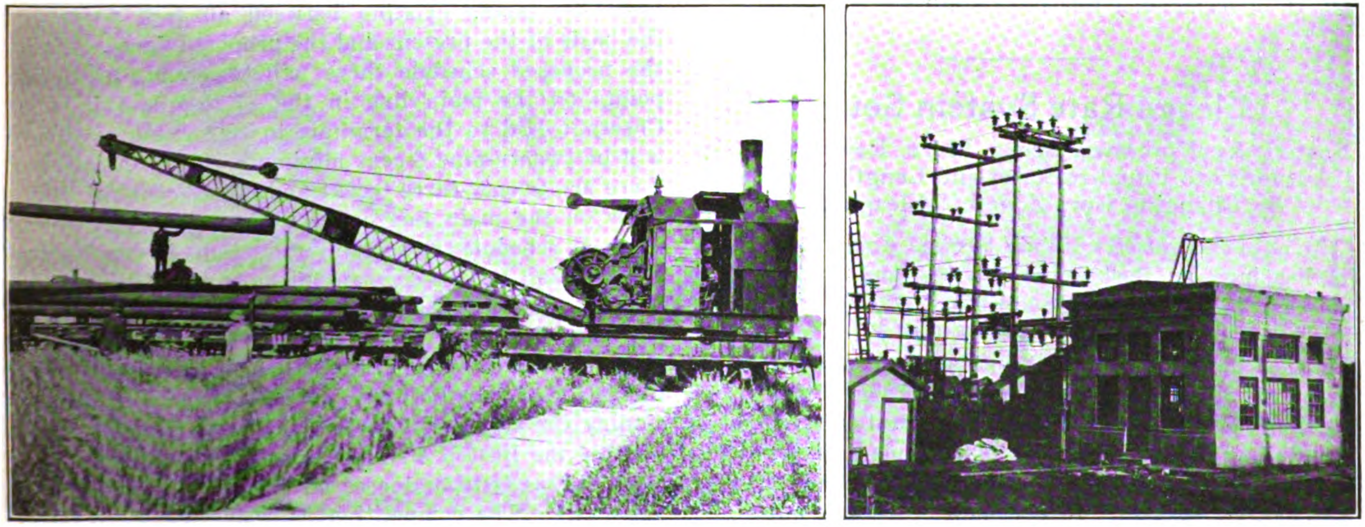
in the cost of pole treatment by doing the work locally paid many times over for the cost of the temporary installation.

After distribution along the line, the poles were framed on the ground, and all material was assembled on them complete. They were then set up in the pole holes by the locomotive crane with a minimum of manual labor. Poles for use on sections of the route where the transmission line is installed are 50 ft. long, but where the poles carry only catenary construction they are 40 ft. in length. The standard spacing is 150 ft., this interval being maintained except on the sharper curves.

On tangents, steel bracket arms made up of a pair of horizontal angles fastened back to back are used to support the catenary, the supporting insulators for the messenger being set on top of the arms. The arms also carry over the greater part of the new line two feeders, each of 636,000-circ. mil aluminum cable. These feeders are supported on insulators mounted on the bracket arms close to the poles. The transmission line is carried on No. 341 Locke insulators that are supported on crossarms near the top of the poles. These high-tension insulators are mounted on Peirce forged-steel pins and Peirce crossarm saddles over the wooden crossarms, which are held square with the poles by steel angles bent to proper shape.

On curves too sharp to permit retention of the bracket-arm type of support span construction is installed. In addition, pull-off wires are used where necessary. In all cases double insulation is provided between the live contact system and the ground, including wood-strain insulators on the span wires and on the guys, where these are used.

The messenger wire that supports the copper contact wire is made of 7/16-in. steel strand with a tensile strength of 15,000 lb., and the trolley wire is standard No. 0000 grooved, this being suspended from the messenger cable by round steel hangers at 15-ft. intervals. In the erection of this catenary construction one entire span was clipped up at one time, four platform cars being coupled together in the work train for this purpose. The average time to clip up a span in this way was one-and-one-half minutes, including movement of



SOUTHERN PACIFIC ELECTRIFICATION—LOCOMOTIVE CRANE USED TO HANDLE POLES; VIEW OF SUBSTATION AT MC COY DURING CONSTRUCTION PERIOD the work train, and as a consequence extraordinarily rapid work was accomplished.

POWER EQUIPMENT

For the supply of energy to the new extension substations have been erected at McCoy, about 8 miles south of Whiteson, the north end of the new extension, and at Wellsdale, about 26 miles still further south, leaving a distance of about 8 miles to the southern end of the extension at Corvallis. These substations receive energy at 55,000 volts, three-phase, 60 cycles, and convert it into direct current at 1575 volts by means of synchronous converters in series. Each substation contains one 1000-kw. unit, consisting of two 500-kw. machines wound for 787.5 volts and connected in series on the direct-current side. The alternating-current supply is stepped down from 55,000 volts to 580 volts by three-phase, water-cooled, outdoor-type transformers, the secondaries being connected in double-delta and the primaries in star. Outdoor-type 55,000-volt lightning arresters are used. The converters and transformers were furnished by the Westinghouse Electric & Manufacturing Company, and the switchboards and lightning arresters by the General Electric Company.

In addition to the electrical machinery above outlined, each substation contains a motor-driven air compressor for blowing out the converters and for other uses about the station, and there is also a motor-driven triplex pump for keeping up the supply of cooling water for the transformers. Owing to the moderate size of the equipment that is installed, the substation buildings are of minimum height. Their design provided for sufficient elaboration in architectural detail and window arrangement to eliminate the inartistic features so frequently found with structures of reinforced concrete, of which material the substations are built.

Energy for the primary supply of power is purchased from an outside source in the town of Salem, which lies some distance to the west of the middle of the new extension. Consequently a transmission line, 10.7 miles in length, has been built between Salem and the town of Gerlinger through which the railway passes. From this point the transmission line is strung along the right of way on the poles supporting the overhead construction, extending north and south from Gerlinger to the substations at McCoy and Wellsdale. The total length of 55,000-volt line is 34.4 miles.

Mileage Rate System Sought

Boston & Worcester Seeks More Revenue—Asks Authority to Equalize Rates and Lengths of Rides by Changing from Zone to Mileage Basis

THE Massachusetts Public Service Commission held hearings at Boston on July 16 and 25 upon an increase in fares for the Boston & Worcester Street Railway. In his opening statement G. W. Cox, counsel for the company, said that in its fifteen-year life the earnings of the railway had never been sufficient to yield an adequate return upon the capital authorized by the Railroad Commission. The schedule now proposed is calculated to yield an increase in revenue of $90,000, or about 10 per cent. In the main it seeks equalization of rates.

The company proposes to install a mileage system of rates in place of the present zone system with a 6-cent fare unit. The minimum rate of fare is to be 6 cents for 3 miles or less, with a charge of 2 cents per mile for each additional mile or fraction thereof. It is proposed to sell round-trip tickets at 15 per cent discount from two one-way rates, good between the principal points and the eastern terminus of the line at Chestnut Hill. It is also proposed to sell 100-mile books at 15 per cent discount from the regular rate, good anywhere on the system, with a minimum charge of three mileage coupons for any single fare paid. Pupils' tickets are to be sold in lots of 30 miles at one-half the regular tariff rate.

The investment and working capital on Dec. 1, 1916, was $5,205,620. The total revenue requirements, covering operating expenses, taxes, depreciation and a 6 per cent return, are $920,563. The 1916 total revenue was $823,136, representing a deficiency of $97,427 below the requirements. Coal cost in 1917 will show an increase of about $45,000. Material and labor costs also bid fair to rise still higher. Operating expenses in the last eleven months increased $52,000, and operating revenue increased only $19,000. For the last eight years the stockholders have received less than 2.75 per cent on their investment.

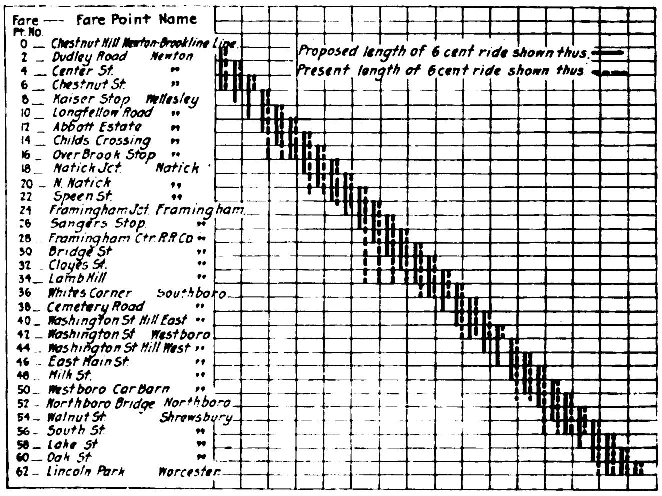


CHART SHOWING INEQUALITIES OF PRESENT 6-CENT FARE COMPARED WITH PROPOSED 6-CENT FARE

The company presented charts showing in graphic form the tariffs existing between all fare points on the basis of the present and the proposed fares. Under the proposed schedule there will be twenty-nine fare points on the main line in the 31.15-mile trip from Chestnut Hill to the terminus in Shrewsbury. These will be twenty-nine 6-cent minimum rides. At present there are twenty-three 6-cent and six 12-cent minimum fares on the main line between the points mentioned. The new schedule shows many reductions in fare as well as increases, for the company plans to equalize the rates and the distances to which they apply. The accompanying chart shows the present and the proposed lengths of ride for 6 cents. On the present schedule the one-way fare between Worcester and Boston (excluding the two 5-cent fares on the city systems at the ends of the Boston & Worcester Street Railway) is 50 cents. This is to be increased to 62 cents on the mileage basis. The competition railroad rate is $1.04, as compared to the one-way trolley total rate of 72 cents. Round-trip tickets are to be sold only at authorized agencies. Conductors will furnish passengers with checks covering their designated destinations.

C. D. Emmons, vice-president and general manager, said that it is not the present intention of the company to screen or remodel its open cars in order to prevent over-riding. About 25 per cent of the service is with open cars and 75 per cent with semi-convertible cars. Mr. Emmons was of the opinion that the work of the conductor will be less difficult than at present on account of the elimination of fare collections in each zone through the mileage check system. Remodelling of cars had not been necessary on the Chicago, South Bend & Northern Indiana Electric Railway, with which Mr. Emmons was associated before coming East.

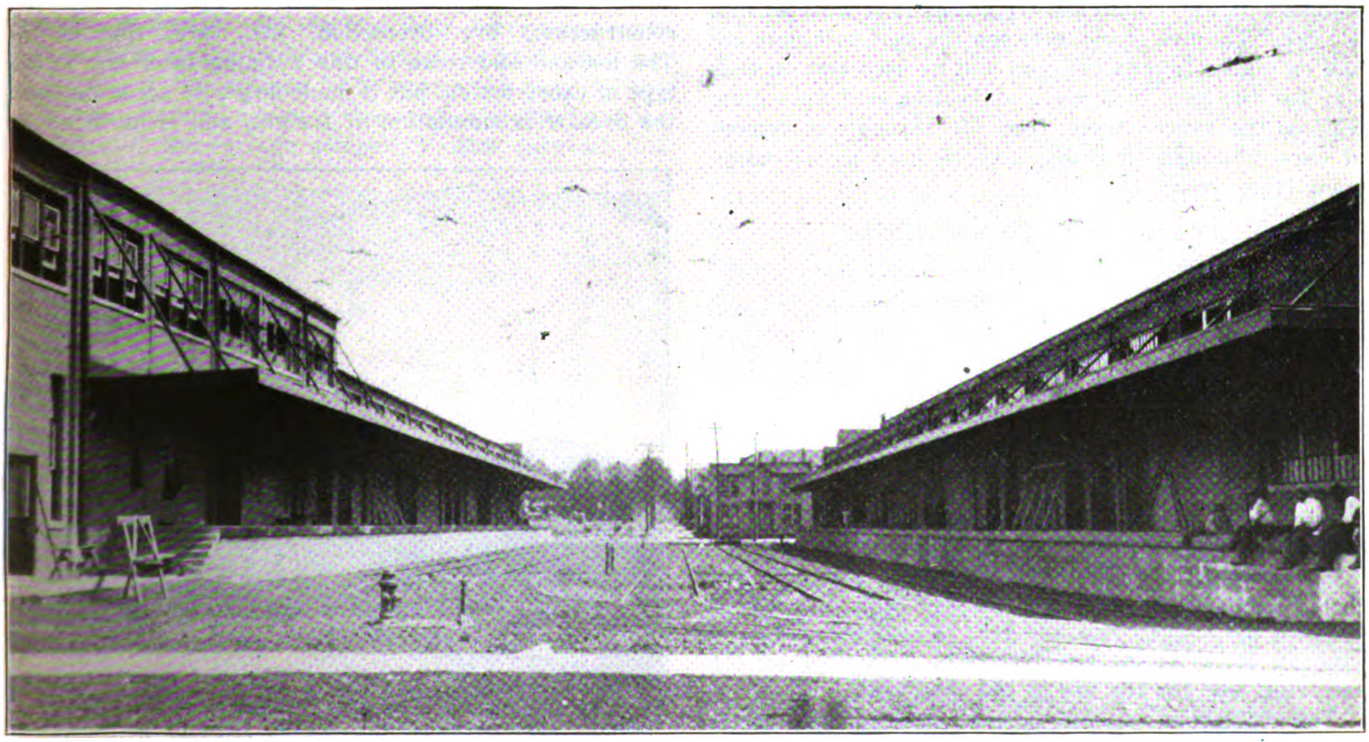
D.U.R. Triples Freight Handling Capacity

A Spacious New Freight Terminal in Detroit, Including Two Specially-Designed Buildings, Will Materially Reduce Cost of Handling Freight Besides Providing Accommodations for the Increased Volume of Business to Be Expected with the Introduction of Improved Facilities

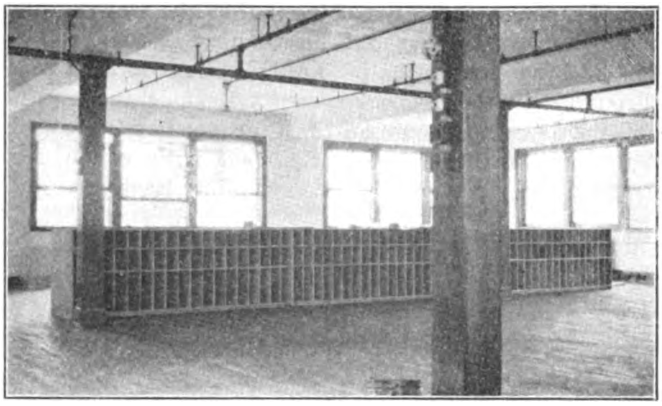
A NEW freight terminal for the city of Detroit has just been placed in operation by the Detroit United Railway to supersede its original somewhat crowded facilities. Although the sale to the Pennsylvania Railroad of the land where the present freight house is located really precipitated the building of the new terminal, yet the improvement was necessary, and more than justified by the marked congestion which prevailed. Conditions had reached the point where the great amount of traffic through the old terminal necessitated a considerable rehandling of shipments in order to make deliveries, and this, of course, added greatly to the terminal costs. The company was also forced to issue embargoes from time to time in order to clear up the congestion. This, and the delay to the teams of the shippers in discharging and receiving commodities, caused a loss of available business which the electric line will now not only be able to secure, but which will flow to it in increasing volume owing to the promptness with which teams and trucks will be released from the freight house, coupled with the faster-than-express service which has been consistently given for goods in transit.

The new terminal is located on the east side of the city, just outside the 1-mile zone from the city hall. This situation is convenient and reasonably central to many manufacturers and wholesale jobbers. Shippers on the west side of the city will temporarily have a rather long haul, but this condition will be alleviated within the year by the construction of another similar and slightly larger freight terminal, 1½ miles to the west of the city hall, on which work was begun June 15.

In the ELECTRIC RAILWAY JOURNAL for April 21, 1917, were shown the general layout and cross-sectional view of the East Side terminal. This includes an inbound freight house, 60 ft. x 405 ft., and an outbound house, 45 ft. x 405 ft. These two buildings and the five-track space between them occupy one entire city block, the streets along either side serving as the team and truck way for the station. In addition to this block, one-half of the next block beyond, from the street to the alley line, is utilized for storage space and for loading



DETROIT FREIGHT TERMINAL—VIEW SHOWING TRACKS BETWEEN INBOUND AND OUTBOUND FREIGHT BUILDINGS



DETROIT FREIGHT TERMINAL—CABINET FOR CURRENT RECORDS ON SECOND FLOOR OF OFFICE

directly from wagons into the cars. On this piece of ground are four team and storage tracks, 600 ft. long, which connect directly with the tracks between the two buildings. A 20-ton wagon scale is installed at the front end of this open yard. Here also will be constructed immediately an automobile loading platform, an open platform for storing empty oil barrels and other empty containers, etc., and a covered milk platform. This open yard will not only provide space for efficient use at present for loading direct from trucks to cars, but also provides space for future expansion of the buildings when the present floor space shall have reached its capacity.

Both buildings are of red-brick and timber construction, with a two-story office section at the front end of the inbound house, the remainder of the two buildings being of one-story height and having monitor-type roofs. The structures are protected throughout by an automatic sprinkler system. On the track side of each building is a concrete platform 8 ft. wide, covered with a canopy which slopes back toward the building wall, from which it projects 11 ft., thus extending well out over the car roofs, and eliminating very largely the drippage of water onto the freight as it is wheeled into the car. The five tracks between the two buildings are laid on cinder foundation, and will be used two on each side for the cars in process of loading and unloading, leaving the center track free for through movement of cars, although this, too, may be used as a loading track if necessary.

THE OUTBOUND FREIGHT HOUSE

The outbound freight house is two bays wide, a total of 45 ft., with practically continuous doors on the track side and pairs of doors with a 35-ft. storage space between on the receiving side. These doors are of wood construction, and counterbalanced so that they may be lifted easily. The floor inside the building is made up with a concrete base, on which an asphalt cushion and binder, and a layer of 3-in. plank are laid. On top of this is a layer of 1-in. tongue-and-groove hard maple flooring. This construction was adopted because of the long life expected from it and because of the fact that it is comparatively noiseless for trucking and not so hard on the men's shoes and feet as cement. High tables, 16 in. x 24 in., are placed at each door on the receiving side for the use of the checkers.

The continuous windows on both sides of the monitor roof and the large side windows make the building particularly light and airy. The upper windows are mechanically operated from chains at several points through the room. Artificial lighting is supplied by large type C lamps in enameled steel reflectors, installed one in every other bay on each side of the center posts, and staggered on opposite sides. All wiring is in exposed conduit.

At the far end of the outbound building a chain hoist is mounted on a monorail extending across the building, and is used for handling heavy shipments. The end bay has been partitioned off temporarily for the use of the Adams Express Company. At the opposite or front end of the building is a baggage room, 45 ft. x 30 ft., in which a 1000-lb. American Automatic scale is installed. Just behind the baggage room is a hot-and-cold room, approximately 20 ft. x 20 ft., built with cork-and-plaster walls, and utilized principally in the winter for protecting perishable shipments from freezing while awaiting shipment. This room may be heated from the steam coils installed on the side walls.

THE INBOUND FREIGHT HOUSE

While the width of the outbound freight house was made as narrow as consistent with providing the necessary amount of floor space within the length permitted by the property (in order to keep the trucking distance down to the minimum), the inbound house was made as large as the area of the property and the appropriation for the building would allow. The amount of freight accumulating in the outbound freight house can, of course, be very largely controlled by the railway company itself, while the accumulation in the inbound house is dependent upon the consignees, and therefore involves the need for much greater storage space. This accounts for the 60-ft. width of the inbound building as compared with the 45-ft. width of the outbound building.

With the exception of width, the inbound freight room is a duplicate of the outbound freight house. The floor, roof, daylight and artificial lighting, general construction, fire protection, etc., are the same. The hot-and-cold room in this building is of the same type of construction, but is made larger to accommodate the greater accumulation of freight, and is more used,

DETROIT FREIGHT TERMINAL—FRONT ENDS OF BUILDINGS HOUSING OFFICES both in summer and winter, in taking care of the perishables upon arrival.

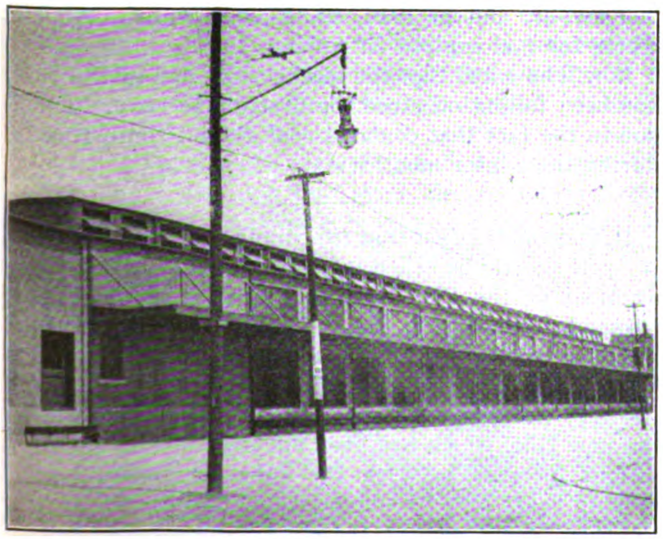
The hot-and-cold room in the inbound house incloses a space 36 ft. x 44 ft., and is intended to provide enough heat or enough cold to protect any perishable freight which may be received. This room is insulated against the outside temperature by cork walls covered with a special plaster inside and outside. It is equipped with meat racks and other facilities for handling the more common perishables. The cement floor within the hot-and-cold room is equipped with drains so that it may be readily washed out as needed.

The inbound freight room is equipped with a chain-hoist monorail system opposite that in the outbound house, and two American Automatic 4000-lb. scales are installed for checking up on freight weights. Four drinking fountains are installed along the street side of the freight room for the use of the employees and teamsters. The doors on this side of the building are practically continuous, while on the receiving side of the inbound house they are grouped in five pairs, with 35-ft. spaces between for storage purposes, the same as in the outbound house. Timber racks for the storage of long pieces of any kind are installed, two on the inbound-house receiving platform and three on the outbound-house delivering platform, and these are found useful in keeping various long pieces of material off the floors.

A large room on the second floor at the front end of the freight room, just behind the two-story office section of the building, has been equipped with tables and benches, hot and cold water, and other conveniences for the use of the warehouse workmen. This room is finished in white plaster, and this, together with the solid row of windows on the two sides, makes the room very light and airy.

FREIGHT TERMINAL OFFICE ARRANGEMENT

As before mentioned, the front 60 ft. of the inbound freight house is two stories in height, and is utilized for office purposes. On the first floor, entrance is made at the front of the building, through a small vestibule which opens into a large lobby across the front of the building. Four windows of the cashier's office and the windows of the cartage company's office open off this lobby and provide facilities for handling a very large volume of work. From the far end of this lobby a stairway leads to the second floor, where a lobby inclosed by a broad wood rail brings shippers in contact with the local freight agent and the general freight clerks. Two additional entrances are provided on the first floor for the special use of employees. The one on the street side of the building opens into a lobby from which employees may enter the cartage company offices or the first-floor freight offices, and off from which a wide passageway leads into the inbound freight house for the use of the warehouse employees. The entrance on the track side of the building is for the special use of freight conductors. As they enter the lobby on the first floor, there are windows off this lobby through which they may turn in their bills and then go upstairs, where windows off another lobby at the top of the stairs put them in touch with the billing clerks, from whom the outbound bills for their next trip may be received.



DETROIT FREIGHT TERMINAL—TEAM SIDE OF OUTBOUND BUILDING

DETROIT FREIGHT TERMINAL—INTERIOR VIEW OF INBOUND BUILDING, SHOWING FOREMAN'S OFFICE AT LEFT

On the first floor also are the offices of the express-bill clerk, the freighthouse foreman, the cashier and the clerks working in these offices. The various offices are separated by wire grille partitions in order to gain the maximum in lighting and ventilation, but the cartage company's office is separated from the railway company's by partitions. Both upstairs and down, the walls of the offices are finished with white plaster and the wiring conduit for the ceiling fixtures is exposed.

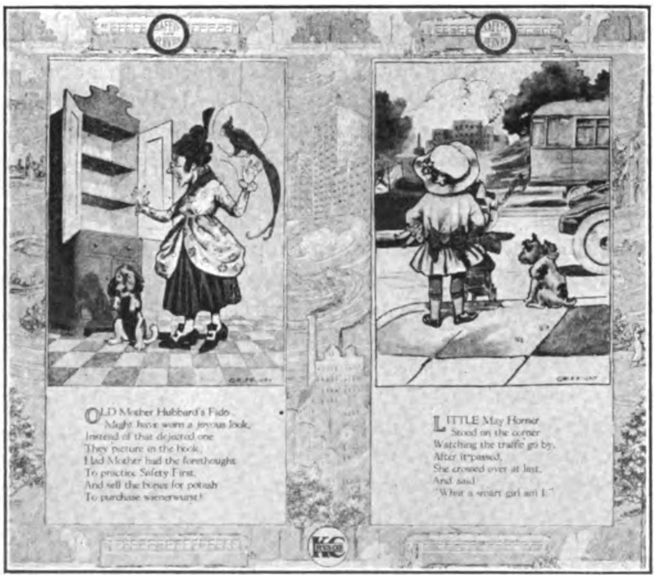
On the second floor, except for the private office of the local freight agent, the office is all in one large room. In this space are located the chief clerk and general clerks in the outbound building, accounting, claims, overs and shorts departments, and the stenographers, tracing clerks, filing clerks, etc. A record filing cabinet for current bills, 32 ft. long, is placed in this large room in such a way as to separate the office into an inbound and outbound section. This cabinet is made up in three sections, with pigeonholes $19\frac{1}{4}$ in., $10\frac{1}{4}$ in., and $8\frac{3}{4}$ in. respectively, from the floor to the top. By building the cabinet in three sections it will be possible in the future to separate and place the sections in different locations if this proves more advantageous. Accommodations are provided in the cabinet for approximately six months' records, and the storage of records beyond the capacity of this is taken care of in a room especially equipped with shelving on all four walls and located adjacent to the main office room. This shelving is arranged to accommodate different sizes of records, and will take care of old records for from three to five years. In addition to the shelving on the walls there are four sections of shelving in the center of the room, all of open construction. A large skylight, in addition to windows on one full side, makes the room very light and especially fitted for old record work. A binding machine is installed in this room to facilitate the keeping of the records in more compact form.

Windows on three sides of the office section of the building, and a skylight in the center at the back, make the good day-lighting one of the special features of the new terminal-office layout. Specially designed desks for the use of the clerks throughout the freight offices were furnished as part of the equipment. These desks are 48 in. x 60-in. quarter-sawed oak, with flat top and a single drawer on each side. The center drawer was omitted in order to place a brace between the drawers underneath the table. Except for the two drawers per desk, they are simply unusually well-built tables, but their uniformity will add materially to the appearance of the offices.

With the new terminal in full operation it is estimated that the terminal facilities of the Detroit United Railway in Detroit will be increased from three to fivefold. The increase in capacity cannot be measured only by the comparison in floor area, for the elimination of extensive rehandling, due to the better facilities, and ability to segregate shipments for various points, multiply the capacity much more rapidly than the floor area involved increases.

Safety Rhymes at Kansas City

The Kansas City Railways have just published a "safety-first" edition of several of the Mother Goose rhymes for distribution at the end of the school term among all the children in the kindergarten and first grades in the city schools. Copies will also be sent to every home in Kansas City where there are children. It is estimated by A. B. Atchley of the publicity department that at least 50,000 copies will be required. The pamphlet contains twelve pages with colored illustrations. Two typical pages are reproduced.



OLD Mother Hubbard's Fido
Might have worn a joyous look,
Instead of that dejected one
They picture in the book,
Had Mother had the forethought
To practice Safety First,
And sell the bones for potash
To purchase wienerwurst!

LITTLE May Horner
Stood on the corner
Watching the traffic go by.
After it passed,
She crossed over at last,
And said:
"What a smart girl am I."

TWO PAGES FROM "SAFETY-FIRST" PAMPHLET OF KANSAS CITY RAILWAY

War-Time Cost of Power-House Coal

Data in Graphical Form from Records of Connecticut Company, New Haven, Conn.

THE accompanying coal-cost chart, reproduced from one of a number recently compiled by the power department of the Connecticut Company, puts in tangible form one reason for the increase in the cost of furnishing electric railway service.

In the chart the data for 1915 are averaged for the year, the dash line showing that the monthly average total cost of coal for the Berlin, Bridgeport, Hartford and New Haven power plants for which the chart was drawn was about $8,300. The corresponding unit cost of coal at the yards was about $3.38 per ton of 2240 lb., as shown by the dot-and-dash line. On May 1, 1917, the unit cost had risen to $6.25 per ton.

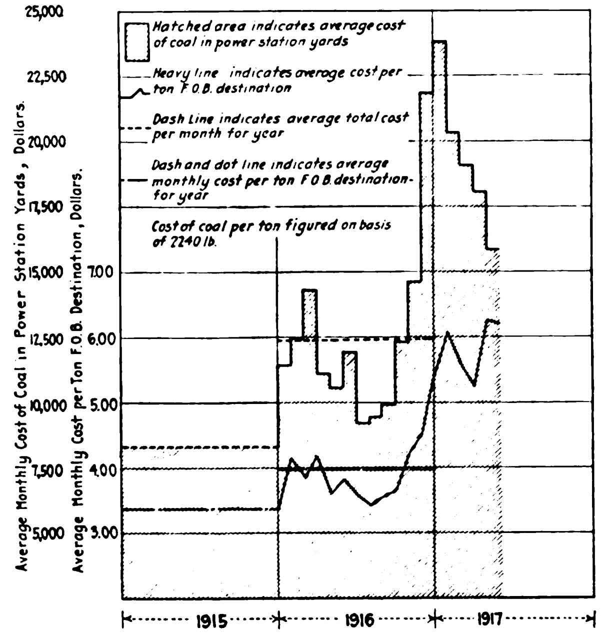


CHART SHOWING COSTS OF COAL AT CONNECTICUT COMPANY POWER PLANTS

This coal is brought from Pennsylvania and West Virginia, an average distance of about 450 miles. Its heat content is approximately 14,000 B.t.u. per pound. The output of the plants in 1915 was roughly 73,415,000 kw.-hr. and in 1916, 81,363,000 kw.-hr. All contracts for coal expired on April 1, 1917.

It will be noted that the total cost of coal in the yards has been falling off since the first of the year. This is due to the fact that contract coal did not come forward during the winter months.

In view of the fact that the younger men of the country will shortly be called into military service, the management of the Pennsylvania Railroad has decided to suspend, temporarily, the regulation covering the age limit for employment. The rule heretofore in force prohibited the hiring of new employees, in any branch of the service, above the age of forty-five years. Under the new rule, which has been adopted to meet war conditions, persons between the ages of forty-five and seventy years may be employed during the war and for a period of six months thereafter. Inasmuch as such employment is not to be considered permanent, it will not carry with it pension department privileges.

Personality in Publicity

How Electric Railway Companies Should Word Their Notices—Other Suggestive Hints of Ways in Which Electric Railway Companies Can Secure Better Public Relations

By IVY L. LEE

JOHN WANAMAKER'S great success is due more than anything else to publicity, and when I say publicity I do not mean merely the advertising of what he has to sell. He has put his remarkable personality in his advertising in such a way that his pages in the New York and Philadelphia papers command universal attention.

It costs John Wanamaker thousands of dollars every year to talk to the public—not about his wares—but about his personal views of what's going on in the world.

Not long ago he decided to close his store all day Saturday for part of the year. Of course he had to announce the fact that he would close, but that could have been done in but little space. Instead, he printed a signed article telling the public at some length just why he was closing his store. What was the result? John Wanamaker got the credit of starting the Saturday closing for department stores. A number of the large New York stores were the first to take the step, but they didn't tell the public with the rare skill that John W. did.

What John Wanamaker has done to department store publicity every electric railway manager can do to his own. He can put the personality of the management forward in such a way that the people will realize that the men who run their street cars have red blood in their veins, and they are, above all, human in their regard for the public.

Take, for instance, a change in routing that must be made. Possibly it is one that at first may give promise of proving unpopular. How would the average electric railway—the A. B. C. Company—announce it? It is a hundred to one that a sign would be posted in the cars reading like this:

"Effective Oct. 1, 1917. Notice.—Green street cars will run south through to Thirty-fifth Street and return northbound by First Avenue, instead of Broadway."

Could anything be colder? Is it any wonder that people sometimes feel that some electric railway managers sit up nights trying to think of ways to irritate the public? I don't know of a better way to incur hostility than to put the word "Notice" at the top of a statement to the public.

How much more reasonable it would have been if John Smith, the president of the A. B. C. Company, had put small folders in his cars giving all the reasons for the change, showing how it would improve the service, etc. Such a notice should, above all, show the personal concern and regret of the manager that it was necessary to disturb an arrangement which to some had become almost a habit.

An American comedian returned from England not long ago and told of his cold reception by London audiences. He said his jokes "got over" all right, but they "lay there." And that is just what happens to about 90 per cent of the notices to the public issued by electric railways. They don't "get across"; and then, when the people and the newspapers protest, the management says the public and the newspapers are unreasonable, that they would complain regardless of what was done. That may be true to a certain extent, but at least give them a chance to be reasonable. Take them into your confidence and tell them why you do things and tell them before you do it.

In some places the back of transfers is used for advertising. It would be worth more if this space were used for some personal message or comment from the manager of the company. It should be changed every day if the date is printed on the transfer, or, if the transfers are arranged so that the date is indicated by punch marks, the message should be changed as often as the company can easily arrange to do so.

The John Wanamaker of the old days stood at the door of his store, helped the ladies out of their carriages and gave them a pleasant good-morning. Every one, rich or poor, received a greeting. Now the store is too large for that, so the wise manager adds this same touch of personality through his publicity. That's what the manager of the electric railways must do. The horse-car driver knew all of his passengers, and there was a cheery good-morning for each. And to-day it is equally important that the manager have a way to keep in touch with the public who are using his cars. Unless the management understands the patrons of its lines, how can it expect the patrons to understand the company?

Some time ago the Pennsylvania Railroad—one of the pioneers in publicity—began to issue poster bulletins to the public. They dealt with various topics. They attracted attention and accomplished good, but they brought forth from a number of people one criticism which was deserved. They were too impersonal, too cold. The reason was that the signature at the bottom of the poster was "The Pennsylvania Railroad Company." Later, one of these posters was issued over the signature of the president of the railroad, Samuel Rea, and the effect on the public was very different. People always like to know the individual with whom they are dealing.

In all publicity work by far the most essential thing is that it be kept human. People generally don't care much about gross and net, but if you talk gross and net in terms that mean something to them, you can gain their attention. By combining with this simplicity, consideration and humility great progress can be made in securing the public's good-will.

Joint Interurban Freight Facilities for Indianapolis

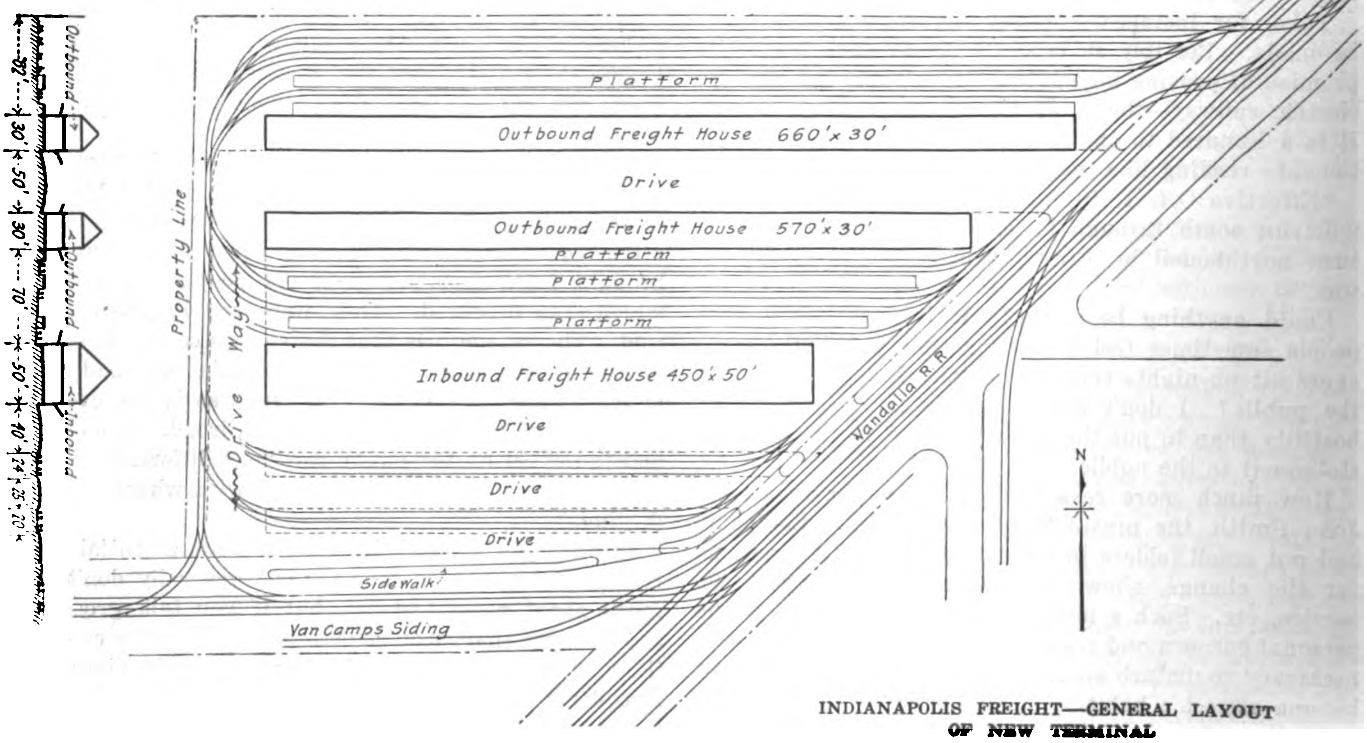
A New Freight Terminal Which Covers a 6-Acre Tract Is Now Under Construction—The Freight House Floor Area Will Total 60,000 Sq. Ft., in Addition to Ample Platform Space and About 1½ Miles of Loading, Storage and Team Tracks

An electric railway freight terminal that will be one of the largest in the country is now under construction in Indianapolis, the estimated cost being $500,000 exclusive of the land. It will serve the twelve radiating lines of the Union Traction Company of Indiana, the Terre Haute, Indianapolis & Eastern Traction Company, the Indianapolis & Cincinnati Traction Company and the Interstate Public Service Company, comprising a total of approximately 1100 miles of track without including the numerous connections with other electric railway properties which do not enter Indianapolis but which handle a large interchange of through freight. The new terminal will increase the freight-handling facilities of Indianapolis by four or five times and will alleviate the costly congestion occurring daily with the present terminal as pictured in the illustration on the opposite page.

The new terminal is to be located on a 6-acre trapezoidal piece of ground only a few blocks southwest of the interurban loop in the center of the city and on the same side of the loop as the wholesale district. Although the present freight terminal is located exactly in the center of the city, and the new layout will be several blocks away from this point, yet the advantages of quick unloading possibilities will much more than offset the greater haul which will result in some cases. The quick release of cartage equipment from the freight terminal is of much greater importance in the present day, when motor trucks are in extensive use, than the distance of haul, for the trucks move so rapidly that the time and expense involved in hauling shipments a few blocks farther is of practically no consequence as long as there are facilities whereby it will not be necessary to keep the trucks standing idle awaiting a turn to unload. Also, when trucks are held, the motor is frequently allowed to run idle and continue the gasoline cost. The important consideration, then, is sufficiency of terminal facilities rather than location of terminal.

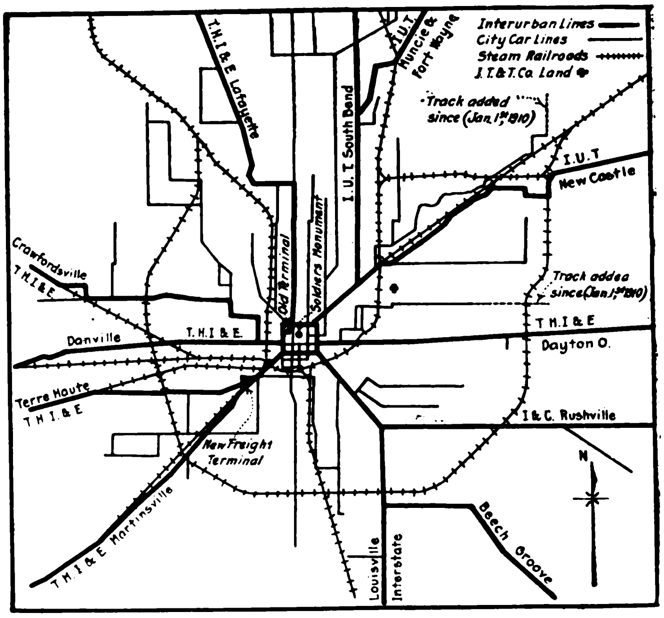
THREE FREIGHT BUILDINGS TO BE ERECTED

Three large buildings will be included in the new project. There will be two outbound freight houses, 30 ft. wide and 660 ft. and 570 ft. long respectively, with a 50-ft. driveway between them and tracks on the opposite side of both. The inbound freight house will be 50 ft. wide and 450 ft. long with a 40-ft. driveway along the south side. At the present time, 432 ft. of the 660-ft. outbound freight house only will be built and this will be used in conjunction with the present freight facilities at the traction terminal building. This one house, however, will be of sufficient capacity so that it will be possible to handle completely the shipments of the largest company now using the old terminal, and thus greatly relieve the pressing congestion which now prevails. The remaining buildings will be erected in the near future, it is anticipated, and the entire 6-acre piece of land is being leveled and graded as it will finally appear.



INDIANAPOLIS FREIGHT—GENERAL LAYOUT OF NEW TERMINAL

The buildings will be constructed of "Saraband Chinchilla" brick varying in color from rough-faced red to slate. Plans call for concrete foundations and steel roof, if the steel can be had, otherwise wooden-truss roofs will be used. The roof will be covered with Federal tile, which are pressed, ribbed, reinforced concrete slabs, 4 ft. long and 18 in. wide, and colored red. The side walls are divided into 16-ft. panels with 6-ft. pilasters and 10-ft. doors, placed opposite on the team and track sides of the buildings. Kinnear rolling steel doors will be installed throughout and there will be windows above the doors on the north walls. The east 64 ft. of the first outbound building to be constructed will be two stories in height with offices on the second floor and with the heating plant and toilet and locker facilities in the basement. This office space will provide record storage and general office space sufficient for one company, and additional office space will later be provided in one of the other buildings.

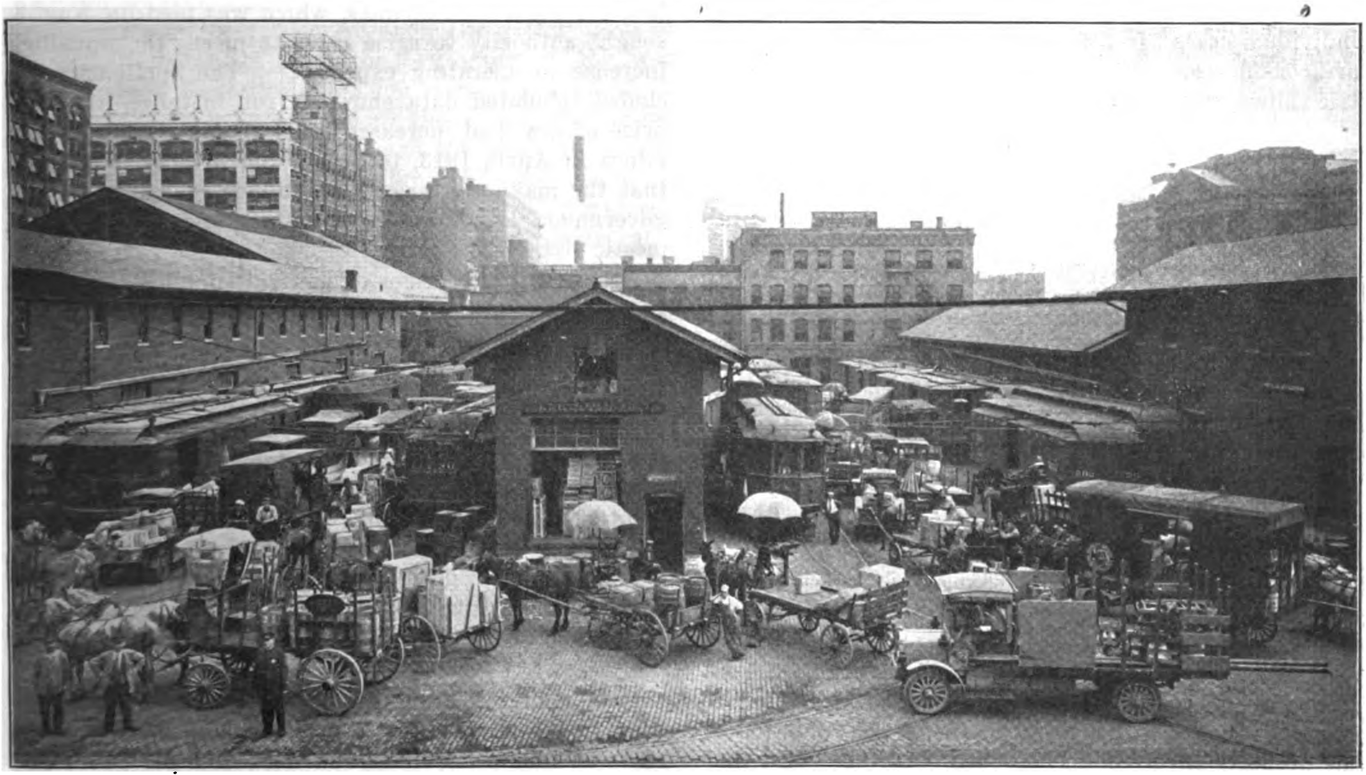

Interurban Lines
City Car Lines
Steam Railroads
I.T.&T.Co. Land
Track added since (Jan. 1st 1910)
Track added since (Jan. 1st 1910)
T.H.I.&E. Lafayette
I.U.T. South Bend
I.U.T. Muncie & Fort Wayne
Old Terminal
Soldiers Monument
I.U.T. New Castle
Crawfordsville T.H.I.&E.
Danville
T.H.I.&E.
T.H.I.&E. Dayton O.
Terre Haute T.H.I.&E.
I.&C. Rushville
New Freight Terminal
T.H.I.&E. Martinsville
Louisville
Interstate
Beech Groove
N

INDIANAPOLIS FREIGHT—MAP OF INTERURBAN LINES IN CITY, SHOWING RELATIVE POSITIONS OF OLD AND NEW TERMINALS

TRACK AND DRIVEWAY LAYOUT

Considerable study was given the consideration of the track layout, building width, driveway areas, etc., by Thomas B. McMath, chief engineer of the Terminal Realty Company and the Indianapolis Traction & Terminal Company, and by other officials of the traction companies. The aim was to provide a general layout which would provide an egress for car and team traffic involving the least interference of one with the other, and also to provide track and driveway areas which would be commensurate with the floor space in the buildings. It was determined that more team way in proportion to the area of the house was needed for electric railway work than for steam road service, because of the fact that a much larger number of trucks and wagons must be handled for a given tonnage of freight at the electric railway terminal than at the steam road terminal. The average load delivered to the Indianapolis terminal is less than 1 ton, and this fact gave rise to the wide driveways shown in the general layout.

The track layout in general will involve loop operation with entrance and exit to the various tracks inside the property line along the diagonal front of the property at the southwest corner. Altogether there will be thirteen straight tracks through the yard, these being separated by the buildings, platforms and driveways. There will be five tracks along the north side of the property, of which the first three or four will be used for setting cars for loading from the north outbound freight house, and the outside track will be reserved for through movements. The four tracks between the



INDIANAPOLIS FREIGHT—CONGESTED CONDITION PREVAILING AT PRESENT INDIANAPOLIS TERMINAL outbound and inbound houses lend themselves to very flexible use. Three of these tracks adjacent to either house may be readily used either for outbound or inbound freight purposes, making the four tracks, with the help of the two platforms, almost equivalent to six tracks. All platforms in the yard extend the full length of the straight track and are of sufficient width (10 ft.) to permit of double trucking. Two pairs of tracks at the south side of the yard will provide space either for the storage of loaded or empty cars, or for team tracks in loading commodities direct from the trucks to the cars. At the present time only the five tracks at the north side of the yard and two tracks past the future inbound freight house will be constructed.

All driveways will be paved with granite block. The track will be laid on gravel ballast with oak ties spaced on 2-ft. centers, using 70-lb. rail on the tangent tracks and 7-in., 91-lb. rail in the special work, the latter being furnished by William Wharton, Jr., & Company, Inc.

A comparison of the present facilities at the old terminal, which includes four buildings, averaging 24 ft. x 195 ft. in dimensions, with those to be provided by the new terminal, is given in the following figures:

	Old Terminal	New Terminal
Area of outbound house	12,350 sq. ft.	36,900 sq. ft.
Area of inbound house	6,650 sq. ft.	22,500 sq. ft.
Length of inbound loading track	2,000 ft.	960 ft.
Length of outbound loading track		2,320 ft.
Length of loading track in and out		1,180 ft.
Length of storage track	....	1,400 ft.
Length of team tracks	....	1,340 ft.
Driveway area (track empty)	32,400 sq. ft.	48,750 sq. ft.
Driveway area (tracks occupied)	18,000 sq. ft.	48,750 sq. ft.

The area around the old buildings is entirely paved and is used by both teams and cars, and when not many cars are set there is ample space for teams and trucks. However, any switching movement greatly disturbs the handling of freight and the positions of teams, and delay occurs because of these obstacles. This condition will be entirely eliminated by the new terminal facilities.

How the Higher Fare Movement Is Progressing

Notes from the Electric Railway Industry to Show How Applications for Increased Fare Are Being Decided or Argued, and How the Revenue Problem Is Being Explained to the Public

THE question of higher fares for electric railway service is a live one in many communities, as the following articles will indicate. These stories are in addition to several appearing in the regular Traffic and Transportation department of the news section. All in all, the articles indicate that regulating bodies, although they are reluctant to grant relief except in individual cases after the presentation of full evidence, are considering seriously but actively the need of electric railways for higher fares.

Blanket Relief Denied in Missouri

Commission Turns Down Application of Utility Association on Ground that Individual Cases Must Be Presented

ON Aug. 7, the Missouri Public Service Commission denied the application of the Missouri Association of Public Utilities for a blanket order whereby that association would have been empowered to increase the rates of each one of its 303 member companies. In handing down its unwritten decision the commission held that a specific case should be presented by each one of the utilities that is desirous of securing higher revenues.

The commission contended that it has not the right to authorize an indiscriminate increase in rates of each of a number of individual companies on the motion of an association of which these utilities are members. Moreover, it asserted that it has never attempted to establish a rate without first knowing the valuation of the property involved. The board therefore ruled that each member company must make an individual application unless the association can show that conditions in a number of cities are identical and that a uniform rate exists in these cities.

While the electric railway interests in Missouri were not specifically mentioned in the application, such companies are members of the association and naturally, it is said, were included in the request made. The petition for the 303 companies, which was filed on Aug. 3, sought authority to raise rates to meet "the appalling increase in operating expenses." The application included tabulated data showing, for instance, that the price of coal had increased from 50 cents a ton at the mines in April, 1913, to $2 per ton in May, 1917, and that the maximum prices for Illinois coal fixed by the government are $2.75 for mine-run and $3.50 for domestic sizes.

As regards the prices of general supplies and labor, the petition set forth averages obtained from seventy-six answers to a circular letter sent to utilities in Missouri. A tabulation of these reports showed the following advances in prices during the last five years: Steam coal, 49 per cent; coke, 66.6 per cent; wood, 13.8 per cent; fuel oil, 72.3 per cent; lubricating oil, 24.4 per cent; gasoline, 71.9 per cent; office help, 32.3 per cent; plant labor, 25.4 per cent, and freight, 16.2 per cent. This made an average increase of 47.4 per cent. Coal purchased on the open market because of expiring contracts or failure to obtain supply on existing contracts resulted in an advance of 119.1 per cent. Cases of this character, however, were not taken into account above.

Data collected from the discount sheets of supply houses showed advances in prices during the last three years as follows: Malleable fittings, 78.5 per cent; cast iron fittings, 155.5 per cent; brass valves (regrinding), 78.3 per cent; straight-way valves, cast iron, 93.8 per cent; 4-in. (10.16-cm.) boiler tubes, 226.4 per cent; 2-in. (5.08-cm.) wrought-iron black pipe, 125.7 per cent; pig lead, 188.8 per cent; waterproof copper wire, 131.4 per cent; pole-line hardware, 110 to 144.4 per cent. The average advance in this class of items amounted to 136.4 per cent.

Explaining the Six-Cent Fare

How the Bay State Street Railway Has Made Plain the Need for and the Effect of the New Rates Granted to It

ELECTRIC railway men in general are so familiar with the idea of applying higher fare units to their lines that sometimes the whole public's point of view in this matter may not be fully appreciated. Because a passenger is a regular patron, it by no means follows that he has any personal interest or knowledge of the company's financial problems. Even after a fare increase has been authorized by a commission, there are unquestionably many people to whom the news of a higher fare unit comes as a distinct surprise. Hence it is very important, even after arrangements have been made for higher fares, to let the traveling public know the reasons for the increase and just how the new units or changes in facilities apply to local lines.

An excellent example of this kind of publicity is afforded by the work of the Bay State Street Railway, Boston, Mass., in connection with the latest fare increase on its system. To make absolutely plain the necessity for the increase and the exact tariff and transfer arrangements approved by the Massachusetts Public Service Commission, booklets were prepared for every division on the road showing the price of service, the reasons for the increases and the need of co-operation on the part of the public in the handling of the new rates. Each booklet contained a foreword by President Sullivan pointing out the nub of the company's financial requirements. This touched upon the rising cost of labor and materials since the beginning of the war (labor alone is getting $768,000 more a year than in 1914), the company's petition, the compromise rates adopted for six months' trial, and the vital importance of the public's good-will in making the experiment.

The communities whose representatives conferred with the company obtained a modified increase in rates in comparison with the charges which the company considered necessary, and the foreword frankly stated that if the increase does not prove sufficient the company will have to ask for more at the end of the six months' trial period. Finally, it was pointed out that the company intends to use the additional revenue in giving better service by improving the equipment, and in return for public co-operation the management promises to do its best to make the trial schedule a success.

On the Lawrence division, to take a single illustration, the fare changes and foreword required a twelve-page folder. Complete information was included with regard to the use of tickets, transfers and fare collections on every route maintained by the company. Opportunity was given for the purchase of tickets on the basis of twenty rides for $1 a day in advance of the putting into effect of the new schedule. On all its divisions the company endeavored to make a general distribution of the pamphlets and to meet the public fairly and squarely. The result, as evidenced locally in a statement of the Lawrence Chamber of Commerce, was most gratifying. This statement urged the public to be as tolerant as possible with the company, pointing out the Public Service Commission's conclusion that the railway must have more revenue if it is to continue in business. Consideration for conductors was urged on the particular ground that these employees have nothing to do with fixing the fare increase. In view of the complications of the system it was noted that some changes might be required in the rates and service as determined by experience, but in general the new plan received the commendation of the chamber.

A most satisfactory state of good feeling appears to have been maintained between the public authorities and the company since the beginning of this year's fare proceedings. But there is no question that the willingness of the public to give the 6-cent fare and ticket arrangements on the Bay State system a satisfactory trial has already been increased by the company's straightforward publicity.

Court Sustains Higher Fares

Connecticut Judge Holds that Waterbury Company Is Justified in Discontinuing Sale of Reduced Fare Tickets

IN a decision rendered in the Superior Court, New Haven County, in the case of City of Waterbury, *vs.* Connecticut Company on Aug. 3, Judge Gager dissolved the injunction which he himself had granted on July 27 restraining the company from discontinuing the sale of tickets at six for 25 cents or twenty-five for $1 in Waterbury, Conn., until after an investigation and decision by the Public Utilities Commission.

In his decision Judge Gager says that the State law permits a public utility to raise or lower its rates provided the rates thus established are reasonable, except where the Public Utilities Commission has established a rate. In such a case the company must first apply to the commission to review its rate as to its reasonableness, and any city or any ten patrons of any public utility have the same privilege of requesting a review. The ticket rate in Waterbury was established by the company voluntarily when the road was operated by horses to encourage traffic, and the company was not bound by any contract, charter obligation or other undertaking to continue it. Continuing, the court said "because rates may be raised means nothing if the former rate was special or preferential," and quoted in support of this decision Myers *vs.* Pennsylvania Company, 2 I. C. R., page 403, and Interstate Commerce Commission *vs.* Chicago G. W. R. Company, 209 U. S., 108, L. Ed., Vol. 52, page 705. In this latter case the United States Supreme Court said:

"Undoubtedly when rates are changed the carrier making the change must, when properly called upon, be able to give a good reason therefor, but the mere fact that a rate has been raised carries with it no presumption that it was not rightfully done. Those presumptions of good faith and integrity which have been recognized for ages as attending human action have not been overthrown by any legislation in respect to common carriers."

The Connecticut court then reviews the testimony presented by the company on the increased cost of providing the service and concludes: "It is difficult to see when an increase demanded and granted as necessary everywhere else is not equally necessary in the street railway business. The great advance in all the necessaries of railroading must be paid by the company, and what was a sufficient income a year ago may be insufficient now."

Massachusetts Fare Cases

Commission Is Active in Fare Matters—Is Sitting Practically Every Week on Pending Cases Concerning Various Railways

ELECTRIC railway revenue cases at present constitute the most important business before the Massachusetts Public Service Commission, and that body is sitting upon these matters practically every week. The board will consider in the near future the question of higher interurban fares on the Bay State Street Railway, Boston, and it is required to present to the next Legislature a report on the Boston Elevated Railway's finances with recommendations as to their betterment.

Hearings have been concluded on the fare petitions of the Middlesex & Boston Street Railway and the Norton, Taunton & Attleboro Street Railway. The proposed increase in the latter case has been suspended until Sept. 1, while in the former the board has approved a six months' trial of a compromise fare increase plan agreed upon by the company and by representatives of many of the more important municipalities which it serves. Arguments in the Boston & Worcester Street Railway fare case were heard on July 18 and 25, as noted more in detail elsewhere in this issue, the board having suspended until Sept. 1 the proposed installation of a zone system based on mile-post divisions.

The Holyoke Street Railway fare case is still before the board, although a decision may be expected soon. With the filing of a fare increase petition last week by the Springfield Street Railway, all the larger systems of the State, except that at Worcester, have appealed to the commission for relief. Meanwhile a general investigation of electric railway finances is being conducted by a legislative recess commission.

Six-Cent Fare for Nashua Lines of Bay State Company

New Hampshire Commission Approves Establishment of Six-Cent Fare in Nashua District—Changes in Transfer Arrangements Also Provided For

THE New Hampshire Public Service Commission has issued a finding approving the establishment of a 6-cent fare unit on the lines of the Bay State Street Railway in the Nashua district. The ruling makes the new rates permanent instead of provisional, as is the case for six months on the urban lines of the company in Massachusetts. Before the decision was reached, an agreement was made between representatives of the municipalities of Nashua and Hudson, N. H., and the company for the institution of the new rates.

As in the recent case before the Massachusetts commission, the new fare unit will be accompanied by the sale of tickets at the rate of twenty for $1, each ticket being good for one unit cash fare on the Nashua lines when presented with cover of the same number, except Saturdays after 1 p. m. and on Sundays and legal holidays. All reduced rate tickets except school tickets are to be withdrawn, the latter being sold at one-half the regular rates. Various local changes in transfer arrangements are established.

Under the new schedule the maximum increase will be from 10 to 18 cents on the run from the Nashua transfer limit to the New Hampshire-Massachusetts line, a distance of 7.86 miles. The rate per mile on through fares will range from 1.63 to 4.61 cents, and on local fares from 0.749 cent to 2.35 cents. On cars operated by agreement with the Manchester & Nashua Street Railway from Derry Lane to Nashua transfer station, the present 5-cent fare will remain pending the settlement of a subsequent petition.

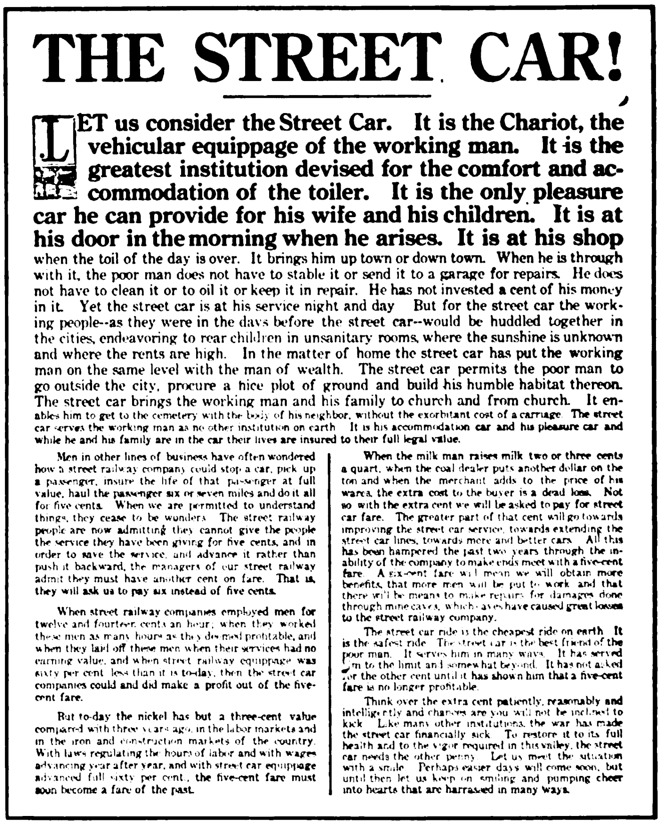
Publicity on Higher Fares

Two Exhibits Showing How the Need of Higher Fares Is Being Explained to the Public

MOST of the electric railways which are asking for higher fares are telling the story of their need for it to the public. Some of this publicity as issued in Brooklyn and elsewhere has been mentioned in this paper. Other forms of publicity are shown herewith.

The first of these is a page advertisement published in the Scranton edition of the Elmira *Telegram* for Sunday, Aug. 5.

The second exhibit is the first and third pages of a two-page leaflet, distributed by the Eastern Pennsylvania Railways Company of Pottsville, Pa. It forms



THE STREET CAR!

LET us consider the Street Car. It is the Chariot, the vehicular equippage of the working man. It is the greatest institution devised for the comfort and accommodation of the toiler. It is the only pleasure car he can provide for his wife and his children. It is at his door in the morning when he arises. It is at his shop when the toil of the day is over. It brings him up town or down town. When he is through with it, the poor man does not have to stable it or send it to a garage for repairs. He does not have to clean it or to oil it or keep it in repair. He has not invested a cent of his money in it. Yet the street car is at his service night and day But for the street car the working people--as they were in the days before the street car--would be huddled together in the cities, endeavoring to rear children in unsanitary rooms, where the sunshine is unknown and where the rents are high. In the matter of home the street car has put the working man on the same level with the man of wealth. The street car permits the poor man to go outside the city, procure a nice plot of ground and build his humble habitat thereon. The street car brings the working man and his family to church and from church. It enables him to get to the cemetery with the body of his neighbor, without the exorbitant cost of a carriage. The street car serves the working man as no other institution on earth It is his accommodation car and his pleasure car and while he and his family are in the car their lives are insured to their full legal value.

Men in other lines of business have often wondered how a street railway company could stop a car, pick up a passenger, insure the life of that passenger at full value, haul the passenger six or seven miles and do it all for five cents. When we are permitted to understand things, they cease to be wonders The street railway people are now admitting they cannot give the people the service they have been giving for five cents, and in order to save the service, and advance it rather than push it backward, the managers of our street railway admit they must have another cent on fare. That is, they will ask us to pay six instead of five cents.

When street railway companies employed men for twelve and fourteen cents an hour; when they worked these men as many hours as they deemed profitable, and when they laid off these men when their services had no earning value, and when street railway equippage was sixty per cent less than it is to-day, then the street car companies could and did make a profit out of the five-cent fare.

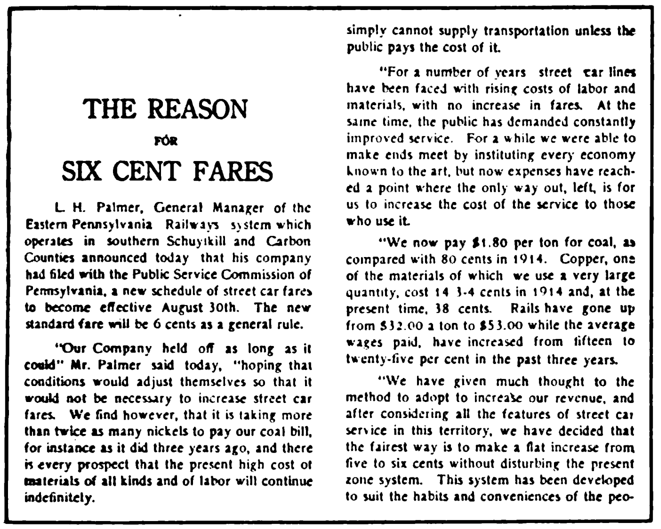
But to-day the nickel has but a three-cent value compared with three years ago, in the labor markets and in the iron and construction markets of the country. With laws regulating the hours of labor and with wages advancing year after year, and with street car equippage advanced full sixty per cent., the five-cent fare must soon become a fare of the past.

When the milk man raises milk two or three cents a quart, when the coal dealer puts another dollar on the ton and when the merchant adds to the price of his wares, the extra cost to the buyer is a dead loss. Not so with the extra cent we will be asked to pay for street car fare. The greater part of that cent will go towards improving the street car service, towards extending the street car lines, towards more and better cars All this has been hampered the past two years through the inability of the company to make ends meet with a five-cent fare. A six-cent fare will mean we will obtain more benefits, that more men will be put to work and that there will be means to make repairs for damages done through mine caves, which caves have caused great losses to the street railway company.

The street car ride is the cheapest ride on earth It is the safest ride The street car is the best friend of the poor man. It serves him in many ways It has served him to the limit and somewhat beyond. It has not asked for the other cent until it has shown him that a five-cent fare is no longer profitable.

Think over the extra cent patiently, reasonably and intelligently and chances are you will not be inclined to kick Like many other institutions, the war has made the street car financially sick To restore it to its full health and to the vigor required in this valley, the street car needs the other penny Let us meet the situation with a smile Perhaps easier days will come soon, but until then let us keep on smiling and pumping cheer into hearts that are harrased in many ways.

HIGHER FARES PUBLICITY—ADVERTISING IN ELMIRA SUNDAY "TELEGRAM"



THE REASON

FOR

SIX CENT FARES

L. H. Palmer, General Manager of the Eastern Pennsylvania Railways system which operates in southern Schuylkill and Carbon Counties announced today that his company had filed with the Public Service Commission of Pennsylvania, a new schedule of street car fares to become effective August 30th. The new standard fare will be 6 cents as a general rule.

"Our Company held off as long as it could" Mr. Palmer said today, "hoping that conditions would adjust themselves so that it would not be necessary to increase street car fares. We find however, that it is taking more than twice as many nickels to pay our coal bill, for instance as it did three years ago, and there is every prospect that the present high cost of materials of all kinds and of labor will continue indefinitely.

simply cannot supply transportation unless the public pays the cost of it.

"For a number of years street car lines have been faced with rising costs of labor and materials, with no increase in fares. At the same time, the public has demanded constantly improved service. For a while we were able to make ends meet by instituting every economy known to the art, but now expenses have reached a point where the only way out, left, is for us to increase the cost of the service to those who use it.

"We now pay $1.80 per ton for coal, as compared with 80 cents in 1914. Copper, one of the materials of which we use a very large quantity, cost 14 3-4 cents in 1914 and, at the present time, 38 cents. Rails have gone up from $32.00 a ton to $53.00 while the average wages paid, have increased from fifteen to twenty-five per cent in the past three years.

"We have given much thought to the method to adopt to increase our revenue, and after considering all the features of street car service in this territory, we have decided that the fairest way is to make a flat increase from five to six cents without disturbing the present zone system. This system has been developed to suit the habits and conveniences of the peo-

HIGHER FARES PUBLICITY—PAGES FROM POTTSVILLE LEAFLET

part of a publicity campaign conducted by that company and including leaflets, newspaper advertisements, cards in the cars, notices to employees, etc.

General Evidence Presented at Albany

Up-State New York Railways Show Increased Costs of Operation and Financial Condition—Commission Reserves Ruling on Franchise Fare Restrictions

THE hearings before the Public Service Commission for the Second District of New York on the applications of the twenty-eight electric railways for permission to increase passenger fares were resumed at Albany on Aug. 7. The petitions of these companies were made under the auspices of the special committee on ways and means to obtain additional revenue of the New York Electric Railway Association. Petitions were also filed independently by three other lines in New York State, the hearings on which were begun on July 25, as noted in the ELECTRIC RAILWAY JOURNAL of July 28.

At the hearing this week the evidence presented was general in scope, covering the present situation in which all the twenty-eight petitioners find themselves. Municipal representatives argued that no general testimony should be admitted, but the commission ruled that the railways might introduce their case in this way. Corporation Counsel Richard C. S. Drummond of Auburn, representing the committee composed of the different corporation counsels of the State, appeared in opposition to the applications, and Charles E. Hotchkiss, New York, appeared as counsel for the committee representing the railways.

HOW COSTS HAVE GONE UP

In order to show the advance in prices of labor, material and equipment and the general expense of operation, testimony was presented by various experts from manufacturing companies. For example, Edmund P. Waller, assistant manager of the railway department of the General Electric Company, and Roscoe Seybold, of the Westinghouse Electric & Manufacturing Company, testified that all kinds of electric apparatus used by electric railways now costs, on account of increased prices of labor and materials, from 50 to 125 per cent more than in 1914. Labor costs in the production of these supplies have advanced from 30 to 40 per cent since 1914. Steel plates have increased in cost as much as 700 per cent; copper, 120 per cent; steel castings, 100 per cent; steel forgings, 340 per cent; coal, 80 per cent; brass, 200 per cent, etc.

W. G. Kaylor, of the Westinghouse Traction Brake Company, stated that since April, 1917, air brake equipment has increased 27 per cent in price, and James S. Thompson, vice-president of the American Brake Shoe & Foundry Company, testified to a 63 per cent increase in cost of brake shoes. Wm. H. Englund, of the Electric Service Supplies Company, said that trolley wire insulators, etc., have increased 200 per cent in the last three years, owing to increased costs of labor and material.

HIGH LABOR COSTS AND FINANCIAL BURDENS

Prof. Roswell C. McCrea, of Columbia University, testified that labor costs had increased greatly in the last three years, and declared it practically a certainty that still more increases are near at hand. Professor McCrea presented tables showing the rise in wages in recent years.

Prof. Thomas Conway, Jr., of the Wharton School of Finance, University of Pennsylvania, submitted a statement and exhibits, based on reports to the Public Service Commission, to the effect that more than one-half of the petitioning companies were not only paying no dividends but were not even earning the interest on their bonds. Professor Conway stated that the net corporate income of twenty-seven of the twenty-eight companies, despite an increase of total business, had fallen from $1,143,294 in 1912 to $423,711 in 1916. Only seven companies showed an increase in net since 1912. Fourteen companies failed to earn their fixed charges in 1916.

Professor Conway testified that only three of the companies had income enough to enable them to market their securities. He stated that even a 6-cent fare would not make up for the loss of purchasing power of the nickel in buying of supplies for electric railways. Unless relief were granted sufficient to make the industry attractive to investors, the companies could not keep up service, buy cars or other equipment, or extend lines, and some would have to go into receivership.

COMMISSION REFUSES TO RULE IN ADVANCE ON JURISDICTION

Mr. Drummond endeavored at the beginning of the hearing to secure a ruling on the right of the commission to grant an increase in fares in special cases where charters and franchises imposed 5-cent fare limits upon the companies. Chairman Van Santvoord answered that the commission was not going to decide this question in advance; that the statute gives the commission the right to make the inquiry now under way, and that the commissioners purposed to go ahead with the taking of testimony and not to enter into an argument about the decision of legal questions. Chairman Van Santvoord said that Mr. Drummond and his associates could file objections. As noted in the issue of July 21, the commission had previously ruled that it had power to grant increases in cases not involving alleged charter or franchise restrictions.

In commenting upon the present ruling, the city representatives later gave out a statement in part as follows:

"If the commission had ruled that it had no jurisdiction in such cases, several of the petitions would be thrown out, and the cities involved would not have to go to the expense of engaging experts and preparing to combat the claims of the companies. As the commission denied this request, it now becomes necessary for all cities, even though the commission's jurisdiction in certain cases in which several cities are involved has not yet been determined, to go to expense and trouble of preparing to oppose the petitions of the companies.

"We objected to taking general testimony alleged to be applicable to all cases. After this had been overruled, we requested that at the conclusion of the general testimony the commission take up the trial of the case to be designated by us, as involving all the questions desired to be reviewed.

"The commission at first refused this request, stating that it would determine for itself what cities should be considered first. At the close of the day the commission stated it would consent to receive a suggestion from the cities. We have decided to suggest Schenectady, as all the questions of jurisdiction are involved, and every question the commission will have to pass on will be decided in that one case."

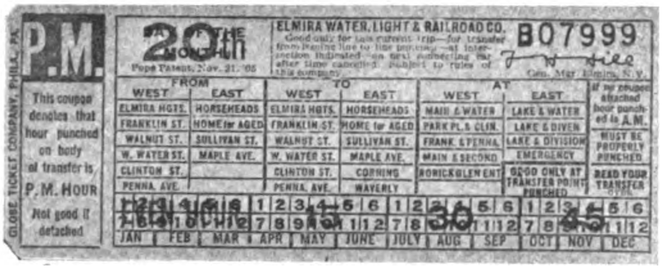
A Simple and Effective Transfer

BY C. A. KOLSTAD

Secretary and Treasurer Elmira Water, Light & Railroad Company

We think that we have adopted a transfer that is very simple and effective and therefore that it will be of interest to other utility operators.

On account of the closeness of the various transfer points on our lines our transfers must indicate very clearly the intersection point where they are to be used.



GLOBE TICKET COMPANY, PHILA. PA.

P.M.

This coupon denotes that hour punched on body of transfer is P.M. HOUR

Not good if detached

20th DAY OF THE MONTH

Pope Patent, Nov. 21, '05

ELMIRA WATER, LIGHT & RAILROAD CO.

B07999

Gen. Mgr. Elmira, N.Y.

FROM WEST	FROM EAST	TO WEST	TO EAST	AT WEST	AT EAST	
ELMIRA HGTS.	HORSEHEADS	ELMIRA HGTS.	HORSEHEADS	MAIN & WATER	LAKE & WATER	If no coupon attached hour punched is A.M.
FRANKLIN ST.	HOME for AGED	FRANKLIN ST.	HOME for AGED	PARK PL. & CLIN.	LAKE & DIVEN	
WALNUT ST.	SULLIVAN ST.	WALNUT ST.	SULLIVAN ST.	FRANK. & PENNA.	LAKE & DIVISION	MUST BE PROPERLY PUNCHED
W. WATER ST.	MAPLE AVE.	W. WATER ST.	MAPLE AVE.	MAIN & SECOND	EMERGENCY	
CLINTON ST.		CLINTON ST.	CORNING	RORICK GLEN ENT.	GOOD ONLY AT TRANSFER POINT PUNCHED	READ YOUR TRANSFER
PENNA. AVE.		PENNA. AVE.	WAVERLY			

1	2	3	4	5	6	1	2	3	4	5	6	1	2	3	4	5	6	1	2	3	4	5	6
7	8	9	10	11	12	7	8	9	10	11	12	7	8	9	10	11	12	7	8	9	10	11	12

15 30 45

JAN FEB MAR APR MAY JUNE JULY AUG SEP OCT NOV DEC

NEW TRANSFER AT ELMIRA

We therefore arranged our lines and transfer points in geographical order. This makes them easily readable by both the passenger and conductor, thus reducing friction from wrong punching.

As we do not print in the year, returned transfers can be used over each month, thus reducing the waste. To prevent passengers saving transfers and using them on the same day the following month, different colors are used each month besides the punch mark for the month. As the month and issuing line can be punched ahead, only three punches are required when the transfer is issued to the passenger.

We realize enough from the sale of the back for advertising to pay the entire cost of printing our transfers.

A Spelling "Bee" on Trainmen's Rules

Great Interest and Proficiency in Rule Book Stimulated by Inter-Divisional Contests

A MEANS of inducing the trainmen to read their rule books instead of forcing them to do so has been meeting with great success in the Denver Tramway Company. This comprises what in effect is an old-fashioned spelling "bee" at the monthly meeting of the Denver Tramway Brotherhood, with the rules of the transportation department as the point of contest, instead of spelling. This contest has come to be one of the features of these monthly meetings and has proved as entertaining to all the employees as it is keenly interesting to the trainmen. The manner in which the contest is arranged is as follows:

For the contest each month the four division superintendents of the company each appoint eight conductors and eight motormen to represent their division in the next rule book spelling bee. These sixteen men then begin in earnest to study the rule book, and usually they appoint a trainer who gets the men together periodically in the club room and asks them questions. Thus on the four divisions there are sixty-four men each month who are making a special drive on the company rule book. Then two days previous to the contest, the names of the two motormen and two conductors who are to represent each division in the contest are drawn by lot from the group of sixteen. At the contest, the general attorney for the company acts as chairman of the meeting, while the transportation department instructor puts the questions to the sixteen men from the four four divisions. One of the company department heads acts as scorekeeper, and the claim agent who is also in charge of safety work, the superintendent of transportation and the publicity manager act as judges. The team winning the highest score is given a prize of $10, with a second prize of $5. The prizes, of course, are divided equally among the four members of the winning teams.

In addition to affording a lot of good fun, these contests have brought out many interesting facts. The questions asked are confined not only to the rule book, but also include the locations of all the principal buildings and institutions, parks, clubs, etc., and what car to take to reach them. It is on some of these latter questions that some of the oldest men in the company have fallen down. The losing teams in the contest thus far have shown a very excellent spirit, and instead of being greatly disappointed have declared they would get the money next time.

In selecting the sixteen men to represent their divisions the division superintendents are required to appoint no man who has been in any former contest. This insures that the group of sixty-four men in training on the system each month will gradually take in new men, so that in the course of about six months all the trainmen on the system will know the rules better than ever before. As none of the group of sixteen on each division each month knows who will be drawn for the final contest, it keeps them all "plugging" until within two days of the monthly brotherhood meeting. The spirit with which the men have entered into this contest and the very marked results which are being obtained have been a revelation to the company officials. The idea was introduced by J. C. Davidson, publicity manager.

Analysis of the Power Sources of Electric Railways

Figures Show That 55 Per Cent of Companies Generate Their Power and That These Companies Operate 68 Per Cent of the Mileage and Own 70 Per Cent of the Cars in the Country

OWING to the interest in the subject of energy purchase and sale by railways, the following tables have been compiled for the purpose of investigating the present status of this business. The figures are based on those in the *McGraw Electric Railway Directory* for August, 1916. On account of the complicated organization of many companies estimates had to be made in certain cases so that the figures are only approximate, but it is thought that the tables will prove useful.

TABLE I—POWER SOURCES OF ELECTRIC RAILWAYS

Territory, State or Country	Total Number	Number of Companies with Power Load	Number of Companies with Lighting Load	Companies Generate Power	Companies Purchase Power	Companies Generate and Purchase	Mileage of Generating Companies	Mileage of Purchasing Companies	Number of Cars of Generating Companies	Number of Cars of Purchasing Companies
Alabama	13	6	6	6	8	1	251.7	108.6	506	170
Arizona	4	0	2	1	3	0	6.7	45	10	37
Arkansas	10	4	5	5	5	0	96.6	29.5	200	87
California	40	3	3	12	30	2	340	2,924.5	577	5,577
Colorado	12	3	4	6	7	1	355.4	86.9	628	54
Connecticut	20	1	1	11	9	0	788	222	1,703	384
Delaware	2	1	0	1	2	1	136	17	371	18
Dist. of Columbia	7	2	1	4	3	0	399.7	11.9	1,382	7
Florida	9	4	4	8	1	0	167.1	26.1	277	30
Georgia	13	5	6	9	7	3	409.5	56.1	692	84
Idaho	6	1	1	1	5	0	58	121.7	20	69
Illinois	70	10	11	29	42	1	1,952	1,692.9	3,566	4,333
Indiana	48	11	12	31	17	0	2,462	359.2	2,116	459
Iowa	28	11	14	19	9	0	528.4	207.3	987	343
Kansas	19	3	5	11	8	0	294.5	253.8	212	305
Kentucky	10	1	2	7	3	0	448.6	14.5	1,071	41
Louisiana	10	1	6	10	0	0	327.2	0.0	820	0
Maine	14	5	5	9	5	0	498.1	57	712	85
Maryland	10	3	2	4	6	0	513.5	153.1	2,233	181
Massachusetts	43	4	2	25	19	1	2,735.2	506	7,814	581
Michigan	27	5	6	18	12	3	890	774	1,754	1,063
Minnesota	11	1	2	4	7	0	457.9	165.8	1,140	197
Mississippi	11	5	10	11	0	0	123.1	0	191	0
Missouri	22	2	6	16	7	1	609.5	547.5	1,362	1,645
Montana	8	0	2	2	7	1	0	271.1	0	1,136
Nebraska	6	2	2	2	4	0	223.3	31.1	582	26
Nevada	2	0	0	0	2	0	0	10.8	0	12
New Hampshire	12	1	1	6	6	0	97.7	78.3	137	106
New Jersey	29	1	1	20	9	0	1,246	73.7	2,633	99
New Mexico	2	1	1	1	1	0	3.7	5	5.5	6
New York	98	12	14	45	56	3	3,416	2,219.1	13,315	4,378
North Carolina	13	6	7	7	7	1	112.7	177	240	286
North Dakota	4	1	1	2	2	0	3	4	24	67
Ohio	77	20	27	53	24	0	3,895.7	478	6,821	374
Oklahoma	16	3	3	7	9	0	199.4	129.5	193	194
Oregon	9	1	1	5	4	0	375.4	354.8	1,222	306
Pennsylvania	123	4	9	63	63	3	2,625.6	1,844.5	5,078	4,248
Rhode Island	3	1	1	2	1	0	423.6	14.5	1,343	13
South Carolina	6	3	3	4	2	0	95.1	14.8	154	20
South Dakota	3	0	0	0	3	0	0	96	0	33
Tennessee	14	3	4	5	9	0	295.9	205.3	755	182
Texas	38	4	5	14	24	0	424.4	316.2	821	620
Utah	5	0	0	0	5	0	0	425	0	970
Vermont	10	1	2	4	6	0	57	67.8	102	40
Virginia	18	2	5	14	5	1	467.5	41.1	977	66
Washington	18	6	10	13	5	0	1,154.6	98	1,800	136
West Virginia	21	8	7	14	10	0	357.7	94	599	62
Wisconsin	22	9	8	15	7	0	714	51.2	994	102
Wyoming	2	0	0	0	2	0	0	22	0	22
Canada	62	12	15	34	28	0	1,565.5	731.5	3,915	1,556
Hawaii	1	0	0	1	0	0	30	0	72	0
Mexico	14	6	8	12	2	0	385.5	37.2	998	96
West Indies	7	3	6	7	0	0	238.9	0	853	0
Philippine Islands	1	0	1	1	0	0	53.9	0	141	0
Porto Rico	2	1	1	2	0	0	17.7	0	133	0
Totals	1108	203	261	613	518	23	33,328.5	16,272.2	74,371	30,906

18.5 per cent of companies have power load.
23.6 per cent of companies have lighting load.
54.3 per cent of companies generate their power.
45.7 per cent of companies purchase their power.
2.08 per cent of companies both generate and purchase their power.
67.3 per cent of mileage is operated by generated power.
32.7 per cent of mileage is operated by purchased power.
70.6 per cent of cars are operated by generated power.
29.4 per cent of cars are operated by purchased power.

TABLE II—RAILROADS OPERATING ELECTRIC DIVISIONS

Name and Division	Purchase Power	Generate Power	Motor Cars	Locomotives	Miles
Balto. & Ohio, Belt Div.	P	..	..	9	8.4
Boston & Maine, in New Hampshire	..	G	37	..	30.72
Boston & Maine, in Mass.	P	..	..	5	22
Bush Terminal R. R.	P	..	2	3	6
Chicago, Milwaukee & St. Paul.	P	..	..	44	440.6
Erie R. R., Rochester Div.	P	..	8	..	40
Grand Trunk, St. Clair Tun.	..	G	..	6	12
Great Northern Ry., Cascade Tunnel	P	..	..	4	10
Long I. R. R., Electric Div.	P	..	591	..	217.2
N. Y., N. H. & H., all electrified divisions	P	G	25 44*	100	570
N. Y. C. & H. R., Elec. Div.	..	G	192* 19*	63	254.6
Norfolk Southern R. R., Va. Beach Div.	..	G	25 17*	1	47
Norfolk & Western Ry.	..	G	12	..	88.8
Penn. R. R., Paoli Div.	P	..	93	..	96.6
Penn. Tunnel & Terminal Co.	..	G	68	66	95.5
West Jersey & Seashore R. R.	..	G	109	..	150.3

*Trailers.

Table I embraces all street railways and interurban lines, including storage-battery lines, but excludes gas electric lines, auto bus lines, horse car lines and inclined cable roads. Table II includes those roads which were originally steam roads but have since been electrified or which operate electric divisions. As the tables are intended to represent passenger roads, a few roads built primarily for the transportation of freight, such as the Chicago Tunnel Company, which operates 61 miles of narrow-gage subway lines and owns 132 motor cars and 3000 other cars, were excluded. In a good many instances where companies, such as the Detroit United Railway, generate part of their load and purchase the remainder, the figures on cars have been prorated according to the amounts generated or purchased by these companies.

Railways in Table I, which obtain their power from another sub-company of the same corporation like the Public Service Corporation of New Jersey, are classified as generating their power but not as carrying a lighting or power load, but where the operating company is both a lighting and a railway company, like the Milwaukee Electric Railway & Light Company, it is classified as generating its power and also having a lighting load. It was somewhat difficult to determine just which roads should be included in the electrified group, but for the purpose of this study only those appearing in Table II have been so designated.

From this classification it appears that about 18 per cent of the electric railway companies in this country are doing a supplementary industrial power business and 24 per cent a lighting business. Of those which either generate or purchase power, 55 per cent belong in the generating group and 45 per cent in the purchasing group; 2 per cent of the total number both generate and purchase. Approximately 68 per cent of the mileage and 70 per cent of the rolling stock are owned by railways generating their power.

There were 891 collisions between automobiles and electric cars on the Detroit United system during May of this year. This is an average of almost twenty-nine per day or more than one for every mile of track, including yard trackage. As a result of these collisions 150 claims for damages were made against the company. These figures were recently presented to the Detroit public through *Electric Railway Service*, the company's publication in an article urging greater care.

COMMUNICATIONS

Publicity and the Association

SOUTHERN PUBLIC UTILITIES COMPANY
CHARLOTTE, N. C., Aug. 7, 1917.

To the Editors:

A communication from W. F. Brashears, director of the Public Utility Publicity Bureau of Chicago, in your issue of July 28, under the heading: "The Privately Conducted Publicity Bureau," has come to my desk, and by reason of the fact that he quotes from a prior communication from the writer and because of the fact that his argument begins at the point mine starts, I am presuming upon the charity of the ELECTRIC RAILWAY JOURNAL for a bit of space.

If company publications were issued solely for the men employed by these companies, it is possible that the argument of the Chicago gentleman would hold, but that has long since been proven to be a single barreled gun. The more successfully operated publicity departments reach the public which compose the patronage, real or potential, as well as the employees, and again I submit that varying conditions make it impossible for a general publication to fill the needs of any appreciable number of localities or sections.

Mr. Brashears is happy, I think, in the selection of his comparison of the publicity bureau with the central station or a single electric railway company for a given city. But from that point his argument is faulty. It is my opinion, and has always been, that the central station idea is the proper one, and that the publicity bureau within the American Electric Railway Association is that central station. I agree with Mr. Brashears that a multiplicity of such stations would not operate to the best advantage of the industry.

But I am convinced, after a careful study of his communication, that the gentleman has confused the issue and is arguing against a central association publicity *bureau* when he probably means to advocate the establishment of a central *printing house*. I submit there is a wide difference between the two, and though he fears that the creation of the former would interfere with his business and that it would be unfair and unwarranted, I fail to see that an Association bureau for the dissemination of useful information, much of which would not be for publication, would interfere in any way with the publication of even a general bulletin or magazine such as he issues now for so many electric railways.

I want to be entirely fair to Mr. Brashears and therefore I am going to admit that the publication of a general bulletin for the small company, employing, as he says, twenty-five or thirty men, would and probably is, serving a most excellent purpose. Manifestly it would not be economical for a company of that size to operate an independent publicity bureau, and when this type of companies is being considered I want to admit that the general publishing house would be a valuable factor in the publicity field.

I want to admit, also, that inspirational articles are as valuable in one section as another, yet I find that even these are more forceful if they are adapted to the conditions prevailing in the various sections. Ministers of the gospel do not preach Christ and Him crucified in exactly the same words to every congregation, owing to the different composition of congregations, and a thought expressed in different phraseology reaches the people with much greater force than the thought presented time after time in the same language. Thus it is, that a thought which appeals to the employees of a company and the public of one section when presented according to one set and specific school, will fail of its purpose in some other section.

In conclusion, I want to say that my purpose in writing the JOURNAL, in the first instance, was to bring out a full and free discussion of this most important matter, and I am more than delighted with results. Because publicity men fail to agree on all points is no argument against their respective schools or lines of action. But in the multiplicity of counsel there is wisdom, and I believe too much time, effort and space can not be devoted to the subject under discussion.

LEAKE CARRAWAY, Director of Publicity.

UNITED RAILWAYS & ELECTRIC COMPANY
BALTIMORE, MD., Aug. 6, 1917.

To the Editors:

In re the much mooted question of a publicity section, permit me to say that I have read the letters of Mr. Brashears of Chicago, Mr. Carraway of Charlotte, Mr. Davidson of Denver, Mr. Van Zandt of Detroit, the Sermon on the Mount, the Message to Garcia and sundry and divers other disquisitions touchin' on and appertainin' to the pending subject. Incidentally, I have written some on the subject myself.

I am in favor of a publicity organization associated with the American Electric Railway Association but not to usurp the functions of the very excellent data bureau now maintained by the association.

The publicity organization should perform its natural functions, just as a traffic organization, a transportation organization, and all the other company organizations within the association perform their natural and self-related functions. And there should not be any great difficulty in drawing the line between the natural functions of one department and those of another.

The whole discussion only emphasizes the healthiness of the subject and the need of getting together and threshing out the whole subject. Let's mobilize.

DWIGHT BURROUGHS, Publicity Manager.

Water Power in Canada

A table prepared from 1915 data by Charles H. Mitchell, Ottawa, Canada, shows that even though Canada occupies second place among the countries in available water horsepower (with about 8,000,000 hp. as compared with 28,000,000 in the United States), she has developed her resources until the percentage utilized almost equals that of the United States, with more than three times the amount available. The developed horsepower per capita is three times that of the United States, and the annual rate of development in Canada is probably much more rapid. The Canadian government is supreme in matters affecting navigable rivers and exercises a firm control over them. The policy of the government, while protecting the public and insisting on economic utilization, aims at fostering legitimate private enterprise.

EQUIPMENT and MAINTENANCE

HAVE YOU A GOOD WAY
OF DOING A JOB?
—Pass It Along

Read in This Issue:
How the Pacific Electric Railway Developed Its Mechanical Flagman

Evolution of an Automatic Flagman

Author Describes Experience in Developing an Electrically-Operated Automatic Flagman, at First on Lines of Pacific Electric Railway, Later as a Commercial Product

BY CLIFFORD A. ELLIOTT
Cost Engineer Pacific Electric Railway, Los Angeles, Cal.

The Pacific Electric Railway has been doing everything within its power and financial limits to eliminate grade crossings. In recent newly-constructed lines, overhead highway bridges or underground passages have been established wherever feasible. When financial conditions have not permitted the separation of grade at dangerous crossings either watchmen or electrically operated automatic flagmen have been employed.

In August, 1910, the Pacific Electric installed the first mechanical flagman, which was developed in its own signal shop. It was a motor-driven belt design, and the motor, which was protected in a cast-iron box and mounted on the post supporting the flagman, was placed in operation by trolley brush contactors. The current was relayed through control apparatus, employing the high-tension type of walking-beam relay, which was installed in a wooden box and placed on the trolley pole near the flagman post as shown in Fig. 1. The other relay box on the flagman post will be explained later. In 550-volt territory the current, after being carried through the relay, was conducted into a four-tube resistance bank of 1000 ohms resistance for each tube, one tube being for the motor and the other three for three lights. The voltage was stepped down in the resistance to 220 for both motor and lamps. Mounted on the flagman were receptacles for two white incandescent lamps, while in the center of the disk were located two red lenses, between which was placed another incandescent lamp for displaying "red" at night. The resistance bank was installed in a sheet-metal box at the top of the post (not shown in Fig. 1) or immediately below the motor. When the flagman was set in operation the motor revolved the wheel and the operating belt, thus producing an arm-like motion of the signal pendulum, and caused the bell, mounted on top of the cast-iron box containing the motor, to ring. During the day the bell furnished a good warning, while at night the illumination afforded by the electric lights, both red and white, made this signal decidedly prominent. The contactors on the ordinary lines were placed about 1200 ft. preceding the crossing, while the cut-out contactor was placed just over the crossing. The approach contactor sent the annunciation into the relay apparatus, thence through the resistance bank and into the motor of the flagman which operated until car had passed through the cut-out contactor; and then the reverse movement of the walking beam relay stopped operation.

Later in the year 1912 the construction of this flagman was taken over for further development by the Railway Specialties Company, Inc., of Los Angeles, Cal. The installation of the motor-driven belt-type flagman

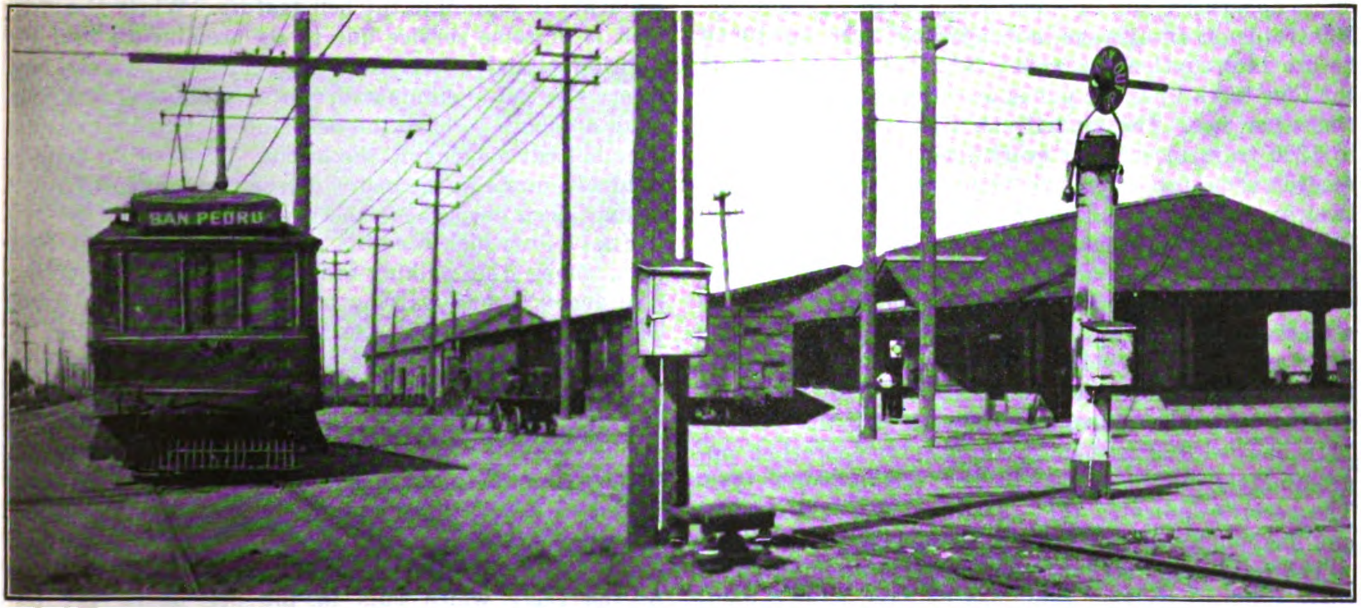


FIG. 1—AUTOMATIC FLAGMAN IN OPERATION

was discontinued and a motor-driven worm-gear type adopted, the principle of its operation, however, being practically the same as the motor-driven belt type. The Railway Specialty Company's signal was briefly described in the issue of the ELECTRIC RAILWAY JOURNAL for Jan. 23, 1915, page 176. It should be said that the flagmen of the old belt type were difficult to maintain as the belt was constantly breaking, thus greatly increasing the failures in operation. During 1916 the type was again improved by the adoption of a magnetically-operated device. This is a much better machine than the other two types formerly installed because it has no motor-driven parts. The pendulum responds more rapidly, the operations being smoother and more active, and the shaking of the machine has been minimized, thus reducing maintenance.

In the former types whenever the flagman was cut in and then cut out the pendulum would rest at its position when cut-out was effected, whereas with the magnetic type the pendulum always returns to center or is set on neutral when not in operation.

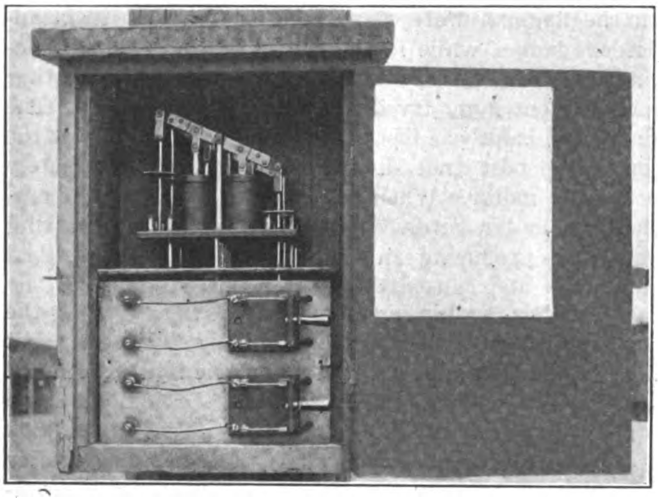


FIG. 2—HIGH TENSION WALKING BEAM RELAY AND INSPECTION CARD

SERVICE RECORD IS CREDITABLE

Records show that excellent service is given by the latest apparatus, and in many instances more than 180,000 trains on an average have operated over a crossing before interruption occurred. Some of the signals on the four-track lines are put in operation as high as 1200 times per day. These particular lines carry from 1000 to 1200 train movements every twenty-four hours, and records show operation under such service for nine to twelve months without an interruption. The average, however, is approximately six months. Most of these failures are due to trolley brush contactor trouble, which it is anticipated can be eliminated by adoption of a track instrument to afford a more perfect contact. On some of the lines where the train operation is lighter, flagmen have seen service from sixteen months to twenty months without failure, and the total for the year of 1916 showed 193 automatic flagmen in operation, approximately eighty of which were the magnetic tyye. The records indicated that the company could operate one flagman eight months without an absolute failure.

The needed maintenance and frequent inspection of these signals have been combined by having the organization which cares for switch lights handle the maintenance of the flagmen, assigning as much territory to one man as he can efficiently handle with justice to both duties. These maintainers are provided with gasoline-motor inspection velocipedes advantageously to cover the ground, and they are required to inspect each flagman in their respective territories every day. A pasteboard card as shown in Fig. 2 is tacked on the door of the relay box at each flagman and the inspector indicates upon each daily trip the conditions noted. These cards are collected each month to permit the compiling of records of operation of the devices for the period. During the year 1916 for a period of six months there were only 185 failures, and during this same year for the twelvemonth period the cost of maintenance of one automatic flagman, including labor and material, was approximately $6 per month.

The cost of the complete installation varies according to conditions, ranging from $300 to $400 at present-day prices. The line wire used is No. 12 weatherproof iron wire, while that placed in trunking and cable is No. 14 rubber-covered double-braid copper wire. In the installation of the contactors on heavy-traffic lines, where during certain hours of the day there is as low a headway as forty-five seconds, the practice is to place three contactors 400 ft. apart, so that a train immediately preceding another will not cut the signal while the following train is approaching the crossing. The company's operating rules require at least an 800-ft. interval, in which case there is always this length of the protection in the crossing.

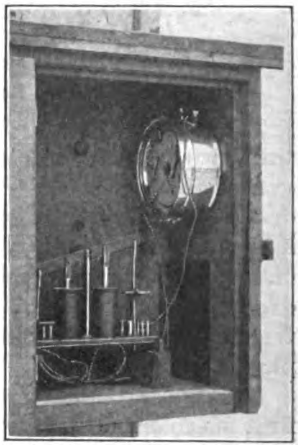


FIG. 3—CLOCK IN RELAY BOX TO EFFECT CUT-OUT AND CUT-IN OF BELL

BELL CAN BE CUT OUT AT NIGHT

In restricted residential districts when flagmen are installed, the company in some instances agrees with residents to eliminate the bell feature. While the flagman is of some service due to its prominence and the lighting signal effect, it is not, however, at its best where the bell is eliminated. In several cases the company arranges to have the bell ringing during the daytime but cut out during the night. This can be done to good advantage in the motor-driven type, but no scheme has yet been devised for the magnetic type.

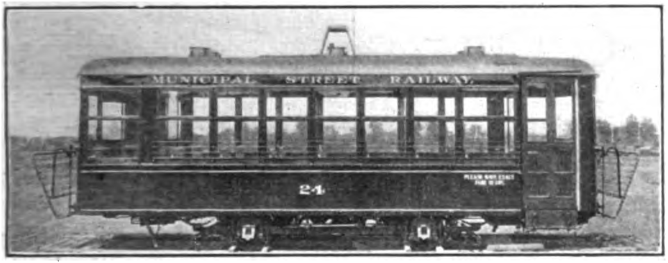
Fig. 1, in which a car is seen approaching the flagman, shows the walking-beam relay box on a trolley pole and a second walking beam relay placed in a box on the pole supporting the flagman. There is also located in this latter relay box, and opposite the walking beam relay to which it is connected by wires, an eight-day Seth Thomas clock (Fig. 3), the face and the minute hand of which are removed, while two brass stationary arms (to serve as cut-outs and cut-ins) are placed on the clock. The hour hand at 6 p. m. cuts in the relay which cuts out the bell, and at 6 a. m. this hand strikes the other stationary arm, thereby cutting in the relay which cuts in the bell again for day operation.

Where the flagmen are in service on the lines adjacent to the ocean the wire brushes are greatly affected by the action of the salt air and require renewal about every four months. Another disadvantage of the brush contactor is the necessity of carrying an extra man with the maintainer, to flag approaching trains while the latter is mounting the ladder to make the inspection. As already stated it is anticipated that a track contactor will be substituted for the trolley brush type.

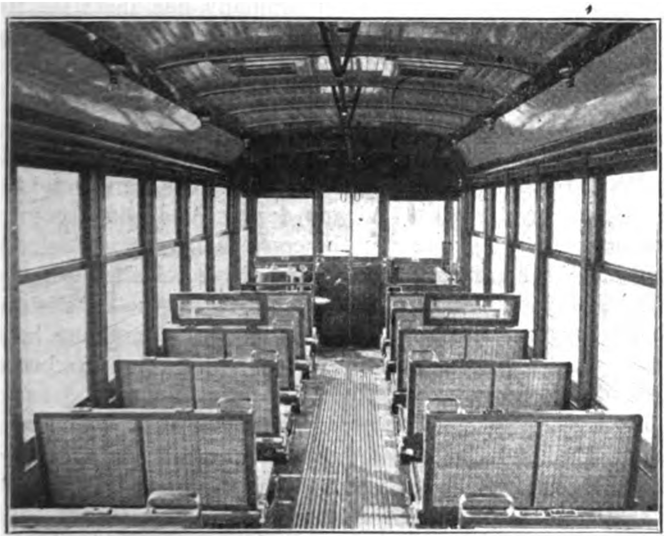
New Car for Louisiana Municipal Railway

New double-end, single-truck, one-man cars have recently been furnished to the Municipal Street Railway of Monroe, La. These embody a light-weight, compact design with steel underframe and side sheathing and archroof construction. The interior of the car is equipped with fourteen reversible lightweight cross-seats, giving a seating capacity within the car body of twenty-eight passengers. Folding seats on the platforms provide for four additional passengers, making a total seating capacity of thirty-two.

The car is equipped with air brakes, manually-operated doors and two GE-506-A-2 motors. The over-bumper length is 27 ft. 9½ in. and the over-sheathing width is 7 ft. 6 in. The truck wheelbase is 8 ft. 6 in. and the wheels are of 24-in. diameter. The weight of the complete unit is 13,500 lb. The height of the step above the rail is 15 in. and the height of the car floor is 27 in. above the rail. There is no ramp in the car floor and the platform floor is on a level with the car floor. The cars were purchased from the St. Louis Car Company.



ONE-MAN CAR BUILT FOR MONROE, LA.



INTERIOR VIEW OF MONROE (LA.) MUNICIPAL RAILWAY'S ONE-MAN CAR

Perpetuating the Strength of Pole Lines

Renewal of Poles at Intervals Along Line Each Year Keeps Line Strengthened—Complete Pole Record Book Makes This Possible

BY A. SCHLESINGER

Superintendent Distribution and Substations, Terre Haute, Indianapolis & Eastern Traction Company, Indianapolis, Ind.

Maintaining the maximum strength in pole lines with a minimum expenditure is a real problem. When a pole line has been up for eleven years, with little attention, for instance, what should be done? Should the line be rebuilt or are the poles good for another ten years, and should the man responsible take a chance on having the entire line down for the sake of getting the maximum life out of the poles?

In answer to these questions the Terre Haute, Indianapolis & Eastern Traction Company has adopted the plan of reinforcing the pole lines each year by replacing poles at certain intervals. For instance, on one eleven-year-old pole line, we would renew every sixth or every ninth pole, depending upon the condition of the line, the loading, the importance, and the amount of money available for renewal. If every ninth pole was renewed and a heavy storm occurred, it would very likely take down not more than the eight intervening poles and the line would not be put completely out of commission. We aim to replace about 1000 poles a year on our various pole lines, which comprise altogether approximately 17,000 poles. This would provide a complete renewal every seventeen years, but this is not quite necessary, for many of the poles are good for a much longer period. Some have already been in service more than sixteen years and are still comparatively sound.

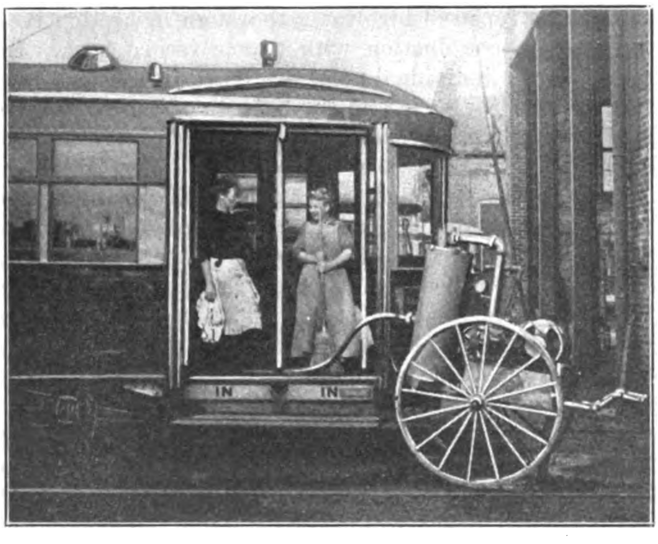
In our ordinary maintenance work the selection of the poles to be replaced involves a thorough inspection record used in conjunction with a pole record book. In this book the individual poles are listed in a single vertical column per page and the balance of the page utilized for columns headed for successive years. Then each year, as certain poles are renewed, a symbol which designates the type and length of pole is placed in the proper year column opposite the pole replaced. The annual inspection of the poles shows the condition of each, and this is recorded and brought into the office. Those poles in worst condition which must be renewed that year are then properly entered in the pole record book, and then the additional poles for that year's reinforcing are spaced along between these imperative replacements. From this pole record book it is thus very easy to see what poles were renewed in previous years and to fill in the spaces between renewals each successive year in the manner which will most effectively strengthen the line. By this scheme the maintenance is spread out uniformly over a long period and not a maximum but a high degree of line strength is perpetuated. With this annual reinforcing there is little danger of losing many poles at one time, and yet the replacement can be so manipulated as to get practically the full life out of the remaining old poles.

In addition to the replacements, we further strengthen the line by stubbing some of the poles with those taken down. Push braces are also set now and then, depending on the characteristics of the line. On one of the old lines where the original poles were 35 ft. in height, we replaced every other pole with a 40-ft. pole and spanned the high-tension line 200 ft., leaving only the trolley bracket fastened to the intermediate 35-ft. pole. This line will be left in this condition for approximately four years, and when the remaining 35-ft. poles are replaced with 40-ft. poles, the high-tension wire will be supported from every pole. By this scheme, instead of having a full strength line at the beginning and somewhat weakened by age at the end of the four years, we obtain a line of practically full strength throughout a period of eight years or more, and at the same time get practically the full life out of the old poles.

By this process of renewing a certain per cent of the poles each year for reinforcements, beginning at a time when indications are that poles are becoming weak, the uncertainties of inspection are largely obliterated. We frequently have poles broken off, but the line stays up due to the reinforcements, and service is not interrupted. This is the important consideration. At present we are using chestnut poles almost entirely.

Doing Their Bit in Toledo

Like most of the other railways of the country the Toledo Railways & Light Company have met with troublous times in trying to keep their operating forces recruited to normal peace strength. This has been particularly true relative to the common labor needed for the maintenance of way and equipment. The women shown in the accompanying illustration are members of a crew of women car cleaners recently employed by the company in an effort to combat the labor scarcity problem. At present men are employed for the heavier work such as carrying water and manipulating the vacuum cleaner. The men work nine hours per day and the women nominally work eight hours, although because of the exigencies of the rush-hour car schedules their actual working time is nearer seven and a half hours per day. The women are paid 1 cent per hour less than the men. They say that they prefer the work to similar work in hotels, stores, office buildings and dwellings, and they take great pride in turning out well-cleaned cars. The cars are cleaned on the average once in eight days.



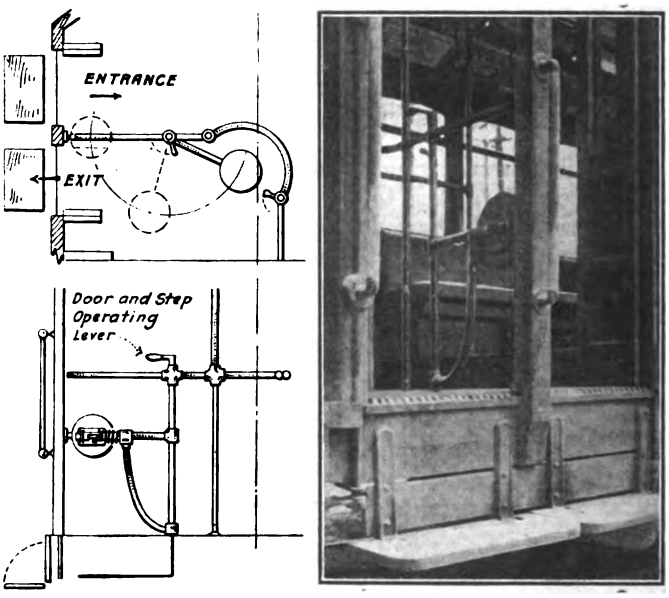
WOMEN CAR CLEANERS, TOLEDO, OHIO

Convenient Type of Conductor's Seat

BY N. NESBITT TEAGUE

Augusta-Aiken Railway & Electric Corporation, Augusta, Ga.

For this company's pay-as-you-enter cars a conductor's seat has been developed by A. E. Kirkley by means of which the conductor can sit facing both the doors and passengers and at the same time operate the handles which open and close the entrance and exit doors. This also brings him into position to collect fares. When the seat is not in use it can be swung into an out-of-the-way position. A spring on the horizontal supporting brackets of the seat is arranged so that it will bring the seat itself into a vertical position when not in use. The picture and drawings indicate the other construction features.



CONDUCTOR'S FOLDING SEAT USED IN AUGUSTA, GA.

One Telephone Booth Used for Three Phones in Noisy Office

BY J. J. CURLEY

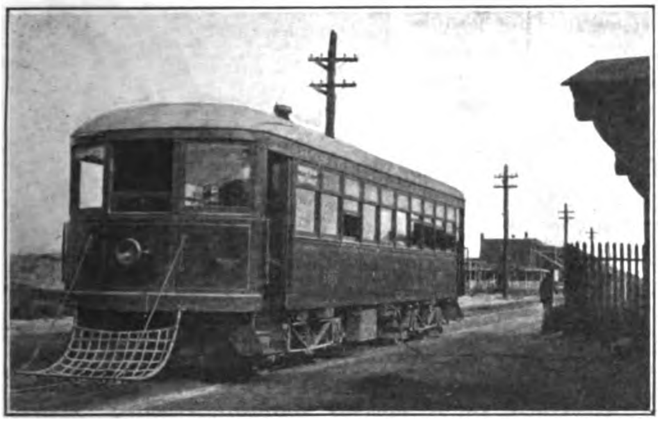
Bay State Street Railway, Boston, Mass.

In noisy offices it is often difficult to use a telephone. To meet this annoyance this company has installed in one of its large shop offices a telephone booth. The office is provided with two public and one private telephone, the three instruments being placed on a shelf just outside of the booth and within easy reach of the clerk who answers them. The telephones are provided with extension wires connected to pulleys and weights so they may be passed to any desk. When on account of noise or the privacy of the conversation it is desired to use the booth, any one of the three telephones may be taken inside and the door closed tight, the extension cord running through casing. This arrangement has been used for some time in our shop office and has been found satisfactory.

In England the managers of a number of tramway companies are seriously considering the operating of "seatless" cars during the heavy rush-hour periods. In the Salford district, the company has removed the seats from several cars used in rush-hour service.

Storage Battery Car Operation

On a 1¼-mile line between Point Shirley and the junction between the Boston, Revere Beach and Lynn Railroad the Point Shirley Street Railway is operating a four-motor storage-battery car. It is equipped with 225 "Beach" Edison type storage batteries manufactured by the Railway Storage Battery Car Company, New York City. The batteries are located under the longitudinal seats. Thirty-six round trips or 81 miles are made per day, and the batteries are charged at the Point Shirley end of the line after each round trip. The illustration shows the car being charged in front of one of the carhouses, energy being supplied by a gas-engine-driven generator.



STORAGE-BATTERY CAR BEING CHARGED AT POINT SHIRLEY, MASS.

In the three years that the car has been in service it has been necessary to renew the electrolyte but once, and no maintenance expenditure for new plates has been necessary in spite of the fact that they are subjected to severe overheating.

Track Joint Maintenance at Colorado Springs

Circular Saw and Electric Welder Prove Effective Aids in This Work

In rehabilitating the track work of the Colorado Springs & Interurban Railway, Colorado Springs, Col., cupped joints are removed by cutting 12 in. or 18 in. off the rail ends, and rail joints are made by welding Abbott base plates and ordinary angle-iron bars together. The old track was laid with 60-ft. 65-lb. A. S. C. E. T-rails, and where these are cupped at the joints the damaged rails are torn out and loaded onto a flat car, which is run to the company's shops. Here two air-operated hoists equipped with grip hooks lift one rail at a time off the flat car and lay it over on two rollers, properly placed for use with a regular circular steel saw. The hammered-out section at the end of the rail is then cut off and the rails placed back on the flat car. When one end has been cut off on all rails in a load, the car is run out of the shop and turned around so that the opposite ends of the rails are in the right position to be cut off with the circular saw when the car is brought back in. After this final cutting the rails are again loaded onto the car and returned to the job.

Wherever the rails are used in double-track work they are sawed off at an angle in order to get a 1-in. in 6-in. vertically beveled joint. By this means the weight of the equipment on the receiving rail is also supported by the leaving rails. This is a practice in use in several cities. Since this type of joint is valuable only for one-way traffic, it is not used on single track. In cutting off the ends, the rails are paired for length so that the joints will come opposite. By cutting off a short piece on each rail, a new length is required for about every twenty-five rails laid.

JOINT CONSTRUCTION

An Indianapolis welder is used to weld ordinary angle bars to Abbott base plates, thus forming a serviceable joint. After being cut off, the rails are drilled for the 4-bolt angle-bars, with holes at 5-in. centers. The two end holes in the rail web are, however, drilled 2 9/16 in. from the end to the center of the hole, making a length of 5⅛ in. between the two end holes when the rail ends are right together. In assembling the joint the outside bolts are first put in, but not tightened. Then a drift pin is driven into the two end holes to take up the slack between the rails and, when the bolts are driven in, the overlength distance between bolt-hole centers in the rails, takes up the slack between the bolts and the side of the bolt hole and brings the rail ends snugly together. The bolt holes are drilled 29/32 in. in diameter for ⅞-in. bolts.

Multi-Curtain Support with Rain and Wind Deflector

New Device Which Can Be Applied to Open and Convertible-Type Cars in Summer Service

The United Railroads of San Francisco are applying to the open ends of their California-type cars a new form of curtain support which permits all the curtains on one side to be operated in unison by the conductor. This support has been patented by Amos Perry, foreman car builder of the company, and his invention has also been adopted by the San Francisco-Oakland Terminal Railways. While designed originally for open-end California-type cars, the support is also applicable to the devilstrip side of open-bench cars and to convertible cars in summer service. Operation is effected as follows:

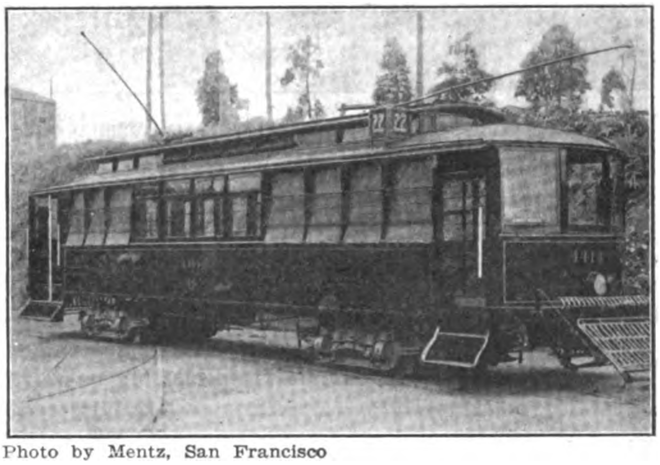


Photo by Mentz, San Francisco

CAR EQUIPPED WITH COMBINATION CURTAIN AND RAIN SHIELD

All of the curtains on a side are attached to one roller which is actuated by the conductor from a pawl-

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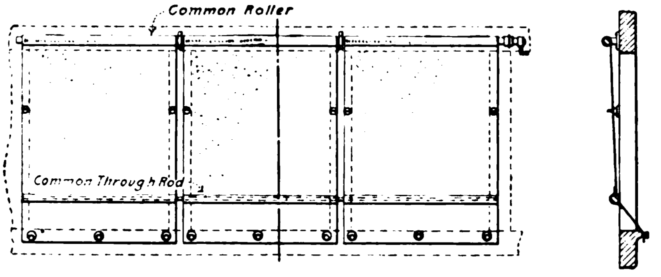
and-ratchet mechanism on the platform like that in a roller-curtain sign. In addition to the top roller, the curtains have a common through rod at some 15 in. from the lower end. The bottom of each curtain has three eyelets which are hooked to headed buttons on the sills in such a way that that portion of each curtain which is below the through rod is pitched outward to form a rain deflector. This causes all the water to drain over the outside of the sill.



DETAILS OF MULTIPLE-OPERATED CURTAIN AND RAIN DEFLECTOR

In operation when it is desired to unreel the curtains it is necessary only to release the ratchet and turn the crank. The eyelets are then hooked on and the crank is turned in the opposite direction to pull the curtains taut. The roller is then locked by lowering the pawl.

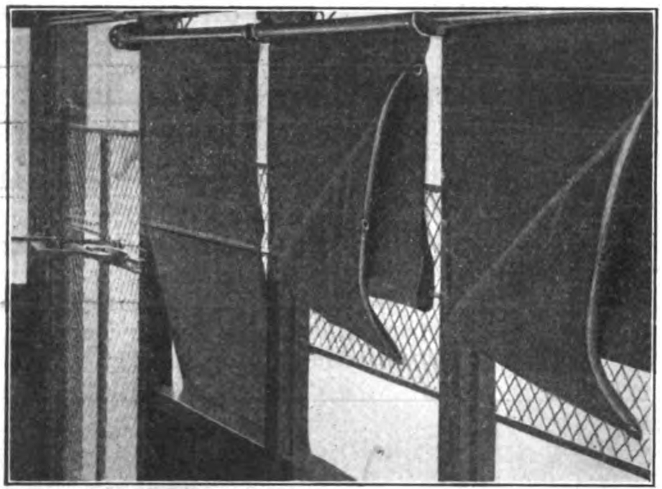


Photo by Mentz, San Francisco

INTERIOR VIEW OF COMBINATION CURTAIN APPLIED TO CALIFORNIA-TYPE CARS

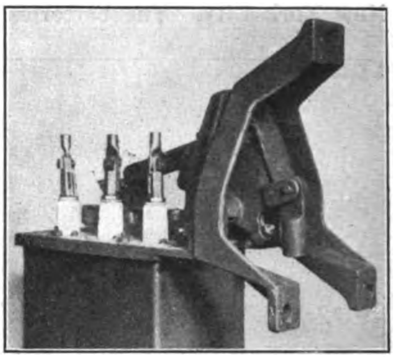
No rain or wind can now enter the car nor can one passenger trifle with the curtains to the discomfort of other passengers. The common rod previously mentioned not only permits the desired deflection but also acts as a weight which causes the curtains to be tightly reeled about the roller when the curtains are raised. This rod also keeps the curtain from blowing outward.

Shavings as Fuel for the Power Plant

On account of the continued uncertain condition of the coal supply and the difficulty of obtaining cars, the plant of the Hattiesburg (Miss.) Traction Company only burned two cars of coal during the month of June. The plant is getting about three cars of shavings per day from the lumber mills, and the company has been authorized to purchase six railroad cars for this purpose. This proposition will save the company in the neighborhood of $500 a month over coal at the present prices. There is a possibility of again negotiating with the J. J. Newman Lumber Company for the total fuel requirements, as the paper mill will not be erected until some time after the termination of the war.

Wall-Mounting Brackets for Oil Circuit Breakers

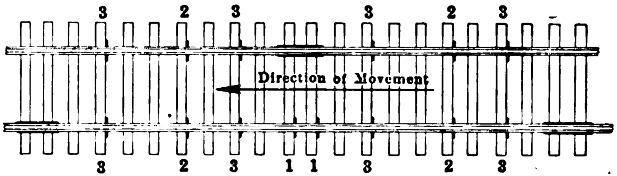
To meet a demand for brackets for use in supporting panel-mounting breakers on walls or pipe frames the Westinghouse Electric & Manufacturing Company has brought out a line of special brackets of which a typical one is shown in the accompanying illustration. The full line of brackets is described in a special bulletin recently issued.



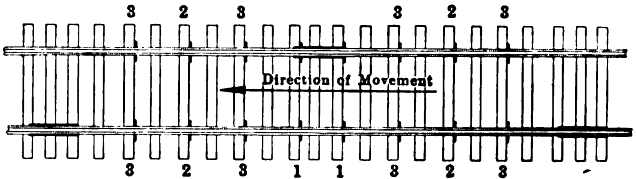
BRACKET FOR PANEL-MOUNTING OIL CIRCUIT BREAKERS

Anti-Creepers on Railway Track

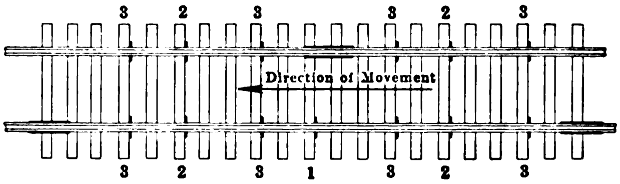
While the lighter traffic on interurban electric railways makes the use of anti-creepers for rail less important than on steam railroads, inquiry among a number of electric railway maintenance of way engineers shows that anti-creeping devices are used in a number of cases. These are principally on high-speed and elevated railways. The schedule of the track and roadway department of the Union Traction Company of Indiana with regard to the installation of anti-creepers provides as follows:



SUSPENDED JOINT



THREE TIE JOINT



SUPPORTED JOINT

When track is running not more than 1 in. per year, anti-creepers are installed as shown at 1-1 in the accompanying diagrams. When the track is running more than 1-in. per year and on all double track that is running, anti-creepers are applied as shown at 1-1 and 2-2. In extreme cases, additional anti-creepers, as shown at 3-3 are added.

News of Electric Railways

Traffic and Transportation

Financial and Corporate Personal Mention Construction News

San Francisco Rejects United Railroads' Offer

City Engineer Submits Revised Company Proposal, but Public Utilities Committee Votes Plan Down

At a meeting of the public utilities committee of the San Francisco Board of Supervisors on Aug. 3, the vote was four to one against accepting the compromise plan of the United Railroads of San Francisco for handling traffic on Market Street and through the Twin Peaks tunnel. The committee recommended that outer tracks for the Municipal Railway be at once constructed on Market Street and that the system beyond the tunnel be extended. The committee's report has yet to be approved by the Board of Supervisors at the meeting on Aug. 13, but it is believed that sanction will then be accorded without delay.

Plans were discussed for using a portion of the reserve funds of the Municipal Railway, which now amount to more than $800,000, for the construction of a line from the west portal of the tunnel to Twentieth Avenue and Taraval Street, a distance of about 3000 ft. At that junction the city could exercise its charter and run cars over the line of the Taraval Street Railway, now under lease to the United Railroads and extending through Parkside. A plan for taking over the United Railroads' lines to connect with Ingleside and other subdivisions was also considered.

REPORT OF CITY ENGINEER ON COMPANY'S PROPOSAL

When the United Railroads presented its proposal for an agreement with the city, involving the use of the Twin Peaks tunnel by the company's cars, the extension of its lines beyond the peaks, the adoption of universal transfers between city and company, as noted in the ELECTRIC RAILWAY JOURNAL of July 14, the public utilities committee asked City Engineer M. M. O'Shaughnessy for a report to guide it in considering the offer. In his report, which the committee received on July 25, the city engineer analyzed the company's proposal from an engineering and economic standpoint, but he refrained from definitely advocating acceptance or rejection of the offer.

According to Mr. O'Shaughnessy's report, after the receipt of the proposal two conferences were had with the company, in which certain objections offered to the form and tenor of the proposal were considered. It was suggested that the proposal be revised and expanded to set forth in detail its full purpose and intent.

The offer as revised, therefore, said Mr. O'Shaughnessy, would conform in substance to various provisions, some of which are abstracted below:

1. That the company construct tracks connecting with the tunnel tracks at the west portal of the Twin Peaks tunnel, extending thence to connect with the existing Taraval Street tracks of the United Railroads at Twentieth Avenue and extending out Taraval Street to the ocean.

That the company connect its tracks with the city's tunnel tracks at the proposed terminus at Sloat and Junipero Serra Boulevards, so as to render possible through service in both directions through the tunnel to the ferry, and that the company make a connection from its existing Market Street tracks to the eastern terminus of the city's proposed tunnel tracks near Castro Street.

2. That the company pay the city $1,333.33 a month as a rental to cover use and deterioration of the city tracks and appurtenances, until the car mileage reaches or exceeds 750 miles per day on the basis of the established schedule, and thereafter in addition 1 cent per car-mile operated above 750 car-miles per day.

That the company assume all liability for safe conduct of transportation through the tunnel and over the city's tracks, maintain the illumination of the tunnel and stations, maintain the tracks and overhead equipment to the approval of the city engineer, and reimburse the city at cost for any power used from city lines.

3. That there be exchanged between the company and the city transfers at all connecting points, such exchange to be on a free basis and limited only by such rules as may be necessary to prevent the abuse of the transfer privilege—such transfer agreement to supersede all existing transfer agreements and to apply to all future extensions of both the United Railroads and the city.

Mayor O. K.'s Transit Lease

Mayor Smith of Philadelphia, Pa., is ready to turn over to City Solicitor Connelly for his legal opinion and for drafting in the form of an ordinance the Twining lease of the city's high-speed transit lines to the Philadelphia Rapid Transit Company. The synopsis of the lease as revised in some parts by Director Twining in the last few days was returned to the Mayor on Aug. 8 and received his approval. He expressed the belief that the draft of the lease is couched in such explicit language that the City Solicitor can pass upon it and draft the ordinance within a comparatively few hours. It is expected that the ordinance will be presented to Councils at the special meeting to be held on Aug. 17.

The Mayor said that before being acted upon by Councils the proposed lease would be given the widest publicity. The committees on finance and street railways, to which the ordinance would be referred, he suggested, would doubtless hold public hearings for discussion of the terms. The Mayor said that he would invite representatives of business organizations to go over the ordinance with him before submitting it to Councils.

The tentative draft of the new contract was handed to the Mayor by Director Twining on Aug. 2. The Mayor refused to disclose the terms. The draft, however, is supposed to represent the harmonized views of the Mayor and officials of the Philadelphia Rapid Transit Company.

Subway Vote Assured in Cleveland

A popular vote on Mayor Davis' subway plan at Cleveland, Ohio, was assured on Aug. 4, when petitions containing 5384 names had been filed. Only 5000 are required to initiate an ordinance, but it is thought that at least 20,000 names will be secured by the time Council holds its next meeting on Aug. 27. If the Council fails to act favorably on the ordinance before Oct. 6, the question will be referred to the voters at the regular election on Nov. 6.

What is known as the civic rapid transit committee, containing representatives of fourteen civic organizations, circulated the petitions and is aiding in the campaign in other ways. The names filed were secured in one day. This indicates the willingness to have the subway question considered by the voters.

The plan has been changed so that the ordinance provides only for the appointment of a rapid transit commission, in accordance with the terms of the State law. Such a commission would have power to consider the subway problem and formulate plans for its construction. The commission could not proceed further than an investigation until provision for financing the proposition was made by additional legislation.

The reason for this is that Mayor Davis thought it best to approach the matter by degrees rather than by presenting the entire plan, including a bond issue, in the one ordinance. If the commission reports favorably upon a plan, then the bond issue can be presented in another ordinance. Thus the idea can be carried out by successive steps and will probably be much better understood, as the voters will have an opportunity to study it piecemeal.

Strike On in Kansas City

Two Hundred Men Went Out on Aug. 8—Company Refused to Consider Demands of Discharged Employees

Following the lead of a few discharged employees who had made a demand for reinstatement and the right to organize, a large group of employees of the Kansas City (Mo.) Railways struck on Aug. 8. The company states that service will be continued as far as possible and that no negotiations will be carried on with the strikers. Twenty per cent of the trainmen showed up on the morning of Aug. 9, but no cars were sent out. New men are being employed and trained, but no strikebreakers are being imported. There has been no trouble at power houses or shops, and the public is generally good natured under inconveniences.

Mangus Sinclair, national organizer of the Amalgamated Association of Street and Electric Railway Employees, has been directing the initiation of former employees of the company into a newly organized union. The present employees made no requests and the only demands came from employees discharged during the last week or so. These discharged men demanded their reinstatement and the right to organize, and they threatened to cause employees to strike at 4.35 a. m. Wednesday. Because they were not employees, their requests were not considered.

Wednesday morning car service began as usual. About 200 men had struck by noon, but service continued. Strikers and agitators gathered at the carhouses to jeer at the workers, and a few bricks were thrown, one motorman being hit while at his controller. There were no policemen on the cars, although the police had promised to protect property if necessary. Many loyal conductors were afraid to operate cars and left them in the carhouses after one or two runs. By 4 p. m. city service was practically suspended, and no cars were run after 6 p. m. All interurban lines were running near schedule, although some refused to take on passengers within city limits unless they were bound for outside points.

During the afternoon the only members of the board of directors representing the city who were in town, John W. Wagner and D. M. Pinkerton, held a conference with Robert P. Woods, city member of the Board of Control; Mayor Edwards; Police Commissioner Ranson; Clyde Taylor, vice-president of the company, and J. E. Gibson, general manager. Company officials asked adequate police protection, and city representatives also urged this. The Mayor and the police commissioner promised police for important points who would do all necessary to protect property and men.

Mysterious "System" Excites Curiosity

Circulars from Philadelphia Describe Wonderful Way of Increasing Income, but Do Not Disclose Method

Electric railway executives throughout the country have been wondering during the last few weeks what plan the United Public Service Corporation of Philadelphia, Pa., is offering them so guardedly for the increase of their net income. This "system" has been addressing correspondence to the electric railways which tells absolutely nothing about a proposition for which most extravagant results are predicted. In order to learn the details of the scheme, so secretive and confidential a procedure is outlined that the railway men are naturally tempted to go about it most any other way than that required by the company.

Electric railway men who have investigated the scheme say that it combines a phase of popular merchandising and advertising with railroading. They look upon it as the vision of one knowing more about promoting and advertising than electric railway operation. Its adoption, they assert, will impose upon the conductor duties which would hamper him in the efficient operation of his car. The proposition is regarded as one calculated to use the electric railway as a means of furthering some other object than the carrying of passengers.

At his office in Philadelphia, Wallace D. Taylor, president of the company, refused to make a statement for publication at this time.

The letter sent to electric railway executives arouses interest with the following opening paragraph:

"If the net earnings of your company, applicable to dividends, can possibly be increased 50 per cent to 100 per cent
without increase in population of community served,
without increase in number of passengers carried,
without increase in fares,
without increase in rolling stock,
without increase in capital invested in amusement parks,
without selling more electric light, heat and power,
without increase in capital of company,
would you cheerfully turn back to those making such a result possible a reasonable PORTION of the NEW profits they would ACTUALLY CREATE for you?"

The letter than proceeds to express the predictions of the promotor as to the very large increase in net revenue to accrue to the companies adopting the "plan" beyond "the slightest doubt whatever." Yet, instead of giving the reader any inkling of the details, a form of agreement was inclosed, which, if signed by the proper executive and returned, would bring the secrets of the mysterious scheme. This agreement states that if the plan is adopted a formal contract will be made. On the other hand, if the system is rejected, the signer agrees "not to make use of any of the ideas or methods contained in said public service system, or any modification thereof, without written permission, at any future time," even though brought to his attention by "some other corporation, firm or person."

It is further agreed "not to give, directly or indirectly, to any one, any of the details of said system, except officers or directors of our corporation, and this agreement will bind them not to give any details to others."

The letter closes with the postscript: "It will be USELESS to request information by letter, or wire, or send a personal representative to try to obtain it, until after we have received the preliminary agreement, properly signed."

Wages and Hours to Be Arbitrated

What Each Side Gained in Seattle and Tacoma Settlements—Big Falling Off in Jitney Operation

Formal sessions of the board of three arbitrators to determine the wages and hours of the employees of the Puget Sound Traction, Light & Power Company in Seattle and Tacoma, Wash., will probably not be held for ten days or two weeks. Charles A. Reynolds, attorney for the men, will require at least ten days to assemble data. The reaching of the strike settlement on Aug. 1 and the choosing of the arbitrators were noted in the ELECTRIC RAILWAY JOURNAL of Aug. 4.

The board of arbitrators appointed has power only to arbitrate the issues of pay and hours, and both sides have bound themselves to abide by its decision. When the carmen walked out, the highest pay any of them was getting was 36 cents an hour after five years of service. Their demands call for 45 cents an hour for the first year and 50 cents an hour thereafter. An additional 2 cents an hour for trainmen in freight service is asked, as well as an eight-hour day with double pay for overtime.

In the arbitration agreement signed on Aug. 1 concessions on important matters were made by both the parties. The company's main victory was the open shop. There is to be no discrimination against non-union men or any coercion to make them join the union. Moreover, future grievances are to be presented by company employees and not by outside labor representatives. The big point gained by the strikers is the retention of their organization. They may belong to any union they like, and there is to be no discrimination against union men. Furthermore, the employees gained the reinstatement of the two discharged Seattle employees, and the seven men discharged in Tacoma are to be taken back if an arbitration board of their fellow employees so decides.

With return of street car operation in Seattle and Tacoma, there was a big falling off in the volume of jitney service. All of the heavy trucks that had been pressed into service went back to the freight business. Moreover, many of the automobiles that had been running on the longer car lines and charging 10 cents dropped out. In Seattle, Attorney William R. Crawford of the Auto Bus Drivers' Union, estimated that between 400 and 500 automobiles dropped entirely out of service.

Of the remainder, 197 cars under federal injunction are operating on new routes not along car tracks. Judge Neterer on Aug. 2, in the United States District Court, ruled that his former injunction, which was suspended during the strike, would now be enforced. With the resumption of service A. L. Valentine, Superintendent of Public Utilities, ordered his deputies to enforce the law in regard to all jitneys operating without the necessary for-hire license.

Upon motion of Corporation Counsel Hugh M. Caldwell, the city of Seattle's case against the Puget Sound Traction, Light & Power Company for a writ of mandamus compelling it to run street cars or show cause in court why a receiver should not be appointed, was dismissed on Aug. 2 by Superior Court Judge King Dykeman. The counter claim and cross complaint of the traction company was also dismissed.

Investigating Utilities in North Dakota

A committee of officials of North Dakota, consisting of the Governor, Attorney General, the chairman of the State Tax Commission and the chairman of the State Railroad Commission, has engaged Hagenah & Erickson, Chicago, Ill., to investigate all public utilities in the State.

The purpose of the investigation is to supply the State departments with accurate data regarding these properties. The investigation will embrace a detailed inventory and appraisal of each property and an analysis of earnings and operating expenses for a number of years.

The appraisal work has been in progress for several weeks, and engineers from the firm are now making inventories in Bismarck, Fargo, Grand Forks, Minot, Jamestown, Mandan and many smaller cities. Certified public accountants in their employ will examine the books after completing the appraisals.

St. Louis Objectors to Submit Substitute Plan

Civic Bodies Oppose Proposed Ordinances—What Frank Putnam Thinks Are Obvious First Steps to Solution

Representatives of the Civic League, the Central Trades & Labor Union and the Tenth Ward Improvement Association, in opposing the proposition pending in the Board of Aldermen for a settlement with the United Railways of St. Louis, promised the public utilities committee at the public hearing on Aug. 1 that their respective organizations would prepare and submit substitutes for the plans contemplated in the proposed ordinances. These were described in the ELECTRIC RAILWAY JOURNAL of July 21. Until the data promised are presented to the committee, it is said, there probably will be no further public hearings.

Objections urged at recent hearings by speakers against the two proposed ordinances were leveled at the proposal for a partnership between the city and the company, the valuation fixed, the granting of a new franchise, the long period of the grant (which is fifty years in each of the propositions), and the abolition of the mill tax.

FIRST STEPS TO SETTLEMENT

Frank Putnam, publicity agent North American Company, the holding corporation of the United Railways, in a letter to the *Post-Dispatch* on July 29, set forth what, in his opinion, should be done to settle the issues between the city and the company. According to Mr. Putnam, the obvious first steps to a rational solution of the problem are these:

"1. An agreement by stock and bond holders to scale down, equitably to all, the face of their securities, to a total equal to the present fair value of the property and business, excluding outlawed franchise values.

"2. A decision by the city government:

"(a) To cease supertaxing the street railway service;

"(b) To co-operate with it in every way (as in Cleveland), to reduce its expenses, so that its earnings, after paying a fair return to the labor and the capital engaged, may be devoted to extending, improving and, when possible, cheapening the service:

"(c) To give the company the best possible franchise, so that it may get capital at least cost for desired extensions and other permanent betterments of the system."

Cincinnati Transit Progress

Change of Location of Proposed Interurban Terminal Under Consideration—Chamber of Commerce Man for Railway Commissioner

At a meeting of the Cincinnati Rapid Transit Commission on Aug. 3 Chief Engineer Frank S. Krug reported that he has under consideration the construction of an interurban terminal station and loop under Government Square, to take the place of the proposed station at Canal and Walnut Streets, as originally proposed. As yet, however, the plans and estimates have not proceeded far enough to determine the practicability of the idea.

Mr. Krug is of the opinion that the wide area under the square would provide an ideal location for the terminal station, as it would not only furnish the most convenient service for the traveling public, but would provide plenty of room for the storage of interurban cars and a loop for turning them.

As only three of the members of the commission were present, discussion of the new plan was postponed to a later meeting. It is expected that Mr. Krug will then be prepared to submit plans and specifications and an estimate of the cost of such a terminal station.

Mr. Krug reported that he had completed plans for a concrete elevated structure on Pearl Street to take the place of the steel structure originally contemplated. The concrete structure, he said, will be more ornamental and will now involve less cost than steel work.

DIRECTOR OF STREET RAILROADS TO BE APPOINTED

The commission approved the proposed section of the new charter creating the office of director of street railroads and defining his powers and duties, with the exception of a clause which stipulated that the Rapid Transit Commission and City Council could not act, except upon the recommendations of the director on proposals for new extensions, new routes or change of routes. The charter commission was asked to eliminate this, as it encroached on the powers of the Rapid Transit Commission and the City Council.

The new charter commission on Aug. 6 submitted a redraft of the clause about the director of street railroads. As it now stands, the clause clothes this official with authority to exercise the powers of the Mayor and Street Railway Commission under existing ordinances, and also the powers of the Rapid Transit Commission which are not reserved specifically to the commission by the rapid transit act.

It is provided further that the City Council and the Rapid Transit Commission shall refer all matters regarding extensions, new routes and change of routes to the director of street railroads for his advice. It is understood that the clause is now satisfactory to all city officials and commissions and to the railways.

CHAMBER OF COMMERCE SECRETARY CHOSEN

William C. Culkins, for some years executive secretary of the Cincinnati Chamber of Commerce, notified Mayor George Puchta on Aug. 1 that he would accept the appointment of street railway commissioner, recently made by the City Council, on condition that provision for the office be made in the new city charter, so that it be removed from the control of the City Council. As has been noted above, the charter commission has made such a provision under another name. The salary will be $7,500 a year.

The appointment must be ratified by the Rapid Transit Commission, but it is understood that all the members are favorable to Mr. Culkins, and that in this case the approval will be only a matter of form. Mr. Culkins stated that he would submit his resignation to the Chamber of Commerce within a few days. He will assume his new position on Sept. 1.

Reading Men Receive More Wages.—Effective Aug. 1, the Reading Transit & Light Company, Reading, Pa., has increased the wages of motormen and conductors 1 cent an hour, making the maximum 28 cents an hour. The increase benefits 600 employees of the company. This is the fifth increase granted during about the last year and means an increase of $20,000 in the annual payroll.

Newspaper Comments Upon Strike Handling.—In a leading editorial the Oregon *Journal* on July 31 praised F. T. Griffith, president Portland Railway, Light & Power Company, for his handling of the recent strike in Portland. The newspaper attributed the present harmony between company and men to the fact that Mr. Griffith promptly announced his willingness for the employees to unionize.

Cars Again in Operation at Lima.—After a lapse of almost a week street cars were again put into operation at Lima, Ohio, on Aug. 6. No more violence was expected, but rioting started again late on Aug. 9 and three men were shot. State arbitrators have endeavored to adjust the differences between the Ohio Electric Railway and the striking motormen and conductors, but failed. The strike began July 11.

Militia Called Out in Springfield.—Five hundred National Guardsmen on Aug. 7 were ordered on strike duty in Springfield, Ill., by Governor Lowden as the result of the killing of a policeman during an attack on a street car of the Springfield Consolidated Street Railway. The rioting followed an attempt by the company to resume night service, which had been suspended for ten days. The beginning of the strike was noted in the ELECTRIC RAILWAY JOURNAL of Aug. 4.

Wages Increased in Quincy.—The minimum wages of trainmen of the Quincy Railway & Light Company, Quincy, Ill., have been increased, effective Aug. 1, 40 cents a day, to a total of $2.20 a day. The maximum wage has been increased 10 cents a day, bringing this up to $2.75 per day. An increase is also under consideration for the carhouse and office men. The increase for the trainmen was brought about as a result of a conference between a committee of the employees and the officials of the company.

For an American Academy of Engineers.—A bill has been introduced in the United States Senate by Senator Brandagee to incorporate the American Academy of Engineers with 200 members. Among those who submitted arguments in favor of this plan were J. A. L. Waddell, Gen. G. W. Goethals, S. W. Stratton and C. O. Mailloux. Others mentioned as incorporators and members of the Academy were: Dr. Louis Bell, Dr. W. F. M. Goss, Dr. A. C. Humphreys, William Barclay Parsons, E. W. Rice, Jr., Frank J. Sprague and John F. Wallace.

Women Conductors Not to Be Used at Norfolk.—It was the idea of the Virginia Railway & Power Company, Norfolk, Va., to try one of two women with a view to determining whether or not they could take the place of the regular conductors on the company's cars in the event that the shortage of labor in the vicinity of Norfolk should make it necessary to replace men with women. Owing to the ability of the company to secure men from other parts of Virginia and from outside the State, however, the idea of using women has been abandoned for the present.

Railroad Valuation Act Declared a Failure.—Evidence is accumulating that the federal valuation of railroads, begun pursuant to an act of Congress four years ago, has in reality progressed so little that the expected value of the work has far from materialized. There have been interminable arguments in regard to the theories followed by the Interstate Commerce Commission and the practices of its valuing engineers, and now the few companies that had completed their inventories as of June 30, 1914, have been ordered to bring them down to date. It is reported that some railroads declare the valuation act is a failure and that a repeal will be asked at the next session of Congress, when the war business may be finished.

Wage Increase in West Milton.—The conductors and motormen of the Dayton, Covington & Piqua Traction Company, West Milton, Ohio, have been granted an increase of 3 cents an hour, together with the premiums as received during the last five years. The premiums are 5 cents a day additional after five years of service, and 1 cent a day additional for each year of service thereafter. The men also receive $5 extra for each six months that their record of service is without demerit. It is reported that some of the employees have organized and desire a larger wage increase.

West Side Contract Nears Completion.—The drawing of a new contract between New York City and the New York Central Railroad Company for the west side electrification and park improvement, which has been going on for several weeks, is practically completed. Reports as to the progress were submitted on Aug. 3 at a meeting of the joint conference committee of the Public Service Commission and the Board of Estimate. Under the law enacted at the last session of the Legislature an agreement must be reached by Dec. 1, or full control of the matter will pass into the hands of the Public Service Commission. During the drawing of the contract a careful examination was made of the franchises, rights, easements and property titles of the railroad along the west side, and an early report covering all of these points will be made. Public hearings will soon be held to discuss fundamentals and to receive any suggestions the public may care to make.

Bonus Granted Chicago & Joliet Employees During War.—The Chicago & Joliet Electric Railway, Joliet, Ill., has granted all its employees a bonus of 7.5 per cent of their wages, dating from July 1 and extending through the war period or until conditions become normal. This increase affects about 300 employees and will increase the payroll between $15,000 and $20,000 a year. While the company had a contract with the local division of the Amalgamated Association of Street & Electric Railway Employees which fixed the scale of wages until June 30, 1919, it was deemed advisable to grant this special wage increase to offset the large increase in the cost of living and the advanced wages paid for labor in other lines of industries. Both of these conditions have tended to make it difficult to hold the men in the employ of the railway or to secure the additional help required for increased business.

Commission Wants Junior Electrical Engineer.—The New York Civil Service Commission has announced an open competitive examination on Sept. 8 for a junior electrical engineer for the Public Service Commission for the First District of New York, at a salary from $901 to $1,200 a year. The duties are to inspect the power houses and equipment of subway, elevated and street railway, lighting and power companies in New York City. Candidates must have had at least three years' training in a technical school of recognized standing and not less than one year's experience in electric railway or electric lighting work or in the manufacturing or installation of electrical or mechanical apparatus. Subjects of examination and relative weights: Theoretical and practical questions relating to the construction and operation of power house and railway equipment, electric distribution, measurements, standards and other pertinent subjects, 5; experience and personal qualifications, 3; education, 2. The examination is open to non-residents.

Program of Association Meeting

National Association of Railway Commissioners

Notice has been issued in regard to the twenty-ninth annual convention of the National Association of Railway Commissioners in Washington on Oct. 16-20. At this convention the present vital problems of regulation, including the functions of utilities in serving in the nation's need, the requests of utilities for increases in rates and for authority to diminish or discontinue service and the requests of the public for reasonable rates and more adequate service will be discussed with a view to uniform constructive action by the various commissions.

Financial and Corporate

Annual Reports

Terre Haute, Indianapolis & Eastern Traction Company

The income statement of the Terre Haute, Indianapolis & Eastern Traction Company, Indianapolis, Ind., for the year ended Dec. 31, 1916, follows:

Gross earnings from operation		$3,199,523
Operating expenses		1,863,678
Net earnings		$1,335,845
Taxes		161,451
Operating income		$1,174,394
Other income:		
Dividends on stocks owned, etc	$138,436	
Sale of power	122,860	
		261,296
Gross income		$1,435,690
Deductions and rentals:		
Bond interest	$769,323	
Dividends	221,833	
Interest on notes	38,565	
Maintenance of organization, leased lines	3,000	
		1,032,722
Surplus		$402,968
Sinking fund		198,822
Balance		$204,146

The gross earnings for 1916 showed an increase of $245,404 or 8.31 per cent over those for the year 1915. This increase was made up of $206,438 or 8.44 per cent in the railway department, and $38,966.63 or 7.64 per cent in the light and power department. All divisions showed increases. Operating expenses for 1916 were $101,455 or 5.76 per cent in excess of those for 1915, principally on account of the increased cost of labor and material. The total expenditures on the railway property during 1916 on account of maintenance were $503,038, or 19.3 per cent of railway earnings. A sum of $330,315 was expended for maintenance of way and structures, and $172,722 for maintenance of equipment. Taxes in the last year increased $12,128.

During 1916 there was expended for added property and charged to capital account the sum of $41,560. The total amount to Dec. 31, 1916, expended for construction purposes, for which no securities have been issued, is $996,964. In 1916 the company paid to the trustees on account of sinking funds $198,821, making the total invested in sinking funds to Dec. 31, 1916, $710,046. With $261,134 invested in securities of affiliated companies, the total investment of company funds amounts to $1,968,144.

Miscellaneous traffic and operating statistics for the year ended Dec. 31, 1916, follow:

Passengers carried—interurban lines	8,638,749
Passengers carried—city lines	13,073,586
Total passengers carried	21,712,335
Freight handled (tons)	89,085
Express handled—exclusive of Wells-Fargo Express (tons)	15,646
Car miles operated—interurban lines	5,826,710
Car miles operated—city lines	2,127,328
Coal consumed at power stations (tons)	209,569
Power generated, main power stations (kilowatt-hours)	91,061,040

Oakland, Antioch & Eastern Railway

The total operating revenue of the Oakland, Antioch & Eastern Railway, Oakland, Cal., for the calendar year 1916, amounted to $620,216, this being divided as follows: Passenger, $471,121; freight, $108,701; express and milk, $25,887, and other sources, $14,506. The operating expenses totaled $437,255, giving an operating ratio of 69.4 if a fire loss of $6,930 be excluded. The gross income amounted to $153,476, and deductions to $363,708, so that the net result was a deficit of $210,231 for the year.

The number of passengers carried in 1916 was 722,138, and the tons of freight hauled were 158,027. The total car mileage amounted to 1,987,267. The passenger earnings in 1916 were $35,865 or 7 per cent less than those of 1915, on account of the Exposition business being ended. The gross revenues, however, exceeded those of 1915 by $14,799, this being due mostly to an increase of $44,575 or 69 per cent in freight.

During 1915 and 1916 the company worked under the financial plan adopted by its security holders. The average gross earnings during these two years, or $612,816, exceeded the 1914 gross by $131,507 or 27 per cent. For the two months of January and February and the first twenty-four days of March, 1917, the gross earnings showed a gain of $28,979 or 30 per cent.

While it is problematical whether this rate of increase can be maintained, the company says, its territory is beginning to awaken, and it would seem that in two years its earnings should about equal operating expenses and interest on funded and unfunded debt. The financial difficulties now present are the formulation of a plan to meet the interest charges until they are fully earned, and the devising of a method for funding or liquidating $1,000,000 of floating indebtedness.

Omaha Ouster Suit Argued

The first hearings in the suit of the city of Omaha, Neb., to secure a settlement from the Omaha & Council Bluffs Street Railway under the reversion clause of the legislative franchise of 1867 to the Omaha Horse Railway, were held on July 26 and 27. This franchise, the city asserts, expired on Jan. 1, 1917. The city wants an accounting for its alleged interest in the present property.

The company, however, states that the tangible property of the old horse-car line now amounts to nothing, and that the city cannot hold any intangible interest after voluntarily permitting the old line to be abolished. The company, therefore, has moved that the city should not be allowed to trace the funds of the horse-car railway through subsequent mergers, and the judges in the United States District Court have reserved decision.

Previous references to this case were made in the ELECTRIC RAILWAY JOURNAL of Jan. 20, 1917, and March 17, 1917.

Modified Dry Dock Plan

Protective Committee of Third Avenue Subsidiary Certificate Holders Urges Acceptance of New Refunding Plan

The protective committee for the 5 per cent certificates of indebtedness ($1,100,000 outstanding) of the Dry Dock, East Broadway & Battery Railroad, New York, N. Y., has issued a circular in regard to a modification of its refunding plan. On June 21, 1916, the committee gave notice that a refunding plan had been adopted. Counsel for the committee has advised it, however, that as the Public Service Commission has not authorized the issue of $1,501,500 par value of series "C" refunding bonds but only of $1,300,200 par value, there is serious doubt as to whether the Third Avenue Railway, the controlling company, is under any obligation to modify the agreement made in June, 1916, and accept one-half of the amount of series "C" bonds now authorized.

The Third Avenue Railway, nevertheless, has offered to accept $528,000 par value of series "B" bonds and $650,100 par value or one-half the authorized issue of series "C" bonds, provided the holders of the 5 per cent certificates of indebtedness will accept the other half of the series "C" bonds. The entire issue of series "C" bonds, however, is to bear interest at the rate of 5 per cent, if earned, from July 1, 1915, to July 1, 1925, and thereafter at the fixed rate of 4 per cent with an additional 1 per cent, if earned, until the maturity of the bonds in 1960.

During the nine and one-half years which have elapsed since the committee was organized, it is said, the gross passenger earnings and the net earnings of the Dry Dock line have steadily decreased, so that at the present time it does not seem likely that any interest on the series "C" bonds will be earned for a number of years. The reduction of the rate of interest, if earned, from 6 per cent to 5 per cent will not, therefore, be of any real disadvantage to holders of the 5 per cent certificates of indebtedness, as it is most unlikely that as much as 5 per cent interest will be earned prior to 1925, or that any interest in addition to 4 per cent will be earned thereafter.

The Third Avenue Railway holds not only $480,000 of 6 per cent receiver's certificates, but also other 6 per cent claims against the Dry Dock company which the federal court has allowed at $1,500,000. Under the plan now proposed the Third Avenue Railway will surrender all these claims for the $528,000 of series "B" bonds and $650,100 of series "C" bonds. Unless the plan now proposed is accepted, the claims will be valid in full for the amount stated with arrears of interest. If the certificate holders do not agree to this modified refunding plan, the committee says, they are not likely to get anything.

The committee has, therefore, adopted a further modified refunding plan which is binding upon the depositing certificate holders unless the holders of more than one-third in amount of the certificates file written notice of dissent with the Union Trust Company, New York, before Sept. 15, 1917. The debts which are to be refunded aggregate $4,162,000, exclusive of interest. This indebtedness will be refunded and future requirements provided for by making a general refunding mortgage covering the property with the priorities as follows:

Series "A" 5 per cent bonds, to be a prior lien and preferred as to both principal and interest—not over....	$1,500,000
Of this amount $950,000 is applicable only to refund the outstanding $950,000 of general mortgage bonds. A total of $550,000 may be issued to acquire additional property and for betterments.	
Series "B" bonds, to bear interest at the fixed rate of 4 per cent per annum from July 1, 1915, until Jan. 1, 1960. A prior lien over, and preferred as to both principal and interest over series "C" bonds..........	528,000
Series "C" bonds, to be dated July 1, 1915, and to bear interest as noted above..........................	1,300,200

The holders of $1,100,000 of certificates of indebtedness are to receive in full settlement of principal and all accrued interest thereon $650,100 of series "C" bonds, these to be distributed pro rata in the ratio of $59.10 in face value of series "C" bonds for each $100 face value of certificates of indebtedness. The Third Avenue Railway will contribute $21,000 in cash toward the expenses of the committee, the fees of their counsel and a reasonable allowance to the members of the committee.

Northwestern Penn Amalgamation Nearing Completion

In January, 1916, the Northwestern Electric Service Company, a new company, was authorized to issue: (a) $200,000 of first preferred stock, viz.: $173,500 for cash, $20,000 for property and $6,500 in exchange for an equal amount of stock of twelve light and power companies which were merged to form the company; (b) $455,000 of second preferred stock in exchange for second mortgage bonds of the Northwestern Pennsylvania Railway, Meadville, Pa., and (c) $1,050,000 of common stock in exchange for the stock of the railway. These exchanges were to give to the Northwestern Electric Service Company the control of the railway through ownership of all the common stock of the latter.

The amalgamation, it is now said, has not yet been completed. The management, however, has the promise of sufficient stock of the Northwestern Pennsylvania Railway to give the new company a voting majority which would make the exchange proposition operative. It is hoped to complete this exchange of securities within thirty days.

It is contemplated that between $800,000 and $1,000,000 of common stock will be issued in purchase of a majority of common and preferred stock of the Northwestern Pennsylvania Railway on an offer which was extended on the following basis: In purchase of common stock, Service common at par for Railway common at 30. In purchase of preferred stock, Service common at par for Railway preferred at par.

No definite action has been taken as to cancellation of interest on the railway second mortgage. The largest holders of these bonds are agreeable to such action, and an effort is being made at this time to form a bondholders' committee to represent all or a majority of these bondholders, such committee to act with the company in carrying out the plan. Should the cancellation of interest for a proper period go into effect, the proposed exchange for second mortgage bonds would probably, it is said, be withdrawn.

The present property of the Northwestern Electric Service Company consists of the following: (1) 50 miles of 33,000-volt transmission line between Erie and Harmonsburg, with a branch between Erie and Kearsarge. (2) Distribution lines in the following localities, all of which are in Erie and Crawford Counties, Pa.; Saegerstown, Venango, Cambridge Springs, Edinboro, Middleboro (McKean), Fairview, North Girard, Linesville and Harmonsburg.

Atlantic City & Shore Railroad, Atlantic City, N. J.—The Atlantic City & Shore Railroad has arranged to take over and operate in connection with its Ocean City and Central Passenger Railway lines the single-track road leading into Venice Park, known as the Venice Park Railway. The line has been closed for more than a year and the residents of the park section had to walk or use a jitney. The Atlantic City & Shore Railroad has arranged a system of transfers so that people can ride from any part of the shore resort to Venice Park for a fare of 5 cents.

Boston (Mass.) Elevated Railway.—A quarterly dividend of 1½ per cent has been declared by the Boston Elevated Railway, payable on Aug. 15 to holders of record on Aug. 2. On May 15, one-half of 1 per cent was paid. Since 1916 dividends have been paid as follows: February, 1½ per cent; May, one-half of 1 per cent; August, November and February, 1917, 1½ per cent; May, one-half of 1 per cent.

Chickasha (Okla.) Street Railway.—On account of an increase in valuation from $32,000 to $120,000 by the State Board of Equalization, it has been announced that the operations of the Chickasha Street Railway will be suspended unless a fair valuation is made without delay. The company has never paid dividends and has barely been able to meet bond interest.

Columbus, Delaware & Marion Railway, Marion, Ohio.—Judge Kinkead has ordered the following payments in the receivership case of the Columbus, Delaware & Marion Railway, which was recently sold to the Columbus, Delaware & Marion Electric Company: Eli M. West, receiver and master commissioner, $10,000; receiver's counsel, Harry F. West, $7,000; Bankers' Trust Company, Cleveland, $1,500; bank's counsel, $7,500; Cleveland Trust Company, $3,000; bank's counsel, $3,700; Guaranty Trust Company, $500; bank's counsel, $1,250. Receiver West was instructed to file his final report, preliminary to discharge.

Columbus Railway, Power & Light Company, Columbus, Ohio.—The Columbus Railway, Power & Light Company has arranged to issue $576,000 of 6 per cent secured notes, dated Aug. 2, 1917, maturing Aug. 1, 1918, and secured by deposit of first refunding and extension mortgage bonds. The Public Utilities Commission has granted authority to sell the notes, because of the company's failure to sell all of the $1,846,000 of 5 per cent bonds authorized for sale at 90. The company desires to continue the construction of its power plant, and the proceeds will be used for this purpose.

Dunkirk (N. Y.) Street Railway.—The Public Service Commission for the Second District of New York has reserved decision on the application of the Dunkirk Street Railway, operated under lease by the Buffalo & Lake Erie Traction Company, for approval of a declaration of abandonment of portions of the route in the city of Dunkirk.

El Paso (Tex.) Electric Company.—Stone & Webster are offering at 97½ and interest, to yield about 6.94 per cent, a new issue of $300,000 of three-year 6 per cent gold coupon notes of the El Paso Electric Company, dated Aug. 1, 1917, and due Aug. 1, 1920. The notes are in $1,000, $500 and $100 denominations, and are callable as a whole at 100 and interest on any interest day upon sixty days' notice. The proceeds will provide funds for additions and improvements. The company owns all of the securities of the companies doing the entire electric lighting, commercial power and street railway business in El Paso, Tex., and Juarez, Mexico, and operating an electric railway between El Paso and Ysleta. The population served approxinmates 93,000.

Interborough Rapid Transit Company, New York, N. Y.—The Public Service Commission of the First District of New York has issued an order authorizing the Interborough Rapid Transit Company to issue $23,053,000 of 5 per cent bonds, dated June 1, 1913, and maturing on June 1, 1966. The bonds are to be issued by the company as of March 20, 1913, and are to be sold to net not less than 93.5 per cent. The proceeds of the bonds, to the extent of $21,554,290, are to be applied to meet the cost of equipment of new rapid transit lines operated by the company, while the remaining $1,498,710 of face value is to cover the expenses of the sale of the bonds and the discount. A large part of the new bond issue is made necessary by increased costs not foreseen in the original dual system estimates of 1913. The commission has also resettled an order of May 25, 1917, at which time it permitted the company to issue bonds for $11,436,000 for the cost of plant, structure and equipment of third and additional tracks upon the elevated lines by increasing the amount upon further application to $16,436,000.

Lehigh Valley Transit Company, Allentown, Pa.—The following notice has been sent by the Girard Trust Company to holders of certificates of deposit issued for stock of the Lehigh Valley Transit Company: "The Electric Bond & Share Company having exercised its option, under the agreement dated Feb. 7, 1917, to purchase the preferred and common stock of the Lehigh Valley Transit Company, and having paid to the depositary $48 per share for each share of preferred stock and $28 per share for each share of common stock deposited, you are hereby notified to present your certificate of deposit, properly indorsed in blank, to receive payment therefor."

Memphis (Tenn.) Street Railway.—The Tennessee Railroad Commission has reduced the assessment of the Memphis Street Railway for the years 1917 and 1918 from $4,514,380 to $4,230,200, or $284,180, over the protest of the county. It is reported that the county will carry the matter before the State Board of Equalization in September. The claim of the attorneys for the company was based on loss of revenue through jitney competition of last year, increased expenses occasioned by street paving, demand by the public for more and better cars, extension of lines in sparsely settled territory and the increased cost of coal and other material.

Middle West Utilities Company, Chicago, Ill.—A syndicate consisting of the Illinois Trust & Savings Bank, Russell Brewster & Co., McCoy & Company, Halsey Stuart & Company of Chicago, and A. H. Bickmore & Company of New York, is offering at 97¾ and interest $1,000,000 of three-year 6 per cent collateral gold notes, series "A," of the Middle West Utilities Company. The notes are secured by deposit of securities in the aggregate principal amount of 120 per cent of all notes outstanding. The notes are dated July 1, 1917, and are redeemable all or in part at 100 and interest at any time upon sixty days' notice. They are in denominations of $1,000, $500 and $100.

Reading Transit & Light Company, Reading, Pa.—William B. Bonbright & Company, New York, N. Y., have purchased an issue of $2,300,000 two-year 6 per cent secured notes of the Reading Transit & Light Company, subject to the approval of the Public Service Commission of Pennsylvania, and an advance offering is to be made. The purpose of the issue is to provide in part for the acquisition of all the outstanding common stock of the Metropolitan Edison Company of Reading and Lebanon, and the property of the United Traction Company, which owns or controls lines in and about Reading, all of which were heretofore held under leaseholds. The notes are secured by the deposit with the trustee of $3,000,000 of Reading Transit & Light Company general and refunding mortgage thirty-year 5 per cent bonds and all of the outstanding $3,000,000 of common stock of the Metropolitan Edison Company.

Seattle, Renton & Southern Railway, Seattle, Wash.—Judge A. W. Frater, in the Superior Court, Seattle, Wash., recently signed an order dismissing the receivers, Scott Calhoun and Joseph Parkin, of the old Seattle, Renton & Southern Railway. The receivers were appointed in connection with the case of William R. Crawford, which has been in court for five years. The court allowed the receivers, in addition to their salaries of $12,000, $5,195 for personal expenses. The remainder of the funds available is to be paid over to the new owners of the road.

Seattle (Wash.) Municipal Street Railway.—The municipal street railway system in Seattle was operated during the month of June at a loss of $2,361, making a total loss of $111,251 to date. June was the first month of the fourth year of operation.

Terre Haute & Merom Traction Company, Terre Haute, Ind.—Philip Lahr has been reinstated receiver of the Terre Haute & Merom Traction Company by Judge John W. Gerdink in the Terre Haute Superior Court. He was appointed receiver several years ago as the result of the filing of the case of Don M. Roberts against the company and was discharged in 1914. The company, it is said, is the owner of some property and steel rails which can be sold, and it was asked that Mr. Lahr be reinstated so that he could dispose of the parcels.

Electric Railway Monthly Earnings

Period		Operating Revenue	Operating Expenses	Operating Income	Fixed Charges	Net Income
BERKSHIRE STREET RAILWAY, PITTSFIELD, MASS.						
1m., June,	'17	$91,446	*$90,812	$634	$27,557	†‡$26,901
1 " "	'16	82,913	*52,328	30,585	27,850	‡2,907
6 " "	'17	510,250	*454,190	56,060	165,483	†‡108,926
6 " "	'16	458,221	*388,497	69,724	150,660	†‡79,756
CONNECTICUT COMPANY, NEW HAVEN, CONN.						
1m., June,	'17	$861,397	$656,201	$205,196	$95,457	‡$132,011
1 " "	'16	816,940	501,178	315,762	101,524	‡206,507
6 " "	'17	4,763,660	3,788,687	974,973	574,995	‡503,941
6 " "	'16	4,495,551	3,079,714	1,415,837	591,446	‡930,082
FEDERAL LIGHT & TRACTION COMPANY, NEW YORK, N. Y.						
1m., May,	'17	$206,448	*$149,350	$57,098	$44,642	$12,456
1 " "	'16	194,772	*136,515	58,257	48,592	9,665
5 " "	'17	1,138,905	*753,023	385,882	243,077	142,805
5 " "	'16	1,056,561	*711,357	345,204	243,988	101,216
LEHIGH VALLEY TRANSIT COMPANY, ALLENTOWN, PA.						
1m., June,	'17	$248,707	*$162,729	$85,978	$51,351	‡$45,513
1 " "	'16	206,616	*125,222	81,394	50,571	‡41,115
12 " "	'17	2,671,669	*1,750,275	921,394	625,192	‡446,228
12 " "	'16	2,333,408	*1,386,050	947,358	635,888	‡442,676
NEW YORK & STAMFORD RAILWAY, PORT CHESTER, N. Y.						
1m., June,	'17	$38,780	*$33,139	$5,641	$7,982	†‡$2,302
1 " "	'16	36,597	*25,462	11,135	7,979	‡3,193
6 " "	'17	174,559	*170,865	3,694	47,908	†‡43,949
6 " "	'16	168,251	*143,300	24,951	47,900	†‡22,711
NEW YORK, WESTCHESTER & BOSTON RAILWAY, NEW YORK, N. Y.						
1m., June,	'17	$46,282	*$44,912	$1,370	§$11,338	†‡$9,252
1 " "	'16	44,886	*45,436	†550	§23,434	‡11,379
6 " "	'17	274,446	*277,223	†2,777	§46,688	†‡43,146
6 " "	'16	256,190	*304,369	†48,179	§55,954	†‡60,951
REPUBLIC RAILWAY & LIGHT COMPANY, YOUNGSTOWN, OHIO						
1m., June,	'17	$375,345	*$254,386	$120,959	$80,514	‡$44,747
1 " "	'16	321,024	*188,705	132,319	68,579	‡64,083
12 " "	'17	4,283,069	*2,688,804	1,594,265	907,876	‡719,560
12 " "	'16	3,598,296	*2,112,749	1,485,547	755,680	‡742,086
RHODE ISLAND COMPANY, PROVIDENCE, R. I.						
1m., June,	'17	$511,983	*$412,343	$99,640	$121,123	‡$5,399
1 " "	'16	500,107	*313,402	186,705	122,158	‡91,950
6 " "	'17	2,829,690	*2,364,658	465,032	718,154	†‡169,333
6 " "	'16	2,728,612	*2,021,860	706,752	679,781	‡111,797
SAVANNAH (GA.) ELECTRIC COMPANY						
1m., May,	'17	$74,213	*$52,139	$22,074	$24,144	†$2,070
1 " "	'16	64,343	*44,401	19,942	23,688	†3,746
12 " "	'17	877,833	*582,620	295,213	285,654	9,559
12 " "	'16	785,175	*526,525	258,650	279,246	†20,596
TAMPA (FLA.) ELECTRIC COMPANY						
1m., May,	'17	$82,012	*$48,366	$33,646	$4,370	$29,276
1 " "	'16	72,781	*46,209	26,572	4,394	22,178
12 " "	'17	992,882	*539,245	453,637	52,281	401,356
12 " "	'16	978,851	*519,135	459,716	52,238	407,478
TWIN CITY RAPID TRANSIT COMPANY, MINNEAPOLIS, MINN.						
1m., June,	'17	$853,195	$541,990	$311,205	$145,846	$165,359
1 " "	'16	853,190	511,481	341,709	140,000	201,709
6 " "	'17	5,175,944	3,406,572	1,769,372	877,511	891,861
6 " "	'16	5,009,415	3,142,623	1,866,792	853,387	1,013,404
WESTCHESTER STREET RAILROAD, WHITE PLAINS, N. Y.						
1m., June,	'17	$22,667	$24,583	†$1,916	$2,193	†‡$4,081
1 " "	'16	22,880	22,589	291	1,808	†‡1,489
6 " "	'17	115,196	136,702	†21,504	12,450	†‡33,790
6 " "	'16	118,534	127,369	†8,835	10,558	†‡19,240

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*Includes taxes. †Deficit. ‡Includes non-operating income. §Excludes interest on bonds, charged income and paid by the New York, New Haven & Hartford Railroad under guarantee; also interest on notes held by the New York, New Haven & Hartford Railroad, not credited to income of that company.

Traffic and Transportation

Trenton Company Loses Fare Case

Supreme Court of New Jersey Upholds Effort of City to Prevent Withdrawal of Six-for-a-Quarter Tickets

As noted briefly last week the Trenton & Mercer County Traction Corporation, Trenton, lost its case in the Supreme Court of New Jersey, to which it had appealed for permission to abandon the sale of six tickets for 25 cents. Under a writ of certiorari the company carried to the Supreme Court the order of the Utility Board forbidding it to put into effect the proposed withdrawal of the tickets. The Supreme Court states that the withdrawal of tickets would be an increase of an existing rate under which 82 per cent of the passengers carried paid a fare of 4 1/6 cents. By the proposed withdrawal they would be required to pay a fare of 5 cents. The court's decision, however, can be appealed to the Court of Errors and Appeals. The company has pending in the federal courts an action to test the sale of tickets on constitutional grounds.

The writ of certiorari reviewed two orders of the Public Utility Commission. One was dated Aug. 17, 1915, and suspended the proposed abolition of the tickets, and the other dated Jan. 16, 1916, and permanently ordered the company, after a hearing, not to make the change.

The practice of selling tickets was inaugurated twenty-two years ago, but the company endeavored to change the plan in 1909. After negotiations in 1909, an ordinance was passed by the city requiring the tickets. The company agreed to the ordinance in advance, in writing, and promised to accept by a confirmatory agreement after the measure had been passed. The confirmatory agreement was never actually executed.

Justice Swayze says that the Supreme Court found it unnecessary to pass upon the question whether the original ordinances and their acceptance amounted to a contract by which the companies were authorized to charge as much as 5 cents, or whether they amounted only to a limitation by which the companies were forbidden to charge more than 5 cents. The consideration of the reasonableness of ticket selling was also omitted.

In referring to the understanding about the ordinance, on the faith of which the city passed the measure, Justice Swayze said:

"Had the agreement been signed by the officers of the company no question could have arisen."

The directors of the company held that the ordinance permitted of alterations whenever demanded in the judgment of the Common Council, and that this was a false understanding. On this point the court remarked:

"It is a little difficult to understand upon what theory it is supposed the false recital vitiates the action of the company. It is not charged that the city did anything to mislead the company in this respect. Manifestly the company ought not to be permitted for its own mistake to withdraw from the agreement after the city had acted thereon.

"There was sufficient legal consideration for the agreement by the company. It is true that the ordinance did not affirmatively concede any benefit to the company, on its face was rather a detriment; but that is too narrow a view to take . . . the benefit to the company was what the ordinance omitted, not what it contained."

To the allegation that the Mercer County Traction Company and the Hamilton & Ewing Traction Company could not be affected by the ordinance because no official action was taken by either with reference to its terms, the court comments:

"This argument overlooks the fact that both these companies were at the time under lease to the Trenton Street Railway for a term of which more than 990 years was still to come. The probability of the two lessor companies being affected prejudicially by the ordinance is negligible."

Six Cents Proposed for Oil City

Citizens' Traction Company Would Charge 6 Cents and Introduce Workingmen's Tickets—Company's Service Commended

The Citizens' Traction Company, Oil City, Pa., proposes to begin charging a 6-cent fare on its lines in Oil City and Franklin on Sept. 1. The company has filed tariffs to this effect with the Public Service Commission of that State. To offset inconvenience to patrons in paying 6 cents instead of a nickel, special workingmen's tickets will be issued in books of eighteen tickets for $1 or ninety tickets for $5. These will be accepted for one cash fare on all lines of the company. In a formal statement on the necessity for the increase, J. H. McClure, general manager of the company, said:

"Confronted by a situation which threatens the impairment, not only of the capital invested, but of its services to the public, the Citizens' Traction Company has moved to secure an increase in rates, which will at least give it some relief and which has been forced upon the company by the constantly rising prices of materials, taxes and labor. This step is absolutely imperative and is in line with the tendency of the times in other industries, many of which directly affect this company. The conditions which have brought about this situation threaten bankruptcy for electric railways in general, and in this case menace the ability of the company to provide the service which is so necessary to Oil City, Franklin and vicinity. This action has been caused by present conditions which have disorganized all values the world over."

PUBLIC'S ATTITUDE APPARENTLY FAVORABLE

Although the property is being operated under a franchise which calls for a maximum fare of 5 cents, officials of the company do not anticipate that the application will be denied. According to several local newspaper reports following the announcement of the company's proposal, the public seems to accept the move very much in a co-operative spirit. The request for more revenue was not a surprise, for many in close touch with the development of the local property had already questioned its ability to continue against the rising costs of operation. Evidently the citizens of Oil City and vicinity are satisfied with their electric railway service and stand ready to help in having that service maintained.

Speaking editorially of the present national conditions and their effect on the electric railway field generally, the Oil City *Blizzard* says:

"That the local concern has been hard hit, there seems to be no doubt. That it costs more than 5 cents to haul each passenger is the patent fact that makes some action necessary. If, under the abnormal conditions of war times, with no relief in sight, the company is giving a service at less than cost, it must raise its charges proportionately.

"An electric railway is a public service corporation. Its chief end is public service. When it fails to give adequate service, either in quantity or quality, the public has a right to demand to know the reason why. On the other hand, the public must return to the company an adequate recompense for the service rendered. If the fare is not enough to do this, then—in justice to public and to company alike—the fare must be increased."

Similarly, the Oil City *Derrick*, under the title "To Every One His Due," commented on the proposed increase as follows:

"The proposal of the Citizens' Traction Company to increase its fares to 6 cents is in accord with the general advance in the price of all articles, and as the company's detailed statement shows, seems to be essential to the continuance of good service. Under such conditions there can be no ground for complaint from anyone.

"Citizens of Oil City are proud of their electric railway system, of its comfortable cars and frequent schedule; they would be loath to have its service changed. But a public service corporation cannot serve the people unless it is given adequate return. If the 5-cent charge for service was fair in 1910, it obviously is not reasonable to-day, when every item entering into the business has increased in cost."

Improved Service on Bay State

Company Contemplates the Use of One-Man Cars Besides a General Program of Car Replacements

The Bay State Street Railway on Aug. 1 filed with the Public Service Commission of Massachusetts a request for permission to operate all-automatic one-man cars on some of its lines. This step by the company marks its efforts to reduce the cost of operation and at the same time maintain a good standard of service. President P. F. Sullivan made the following statement in this connection: "We are especially interested in these cars because they will enable us to give satisfactory service economically. The use of cars of this kind is in line with the suggestions of the Public Service Commission and with our policy to give the best service at the lowest possible cost. We are trying in every way to cut down expenses—something these one-man cars will assist us to do."

The company has also filed with the commission a statement of equipment to be replaced. It will place in operation 200 new double-truck cars as fast as they are received from the manufacturer. The first of these cars has arrived and will soon be placed in service in Lynn. In the interests of better service 297 old cars will be scrapped, which, together with forty-one horse cars and thirty-nine snowplows which will also be scrapped, are valued at $989,507. Recently thirty-seven reconstructed cars were put in commission, and as soon as the financial condition of the road will permit, other cars will be reconstructed and changed for prepayment operation, which will bring the total number of reconstructed cars up to 200. This is part of the Bay State's general betterment plan.

Skip Stop Extended in Buffalo

The skip-stop plan of operation on the city lines of the International Railway, Buffalo, N. Y., has been extended to the West Utica, Abbott-South Park and Broadway lines. Elk Street cars operating over the Abbott-South Park line from Main and Perry Streets to Elk Street and the Abbott Road will also skip stops. Officials of the company, co-operating with the municipal traffic commission, have made a thorough study of the skip stop on the two initial skip-stop lines, Main Street and Elmwood Avenue, and have found that it has greatly reduced the running time of cars and has made it much easier to maintain schedules. The estimated saving of time on a one-way trip on the West Utica-Abbott-South Park lines is twelve minutes and on a one-way trip on the Broadway line, six minutes.

Commission's Authority Denied

Circuit Court Holds Commission Cannot Change Rates of I. U. T. Company, Fixed by Contract

Judge J. F. Charles in the Circuit Court of Grant County, Indiana, has ruled that the Public Service Commission of Indiana has no authority to change a rate which has been fixed by contract between a traction company and a county. The court held that the county has the right to make a contract with the traction company for certain fares between specified points and that the State has no right to change the contract. The case grew out of an agreement between the Union Traction Company of Indiana and Grant County by which fares between points in the county were fixed. The company was authorized by the commission in March, 1916, to increase these specified fares to a flat rate of 2 cents a mile. The town of Fairmount and Grant County thereupon brought separate suits against both the traction company and the commission. The company has been charging the increased rate since April, 1916, and the present ruling on demurrer will not bring back at once the old rates.

The plaintiffs in the two actions have obtained a rule to answer against the defendants and will ask a judgment if the case stands on the rulings on demurrer. If the next step is a trial of the issues, evidence will be submitted. It is said that the case is one which the Supreme Court may be called upon to decide.

Girl Employed as Station Agent

Some difficulty has been experienced by the Cleveland, Southwestern & Columbus Railway, Cleveland, Ohio, in maintaining competent agents at several stations, owing to the greater inducements attracting the men to industrial positions. Recently a vacancy occurred at Elyria, which is the company's largest office with the exception of that at Cleveland, and E. F. Schneider, general manager of the company, decided to give Miss Emma Sharfenberg a trial at the work. In this position it is her duty not only to act as ticket agent but to serve as cashier for the entire Western division, since all conductors on that division turn in at Elyria.

The young lady had been employed for about a year as clerk in the office of the local superintendent in Elyria, where she proved to be unusually efficient. She has now been acting as the Elyria agent for two months and is said to be doing the work very successfully. Baggage is handled by the electric package crew at this point, so her duties do not include any work for which a woman would be physically unqualified. This is the first important position the Southwestern Company has intrusted to a woman, although a lady agent has been employed at Crestline, a small station, for a long time.

Monmouth County Reduces Fare.—The Monmouth County Electric Company, Red Bank, N. J., has reduced its fare between Long Branch and Red Bank from 15 cents to 10 cents. The question of reduction of fare has been under consideration for a long time, having been taken up by the Chamber of Commerce on several occasions.

Louisville Traction Revises Tariff.—The Louisville (Ky.) Traction Company, operating through electric service between Louisville and Indianapolis, Ind., has completed a revision of its local fares. The rate between terminals has not been affected but the local rates have been changed to correspond with the rates of competing steam roads and are based on 2 cents a mile.

Railways to Exchange Transfers.—The Seattle & Rainier Valley Railway and the Seattle (Wash.) Municipal Street Railway has each agreed to honor transfers of the other company. The agreement is to be permanent and was arranged by Walter M. Brown, general manager of the railway company, and A. L. Vanetine, superintendent of public utilities.

Fare Increase Asked by Small Illinois Road.—The Galesburg & Kewanee Electric Railway, Kewanee, Ill., a 14-mile line connecting Kewanee, Wethersfield and Galva, Ill., has issued tariffs, effective Sept. 1, increasing the city fare from 5 cents to 7 cents, and also the interurban zone fares from 5 cents to 7 cents. These are the principal increases asked for, although various ticket rates have also been advanced in the new tariff.

Auto-Bus Line to Army Post.—Satisfactory traffic arrangements have been made by the city of Tacoma, Wash., and Pierce County authorities with the bus drivers operating to the American Lake army post. Bus men will be organized into an auto-bus company, with stringent rules as to regulation of traffic on the army post highway. Before the conference of the men with the city and county authorities, there had been numerous complaints of violations of the State traffic law.

Six-Cent Fare Wanted in Dover.—The Dover, Somersworth & Rochester Street Railway, Dover, N. H., proposes to raise its fare from 5 cents to 6 cents in each fare zone, effective Aug. 20. Its new schedule has been filed with the Public Service Commission of New Hampshire. F. E. Webster, treasurer of the company, states that the road is obliged to make the increase because of the steady increase in operating expenses. It is said that the Dover Board of Trade will protest the action.

Segregation of Passengers Ordered.—The Mayor of Oklahoma City, Okla., supported by the City Commission, has ordered the chief of police and all his officers to see that the electric railways operating in Oklahoma City, hereafter strictly enforce the "Jim Crow" law. This action follows a recent assault on the conductor and the motorman of an electric railway car on the Fair Park line, which was the outgrowth of an attempt of negroes to ride in that section of the car reserved for white passengers.

Information Booklet for Birmingham.—A well-illustrated booklet, entitled "Playgrounds," including a list of car schedules of the Birmingham Railway, Light & Power Company, Birmingham, Ala., has just been issued by that company. The folder is made in the form of a railway time-table and contains much interesting information about points of interest in Birmingham and adjacent towns. A map of the electric railway system of the district is also included.

Open Trailers Permitted by Lifting Military Order.—The Louisville & Southern Indiana Traction Company, New Albany, Ind., has resumed use of trailers on its Louisville-Jeffersonville and Jeffersonville-New Albany lines. As noted in the ELECTRIC RAILWAY JOURNAL for July 7, page 37, an order issued by the military authorities prohibiting cars from crossing bridges over navigable streams with windows open made it necessary to abandon the use of open trailers. Now that that order has been rescinded the open cars are used to the satisfaction of patrons of the company.

I. R. T. Withdraws Free Transportation.—The privilege of free transportation on the subway and elevated lines of the Interborough Rapid Transit Company, New York, which was extended to members of the National Guard of New York on April 3, was withdrawn upon the mustering of the National Guard into the federal service. Theodore P. Shonts, president of the company, explained that the privilege could no longer be extended, there being a federal statute forbidding the acceptance of voluntary service for the government except in cases of sudden emergency involving the loss of human life or the destruction of property.

Freight and Express Service Planned for Poughkeepsie.—Tentative plans are being considered for an express and freight service on the Poughkeepsie City & Wappingers Falls Electric Railway, Poughkeepsie, N. Y., to give through deliveries to the boats, railroad stations, Vassar College and the State Hospital at Poughkeepsie. With the development of the Standard Aniline Products factory at Wappingers Falls there is a growing demand for quick transportation from that factory to the forwarding facilities at Poughkeepsie. It is said that the matter is only contemplated, however, as investigations are being conducted to ascertain whether necessary arrangements can be made and whether the company can enter the business profitably.

Railway Wants List of Licensed Jitneys.—The Washington Railway & Electric Company has requested the District of Columbia Public Service Commission that it be furnished a list of all licensed jitney operators, together with the routes traversed and the rates and schedules maintained. Since the recent railway strike in Washington more than 400 jitney licenses have been issued and the commission is preparing to investigate the situation. In its letter to the board the company asked if any steps are in contemplation to require the jitney men to give bond as a protection to patrons in cases of accident and to prevent overcrowding. The company objects to the jitneys paralleling its lines, which was permitted as an emergency measure during the strike, and claims that it is fully able to handle the traffic in its territory.

Illinois Company Fare Increase Upheld.—The new schedule of rates on the interurban division of the Chicago & Joliet Electric Railway, Joliet, Ill., which was approved by the Illinois Public Utilities Commission after a hearing and went into effect on July 1, has been upheld by the Circuit Court. J. R. Blackhall, general manager of the company, reports that although the new rates are considerably higher than the old ones, they have not in any way affected the volume of traffic. The city of Lockport took an appeal from the order of the commission to the Circuit Court of Sangamon County and, as the case could not be heard until the September term of court, the city asked for a stay order suspending the tariff until that time. The hearings on the stay order came up on July 30, and the court denied the petition. The company anticipates no difficulty in connection with the trial, which will not be held until the latter part of the year.

Spokane Trainmen Oppose Jitneys.—Trainmen of the Washington Water Power Company of Spokane recently circulated on the cars for patrons' signatures a petition which was addressed to the Mayor and city. The petition read in substance as follows: "We petition your honorable body that if the jitney buses are to be permitted to run on the streets of the city you confine their operation to streets not already served by electric railway cars. We believe that former experience with jitneys has shown that the competition among them, and between them and the street cars, makes the streets occupied by both dangerous to the public and gives a duplication of service to those streets to the neglect of streets not served by the cars. We also believe that if there is a demand for more transportation service the interests of all would be better served and protected if additional transportation facilities were not allowed on streets which are already served by electric railways."

Reduction of Service Proposed.—The Public Service Commission for the First District of New York is conducting an investigation as to the merits of an application by the Staten Island Rapid Transit Railway, a steam road, for permission to eliminate eighty-eight trains on its north and south shore divisions. The service it is proposed to eliminate consists of trains which have been operated late at night and in non-rush hours. The company contends that the trolley lines which parallel the road are sufficient to care for all the traffic. The Richmond Light & Railroad Company, the adjacent electric railway, has agreed, in the event that the commission acts favorably on the application, to provide additional facilities. At a hearing before the commission on Aug. 7 the case was adjourned to Sept. 5. The commission has in mind the stress of the present times and, while not wishing to curtail the service to the public, especially that which is necessary, is desirous to co-operate with the government in conserving the transportation facilities of the country.

Ohio Road Has Large Special Car Business.—During the year 1916, 542 special cars were chartered from the Cleveland, Southwestern & Columbus Railway, Cleveland, Ohio, or an average of forty-five cars a month. This business brought in an average gross revenue of $20.30 a car. A good many of these special cars were ordered for short trips. The company requires a minimum of fifty passengers and issues special-rate tickets good only on the special car. The contract signed by the person chartering the car calls for the payment of a certain sum for fifty persons or less and so much per passenger for all over fifty. It also specifies that the car must be paid for in advance, not less than twenty-four hours before it is to run, otherwise the contract is declared void. The company's funeral car was frequently chartered and this is included in the above total. The remainder of the business came from various clubs, from parties going to the resorts and from the colleges at Oberlin and Wooster for athletic teams and theater parties. Some advertising was carried in the college papers for this last-named business, but the remainder came very largely unsolicited.

"Be Careful" Campaign Launched.—Another far-reaching campaign is being conducted in the interest of public safety by interests in Philadelphia, Pa. It is termed a "Be Careful" campaign and is supported by more than 150 manufacturing interests, financial institutions, public service corporations, insurance companies, firms and individuals. Full-page advertisements are published in local papers calling attention to the hundreds of killed and wounded on electric railways and steam roads in Pennsylvania in 1916, most of whom were trespassers and careless pedestrians. The people are urged to exercise more care to prevent the little accidents that arise from simple dangers and in that way to reduce the number of fatalities or bodily losses which make life a burden. Among the companies supporting the campaign are: the Philadelphia Rapid Transit Company, the Trenton, Bristol & Philadelphia Street Railway, and the Philadelphia Electric Company. Several individuals also are interested, among whom are: Samuel T. Bodine, president of the United Gas Improvement Company; John Gribbel, vice-president of the American Railways, and John A. Rigg, president of the Interstate Railways.

Personal Mention

R. A. Wilson has been appointed treasurer of the Quebec Railway, Light, Heat & Power Company, Ltd., Quebec, P. Q.

John M. Reifsnider has been appointed a member of the Public Service Commission of Maryland in place of P. D. Laird, resigned.

C. H. Byers has been appointed district engineer of the division of valuation of the Interstate Commerce Commission, Pacific district. W. H. Davisson was appointed assistant district engineer.

Frank I. Hardy, general manager of the Chicago, South Bend & Northern Indiana Railway, has been appointed general superintendent of the Northern Ohio Traction & Light Company, with offices at Akron, Ohio.

C. O. G. Miller, a member of the board of directors of the San Francisco-Oakland Terminal Railways, Oakland, Cal., has been elected president pro tem of that company, filling the vacancy which has existed since G. K. Weeks resigned from the presidency last September. Mr. Weeks is still on the board of directors.

George Scott, chief engineer of power stations for the Moncton Tramways, Electricity & Gas Company, Ltd., Moncton, N. B., has been appointed superintendent of the company to succeed A. B. Coryell. Mr. Scott has been in the service of the company in various capacities for several years. Mr. Coryell, as reported in this paper recently, resigned to enter private business in Buffalo, N. Y.

Howard H. George, formerly assistant engineer under Martin Schreiber, who is chief engineer of the Public Service Railway, Newark, N. J., reviewed his training camp experiences in a communication which appeared in the July issue of the *Trolley Weal*, that company's publication. Mr. George has the rank of first lieutenant in the Officers' Reserve Corps, and has been on active duty since early in May.

Fred W. Proctor, city engineer of North Adams, Mass., has resigned to become engineer of the Berkshire Street Railway, Pittsfield, Mass. Mr. Proctor was graduated from Tufts College in Massachusetts, and was for several years a member of the engineering staff of the Boston & Maine Railroad. After serving several years as assistant city engineer at North Adams, he became superintendent of streets and in 1914 was made city engineer.

J. R. Blackhall, general manager of the Chicago & Joliet Electric Railway, Joliet, Ill., and president of the Universal Concrete Products Company, has resigned his official position with the latter company, but will continue as a director. Mr. Blackhall was active in the development and marketing of the concrete pole manufactured by this company by the centrifugal process. The separation of the manufacturing company office in Chicago and the railway company office in Joliet made it difficult to do justice to both duties, and Mr. Blackhall has, therefore, concluded to devote his entire attention to the railway position.

F. Kingsley, associate editor of the ELECTRIC RAILWAY JOURNAL, has been granted indefinite leave of absence to take up his duties as First Lieutenant of Ordnance, Officers' Reserve Corps. He was ordered into active service on Aug. 10, 1917. Mr. Kingsley was graduated from the mechanical engineering department of Cornell University in 1900. He served as apprentice and machinist in the locomotive shops of several western railroads and later was general foreman of the Helena shops of the Northern Pacific Railway. Following this he was connected with Westinghouse Church Kerr & Company for five years in power station and shop construction and equipment work. He became a member of the editorial staff of this paper in January, 1912.

A. Kordick has been appointed superintendent of the Milwaukee Division of the Milwaukee (Wis.) Northern Railway. Mr. Kordick has been connected with that company for the past eight years, and has been engaged in engineering work since the completion of his early education. He began at the age of fifteen as an oiler at the pumping station of the Sheboygan Waterworks. In the spring of 1907, three years later, he accepted the position of engineer of power stations for the Greensboro (N. C.) Electric Company, where he remained for one year and then returned to Sheboygan. In February, 1909, he entered the employ of the Milwaukee Northern Railway as substation operator and two years later received a position in the interurban train service. Mr. Kordick has been train dispatcher for that company since February, 1913.

Albert Eastman, vice-president and general manager of the Windsor, Essex & Lake Shore Rapid Railway, Kingsville, Ont., was elected vice-president of the Canadian Electric Railway Association at its recent annual meeting. Mr. Eastman entered transportation service in 1889 and remained for about twelve years in the steam railroad field. He then served in various capacities the Detroit (Mich.) United Railway and in November, 1903, became superintendent of employment for the Public Service Corporation of New Jersey. Four years later Mr. Eastman was appointed general express and passenger agent of the Syracuse and Utica lines of the New York State Railways, and in May, 1910, he accepted his present position as general manager of the Windsor, Essex & Lake Shore Rapid Railway. He was elected vice-president of the company in 1914.

J. C. NELSON

J. C. Nelson has been appointed general manager of the Empire United Railways, Inc., Syracuse, N. Y., to succeed T. C. Cherry. Mr. Nelson was graduated from the University of Alabama in the civil engineering department and afterwards took a special course in civil and electrical engineering at Cornell University. In the year 1902 he became connected with Ford, Bacon & Davis, engineers, New York, N. Y., with whom he has been associated since that time. He was at first employed in the construction department of properties in the South operated by that firm and later was engaged in their New York office organization on construction, valuation and the making of investigations of the operation of public utilities. Mr. Nelson then entered the operating field in May, 1916, when he was appointed general manager of the Gary & Interurban Railroad at Gary, Ind., to succeed A. C. Miller. From there he was transferred by Ford, Bacon & Davis to Syracuse to his present position of general manager of the Empire United Railways, Inc.

William J. Lynch, who, as reported recently, has been appointed general manager of the Quebec Railway, Light, Heat & Power Company, Ltd., Quebec to succeed the late H. G. Matthews, has been in the service of that company and its predecessors for twenty years. Mr. Lynch was born in 1882 and began his commercial career in 1897 when he entered the employ of the Montmorency Electric Power Company as office clerk. Two years later he was appointed cashier when that company was amalgamated with the Quebec, Montmorency & Charlevoix Railway and the Quebec District Railway. He was later promoted successively to the positions of accountant and treasurer, and in 1909, when the public utilities in the city of Quebec and vicinity were merged, he was appointed treasurer and comptroller, the position he occupied until the time of his recent promotion. The Quebec Railway, Light, Heat & Power Company, Ltd., controls the following companies: The Quebec Railway, Light & Power Company, the Quebec-Jacques Cartier Electric Company, the Canadian Electric Light Company, the Quebec Gas Company, the Frontenac Gas Company, the Quebec County Railway and the Lotbiniere & Megantic Railway. Mr. Lynch's popularity in the community and his long connections with utility problems will no doubt prove very helpful in the execution of his new and responsible duties.

Construction News

Construction News Notes are classified under each heading alphabetically by States.

An asterisk (*) indicates a project not previously reported.

RECENT INCORPORATIONS

Muscle Shoals Traction Company, Florence, Ala.—Incorporated to construct the proposed interurban railway from Florence to Huntsville, via St. Floraine, Bailey Springs, Killen, Center Star, Rogersville and Athens, 64 miles, with a branch to Lexington, about 12 miles. Officers: Solon L. Whitten, Chicago, president; Tracy W. Pratt, Huntsville, vice-president and treasurer, and Thurston H. Allen, secretary and general manager. [July 21, '17.]

***Alton & Edwardsville Railroad, Alton, Ill.**—Incorporated at Springfield to construct a line from Alton to Edwardsville, via East Alton, Blinn, Silver Ridge, Woodriver and Wanda. Capital stock, $6,000. The line will handle both passenger and freight business. Directors: Louis A. Schlafly, Phil M. Gervig, Henry S. Baker, Don A. Barrus and E. E. Wilson, Alton. It is stated that the project is backed by H. H. Ferguson, vice-president of the Illinois Terminal Railroad.

***Petersburg, Hopewell & City Point Railway, Petersburg, Va.**—Incorporated with a capital stock of $1,000,000. The company plans to acquire the Petersburg & Appomattox Electric Railway, operating from Petersburg to Hopewell, Va., 9 miles, and the Hopewell & City Point Railway, operating from Hopewell to City Point, about 2 miles. It is proposed to construct a branch line to Prince George Courthouse, 6 miles, and 2 miles of second track from Petersburg to Camp Lee, the new army cantonment near Petersburg. Officers: Richard Mann, Petersburg, president; J. L. Vaughn, Shawsville, Va., vice-president; L. W. Zimmer, secretary and treasurer, and H. E. Mason, auditor.

***Blacksville & Western Railway, Morgantown, W. Va.**—Incorporated to construct a line from Blacksville, W. Va., to Brave, Pa., about 5 miles. Capital stock, $25,000. Incorporators: Raymond E. Kerr, Charles A. Goodwin, Ammon I. Derr, C. S. Bailey and David E. Adams, all of Morgantown.

FRANCHISES

Long Beach, Cal.—The Pacific Electric Railway has received a franchise from the city commissioners of Long Beach to lay a single-track, standard-gage line on Water Street to connect with the main line and serving the Craig Shipbuilding Company and other industrial establishments.

Youngstown, Ohio.—The Youngstown & Suburban Railway has received a franchise from the City Council to double-track its line on Front Street and South Avenue.

Henryetta, Okla.—An election has been called at Henryetta for Aug. 16 for the purpose of voting a franchise to the Henryetta, Dewar & Kusa Traction Company for the construction of an electric railway through the city. Morton Henderson, Kusa, is interested. [June 9, '17.]

Easton, Pa.—The Phillipsburg Transit Company has applied to the Public Service Commission of Pennsylvania for permission to operate at Easton and vicinity.

El Paso, Tex.—The El Paso Electric Railway has received a thirty-year franchise from the City Council to construct a line on Baltimore Street from Campbell Street to Madeline Park.

Port Arthur, Tex.—The Jefferson County Traction Company has asked the City Commission for a franchise authorizing the extension of its car line on another street, which would nearly double the street car mileage in Port Arthur.

Tacoma, Wash.—The Puget Sound Traction, Light & Power Company has asked the Board of County Commissioners for a twenty-five-year franchise to construct transmission lines in Pierce County.

Tacoma, Wash.—The city of Tacoma will be granted a twenty-five-year franchise by the Commissioners of Pierce County for the construction of a street car line on the tideflats. A few minor points in the contract are to be arranged before the franchise is signed. The time limit clause will provide that the Eleventh Street line be completed within six months, an extension up Hylebos Waterway to Lincoln Avenue made within sixteen months, and the line completed back along Lincoln Avenue to the city limits within twenty-four months.

TRACK AND ROADWAY

Alabama Power Company, Anniston, Ala.—Plans are being considered by the Alabama Power Company for the construction of an extension to Camp McClellan.

Pacific Electric Railway, Los Angeles, Cal.—A new connecting link of the Pacific Electric Railway, joining Glendora and San Dimas, will soon be built, and will make the Los Angeles-Monrovia-Glendora line a through route to San Bernardino, by connection at San Dimas, over the Los Angeles, Pomona, Ontario and San Bernardino track.

Oakland, Antioch & Eastern Railway, Oakland, Cal.—The Railroad Commission of California has authorized the Oakland, Antioch & Eastern Railway to discontinue the operation of the line of the Sacramento Valley Electric Railroad extending from Dixon Junction to Dixon, 11 miles.

Municipal Railway of San Francisco, San Francisco, Cal.—It has been announced that the Church Street line of the Municipal Railway will be opened to traffic on Aug. 11.

San Francisco-Oakland Terminal Railways, San Francisco, Cal.—Work will be begun at once by the San Francisco-Oakland Terminal Railways improving its line on Telegraph Avenue, from Broadway to Fortieth Street, and College Avenue, from Broadway to the Berkeley line, at a cost of about $143,000.

Southern Pacific Company, San Francisco, Cal.—Under instructions from the City Council, City Attorney D. J. Hall has taken up with the Southern Pacific Company the matter of building the electric line on Butting Boulevard, for which the company obtained a franchise and made surveys some time ago.

Peninsular Railway, San Jose, Cal.—Work will be begun at once by the Peninsular Railway on the construction of an extension to the army cantonment at Palo Alto.

Jacksonville (Fla.) Traction Company.—An extension has been completed by the Jacksonville Traction Company to the industrial section of the city on the Talleyrand Avenue water front.

***Melbourne, Fla.**—It is reported that C. T. Miller, chief engineer, is making preliminary inspection of the proposed route of an electric railway from Melbourne to Tampa, via Haines City, Lake Alfred, Winter Haven, Lucerne Park and other points, 115 miles.

Georgia Railway & Power Company, Atlanta, Ga.—This company plans to construct about 5 miles of line to Camp Gordon, near Chamblee, Ga.

Chicago, North Shore & Milwaukee Railroad, Highwood, Ill.—Important improvements will be begun at once by the Chicago, North Shore & Milwaukee Railroad in Waukegan.

Chicago & Joliet Electric Railway, Joliet, Ill.—This company is reconstructing 1½ miles of single track on streets in the city of Joliet, where the city is putting in paving improvements. The railway company will pave its right-of-way with brick.

Rockford & Interurban Railway, Rockford, Ill.—This company will construct an extension to Camp Grant.

Plymouth & Sandwich Street Railway, Plymouth, Mass.—Operation has been begun by the Plymouth & Sandwich Street Railway over its completed line from Plymouth to Sagamore; also from Plymouth southward to the Cape towns. The line formerly operated to Manomet, and the work of extension has been carried on for the past few years. The road was completed late last spring. Eventually the line will be connected with that of the New Bedford & Onset Street Railway, via the route followed by the Cape Cod Canal.

Grand Rapids (Mich.) Railway.—Work has been begun by the Grand Rapids Railway repairing its street car tracks in the main thoroughfares of the city. The company plans to construct a downtown loop from Monroe Avenue to Michigan Street, probably on Ottawa Avenue N. W., to relieve the downtown streets of street car congestion. This will greatly facilitate street car traffic through the center of the city.

Duluth (Minn.) Street Railway.—A resolution has been introduced in the City Council granting the Duluth Street Railway temporary permission to install double tracks on the present Morgan Park line from Seventy-first to Eighty-fourth Avenue west on Grand Avenue. The new double track will take the place of the present single-track line operating beyond Fairmont Park into Morgan Park.

Mesaba Railway, Virginia, Minn.—This company contemplates replacing its wooden poles with steel towers.

Binghamton (N. Y.) Railway.—This company plans to construct an extension of its Stella line to Lester Avenue, connecting with the Main Street-Lester Avenue route.

Panama Traction Company, Jamestown, N. Y.—The Public Service Commission for the Second District of New York has approved the application of the Panama Traction Company to issue $150,000 in bonds and $60,000 of common stock. The money will be used to build the first link of the line between Ashville and Panama. The proposed line will connect with the main line of the Lake Shore Railway at Erie, Pa., with steamer service at Chautauqua Lake points. D. L. Davis, Jamestown, general manager. [April 28, '17.]

Lake Shore Electric Railway, Cleveland, Ohio.—It is reported that this company will construct a line to the Cromwell steel plant in Lorain.

Ottawa (Ont.) Electric Railway.—This company will reconstruct its track on Sussex Street from Rideau Street to St. Patrick Street with 80-lb. T-rail.

Toronto (Ont.) Civic Railway.—Work has been begun on the construction of an extension of the civic car line on Bloor Street from Quebec Avenue west to Runnymede Road. A single track will be laid on the north side of the street, thus allowing for future double track when required.

Pacific Power & Light Company, Astoria, Ore.—A contract has been awarded by the Pacific Power & Light Company for the reconstruction of a bridge for its car line in upper Astoria. The company will extend its terminals in upper Astoria 1 mile to reach the present city limits. Besides these improvements the company will spend $35,000 this year in other work in Astoria.

***Canton & Ohio River Railways, Pittsburgh, Pa.**—This company has been organized under the laws of Ohio and West Virginia by Cincinnati, Canton and Cleveland men for promoting a project to construct an electric railway from Canton, Ohio, to Wheeling, W. Va., via Toronto, Ohio. Executive offices have been established in Pittsburgh. It is authorized by its charter to issue stock to the amount of $10,000,000. The line as projected is 105 miles long.

Pittsburgh (Pa.) Railways.—The Pittsburgh Railways refusing to lay tracks on new Wheatland Street until final disposition of the city's complaint against it and its underlying companies before the Public Service Commission, the public works committee of Council in a resolution recently adopted instructed Director John Swan of the Department of Public Works to lay the track and complete the improvement of the street. The resolution instructed the director to prepare the proper ordinance for the issuance of bonds to provide money for the track-laying.

Southern Traction Company, Dallas, Tex.—Work has been begun by the Southern Traction Company on the construction of an extension of its line to Camp MacArthur.

Seattle (Wash.) Municipal Railway.—The Board of Public Works of Seattle has approved plans for the construction of a city street car line on Fifteenth Avenue N. W. and Leary Avenue to Market Street; also plans for changing Division A of the city line from double to single trolley. By this change enough copper will be obtained to build the line into the Ballard District. The new tracks will cost about $25,000 and the trolley changes will cost from $5,000 to $10,000.

Wisconsin Interurban System, Madison, Wis.—This company has filed with the Secretary of State a trust deed for $9,000,000 with the Chicago Title & Trust Company, as trustee. The deed, which is the basis for bond issues, embraces practically 250 miles of proposed and partly constructed lines with Madison as the hub of the system. The first line, upon which construction is promised by General Manager J. E. Jones of Portage, to begin at once, will connect Madison and Janesville by way of Stoughton and Edgerton. [July 21, '17.]

SHOPS AND BUILDINGS

Petaluma & Santa Rosa Railway, Petaluma, Cal.—This company has awarded a contract to H. P. Vogensen, Petaluma, for the construction of a new station at Sebastapol.

Chicago & Joliet Electric Railway, Joliet, Ill.—Ground has been broken for a new two-story building to be erected on the site of the old building at the northwest corner of Ottawa and Clinton Streets, Joliet. It is expected that the new building will be ready for occupancy early in 1918. In the meantime the company has taken temporary office quarters in the Adams Arcade Building on Ottawa Street.

Worcester (Mass.) Consolidated Street Railway.—A contract has been awarded by the Worcester Consolidated Street Railway to J. P. Keeting of Westboro, for the construction of two trolley freight stations between Shrewsbury Street and Albany Street near Boulevard Park. The estimated cost is $75,000. One station will be used by the Boston & Worcester Street Railway and the other by the Worcester Consolidated Street Railway.

Durham (N. C.) Traction Company.—This company will construct a new carhouse on East Maine Street at a cost of about $7,500.

Bartlesville (Okla.) Inter-Urban Railway.—Work has been begun on the new Masonic building in Bartlesville, and when it is finished most of it will be occupied by Doherty companies. The Bartlesville Inter-Urban Railway will have one-half of the ground floor, and the Empire Gas & Fuel Company will occupy five floors. The Indian Territory Illuminating Oil Company, another Doherty company, will also have a floor.

Sand Springs (Okla.) Railway.—This company reports that it will build a new carhouse to replace the one recently destroyed by fire.

Sudbury, Copper Cliff Suburban Electric Railway, Sudbury, Ont.—This company has under construction at Sudbury a carhouse 50 ft. x 115 ft., and a station building 20 ft. x 30 ft.

Canadian Northern Railway, Montreal, Que.—This company is erecting new car shops in Port Mann.

Newport News & Hampton Railway, Gas & Electric Company, Hampton, Va.—It is reported that this company is considering the construction of a freight depot in Newport News.

POWER HOUSES AND SUBSTATIONS

Little Rock Railway & Electric Company, Little Rock, Ark.—The Quartermaster's Department has awarded a contract to the Little Rock Railway & Electric Company to furnish electricity to the Twelfth Division cantonment near Little Rock.

Fort Wayne & Northern Indiana Traction Company, Fort Wayne, Ind.—It is reported that this company plans to construct an addition to its Spy Run power house at a cost of about $85,000.

Iowa Railway & Light Company, Cedar Rapids, Iowa.—A transmission line will be built by this company to State Center.

Ottumwa Railway & Light Company, Ottumwa, Iowa.—This company is improving its plant and will construct a new transmission line.

Puget Sound Traction, Light & Power Company, Seattle, Wash.—This company has been awarded a contract for all outside wiring for the permanent cantonment at American Lake, including furnishing electricity for lamps and motors.

Manufactures and Markets

Discussions of Market and Trade Conditions for the Manufacturer, Salesman and Purchasing Agent

Rolling Stock Purchases Market Quotations Business Announcements

Car Manufacturers Marking Time

Present High Prices and Lack of Steel and Wood Responsible for Slow-Up in Building—Government Order for 100,000 Cars Pending

Railway car manufacturers are marking time but will await with interest the action of the government in regard to the purchase of rolling stock for the railways for emergency service. Early in June the co-operative Committee on Cars of the Advisory Commission, of which S. M. Vauclain is chairman, after much discussion proposed purchase by the government of 50,000 box cars and 100,000 gondola cars. This plan of the government to purchase rolling stock, which it is interesting to note originated with the committee on cars of the Advisory Commission and not with the railway car manufacturers, is now the all-absorbing topic in this field, and pending a decision or recommendation by the Council of National Defense, few orders are being placed for equipment.

CAR PLANTS WORKING AT ONE-THIRD CAPACITY

At the present time car manufacturers have a reasonable amount of business in their establishments but have been unable to get steel and lumber in any quantity. The cars on order from steam and electric roads on June 1 amounted to approximately 100,000, of which 70,000 are for domestic use. With the car shops working at their normal capacity, this industry requires somewhat more than 200,000 tons of steel and approximately 40,000,000 ft. of lumber per month. On account of car shortage, embargoes, etc., only about one-third of the amount has been received at the shops, with the result that just at the period when the national life is suffering from a country-wide shortage of cars, the car manufacturers are working at only one-third of their normal capacity. One well-informed man in this industry is reported to have said: "If the government were to buy these 100,000 freight cars and turn them over to the railroads, the immediate use of this great number of cars in carrying raw materials for the steel industry would be sufficient to increase the output of steel necessary to supply all the needs of the car manufacturers without diminishing deliveries to other interests."

GOVERNMENT PLAN FOR PURCHASE OF CARS

The plan for the purchase of cars by the government contemplates that they be leased to the railroad on a per diem basis until the close of the war, when they would be sold to the railroads at a reasonable price. The government is now in a position to buy the cars at lower prices than the railroad but can cover itself by this per diem charge, while the railroad would eventually receive the cars at a much lower figure than it would cost to build them under present conditions.

According to annual statistics published by the *Railway Age Gazette*, car shops in the United States and Canada have been operating at one-half their capacity for the last year or two. Only 135,000 freight cars were bought last year, according to this publication, as compared with more than 200,000 in 1913 and similar amounts in previous years. A careful study of the car situation in the last ten years shows that only on one or two occasions has the car surplusage reached as high as 12 or 14 per cent. In the last few years the surplusage, if any existed, did not amount to more than 2 to 4 per cent and in a number of cases an actual shortage existed. It is known that a car surplusage to the railroad is just as necessary as a surplus capital is to the banker or a surplus of raw materials to the manufacturer.

Paint and Varnish Deliveries Good

Railways Show Good Judgment by Buying the Best Grades of Paints and Enamels—Prices Increase Slightly—No Large Orders Reported

Although many companies are rebuilding or remodeling cars, and despite the fact that there have been some large car orders placed in the last few months, trade conditions in the paint, oil and varnish fields have been comparatively quiet. Unsettled business conditions due to war preparations have had their effect and are to a degree largely responsible for the present inactivities in this business. Many railway companies which expected to paint cars this summer according to schedule have deferred their work on account of the extremely high prices now prevalent.

This time last year linseed oil sold for eighty-two cents a gallon. This was considered a high price at that time, but this same product is now quoted at $1.14 a gallon. Zinc, white enamel, gums, fillers, etc., have all gone up considerably. In addition tin cans have increased greatly in price and are very difficult to obtain. Steel drums which formerly cost $6 now cost $10. Everything in connection with the paint industry has increased in cost, including even the labels which are pasted on the cans and boxes in which such cans are shipped.

RAILWAYS USING GOOD GRADES OF PAINTS

Heretofore, some railways have been content to put on a cheap grade of paint or varnish and have found that it had been necessary to repaint the cars very often. Most railways are now using the best grade of paints, varnishes and enamels because they realize that it doesn't cost any more for labor to put on a good grade of paint than it does for a poor grade and that the principal cost is the labor cost. High-grade varnishes and paint are expensive, but are well worth the money invested. The old saying that you can't buy a gold dollar for 90 cents proves true in regard to these products as well as any others. Recently a well-known salesman approached a company executive in regard to a sale of a certain paint. After going over the matter thoroughly the salesman made the executive a price which was very low. The executive said that he could not afford to pay anywhere near that price as he had quotations from so-and-so that were more than 25 per cent cheaper. In fact, the price was cheaper by 15 per cent than the cost of linseed oil, one of the principal constituents. The nigger in the woodpile was discovered immediately when the paint was tested and was found to have been weakened.

WAR CAUSES SHORTAGE IN COLORS

There are some shades of paint which are not now obtainable on account of the war. Certain reds, yellows and greens which came from Germany cannot now be purchased, although greens and yellows have been made up in this country. The red, however, has not yet been duplicated, although it is known that certain manufacturers have been working along these lines. A good many railways are adopting a new system of varnishing and enameling for wooden or steel cars. This is called the quick painting system. Formerly it was necessary to shop a car for three or four weeks in order to paint it, but now the process can be completed in six to eight days by this new enameling system. In the case of a steel car, it must be sand blasted in order to remove every rust spot. The car is then given several coats of enamel and a finishing coat of varnish. The most expensive practice a man can follow is to use a poor paint on a canvas roof. Good results can be obtained by giving the canvas roof a first coating of a good canvas preserver to make it flexible, and then follow this by two coats of good roof paint.

Although the increases in the price of materials used in paints and varnishes have been very great, the prices have not been increased appreciably. As a whole, the paint and varnish men have been holding back waiting for the other fellow to boost prices, and as a result there has been very little increase in the price of these products. Deliveries are normal and for the most part orders can be filled directly out of stock.

No Relief in Malleable Market

As an evidence of the tight condition of the market on malleable iron castings, a manufacturer in Philadelphia had to pay 12½ cents a pound for small malleables last week. In order to obtain fairly prompt deliveries even at this figure it was necessary to place the order with a New England foundry. Consumers of this line of product state that the production has not kept pace with the ordinary requirements of the trade. It does not take much of a rush of business such as is now being experienced therefore, to simply swamp the foundries. The only relief, manufacturers say, is to be found in the increase of the productive capacity of the foundries. This they claim is not only warranted but sorely needed. Foundries which have been built for making railway malleables, have in the lull in business of this class in recent years taken on other classes of work as for the automobile industry, building trades, etc. These lines now constitute the bulk of their output at the expense of railway work.

New Construction Work in Philadelphia

Manufacturers of electric railway supplies and equipment are keeping an eye on the situation in Philadelphia. Indications point to an early settlement of the difficulties which have held up the completion and equipment of the Frankford Elevated line and the energetic construction of the rapid transit subways. Director of Transit W. S. Twining has prepared a form of lease whereby the Philadelphia Rapid Transit Company is to take over and operate the proposed city high-speed transit lines. This will be submitted to the Council on Aug. 17. Although the details of this lease have not been made public as yet it is reported by those in a position to know, that its terms are satisfactory to all parties concerned.

The Frankford elevated structure which is about two-thirds finished is to cost $7,400,000. This amount represents just the bare steel structure. Several million dollars will have to be spent for track and accessories, rolling stock and equipment. On the subway, contracts aggregating $14,000,000 have been awarded for construction work. The total cost of construction is estimated from $50,000,000 to $65,000,000. Only a small section is actually under construction, the amount of the contract covering it being about $3,000,000.

If the Philadelphia Rapid Transit Company takes over all of this work its activity in construction and equipment work will not be limited to these projects. A large amount of work in the way of surface line extensions will be put forward which has been held back pending the settlement of the controversy between the city and the company. The earnings of the Philadelphia Rapid Transit Company for the year just closed amounted to $2,000,000, which is double the earnings of the year previous. The bulk of this amount has been added to the company's sinking fund for extension work.

Few Second-Hand Cars Available

A leading dealer in second-hand cars states that big double truck cars are "scarcer than hen's teeth." There is a big demand for this type of equipment from electric railways which will be called upon to serve the army cantonments and other government concentration and training camps. As a substitute, this dealer is selling single truck motors and trailers. An energetic search is also being made among the steam roads for day coaches to serve as trailers. Electric roads having orders placed for the popular "one-man" cars to supplant the big double truck cars are very fortunate for they will now find an active market for their old equipment.

NEW YORK METAL MARKET PRICES

	Aug. 3	Aug. 10
Prime Lake, cents per lb	29	28
Electrolytic, cents per lb	29	28
Copper wire base, cents per lb	36	36
Lead, cents per lb	10⅞	10⅞
Nickel, cents per lb	50	50
Spelter, cents per lb	8¾	8¾
Tin, Straits, cents per lb	63¾	63⅝
Aluminum, 98 to 99 per cent, cents per lb	56	56

OLD METAL PRICES

	Aug. 3	Aug. 10
Heavy copper, cents per lb	23½	24½
Light copper, cents per lb	20½	21½
Red brass, cents per lb	19	19½
Yellow brass, cents per lb	15½	16
Lead, heavy, cents per lb	8½	8½
Zinc, cents per lb	6	6
Steel car axles, Chicago, per net ton	$45.00	$41.00
Old car wheels, Chicago, per gross ton	$31.50	$31.50
Steel rails (scrap), Chicago, per gross ton	$43.00	$40.00
Steel rails (relaying), Chicago, per gross ton	$60.00	$55.00
Machine shop turnings, Chicago, per net ton	$16.50	$16.50

CURRENT PRICES FOR MATERIALS

	Aug. 3	Aug. 10
Rubber-covered wire base, New York, cents per lb.	36½	36½
No. 0000 feeder cable (bare), New York, cents per lb.	36½	36½
No. 0000 feeder cable (stranded), New York, cents per lb.	33¾	33¾
No. 6 copper wire (insulated), New York, cents per lb.	33	33
No. 6 copper wire (bare), New York, cents per lb.	36	36
Rails, heavy, Bessemer, Pittsburgh	$38.00	$38.00
Rails, heavy, O. H., Pittsburgh, per gross ton	$40.00	$40.00
Wire nails, Pittsburgh, per 100 lb	$4.00	$4.00
Railroad spikes, 9/16 in., Pittsburgh, per 100 lb	$7.00	$7.00
Steel bars, Pittsburgh, per 100 lb	$4.50	$4.50
Sheet iron, black (24 gage), Pittsburgh, per 100 lb.	$8.35	$8.35
Sheet iron, galvanized (24 gage), Pittsburgh, per 100 lb.	$9.55	$9.55
Galvanized barbed wire, Pittsburgh, cents per lb.	$4.85	$4.85
Galvanized wire, ordinary, Pittsburgh, cents per lb.	$4.65	$4.65
Cement (carload lots), New York, per bbl	$2.22	$2.22
Cement (carload lots), Chicago, per bbl	$2.31	$2.31
Cement (carload lots), Seattle, per bbl	$2.60	$2.65
Linseed oil (raw, 5 bbl. lots), New York, per gal.	$1.13	$1.18
Linseed oil (boiled, 5 bbl. lots), New York, per gal.	$1.14	$1.19
White lead (110 lb. keg), New York, cents per lb.	12¾	12¾
Turpentine (bbl. lots), New York, cents per gal	42½	42½

ROLLING STOCK

Northern Ohio Traction & Light Company, Akron, Ohio, has purchased four Baldwin 87-40 AA trucks to be used on heavy interurban cars in cantonment service.

Cienfuegos, Palmira & Cruces Railway & Power Company, Cienfuegos, Cuba, is in the market for ten storage battery cars. The executive offices of this company are at 80 Maiden Lane, New York City.

Inter Urban Railway, Des Moines, Iowa, has ordered one electric locomotive from the Westinghouse Electrical Manufacturing Company to be used in handling traffic to the cantonment near Des Moines.

Bay State Street Railway, Boston, Mass., is reported to be considering the use of one-man cars on twelve of its routes and has petitioned the Public Service Commission for permission to operate this type of car.

Fort Wayne & Northern Indiana Traction Company, Fort Wayne, Ind., has specified the following details for two box cars which are being built by the St. Louis Car Company:

Number	2
Date of order	April, 1917
Date of delivery	August, 1917
Builder	St. Louis Car
Type	Box
Weight (total)	64,000 lb.
Bolster centers	33 ft. 0 in.
Over bumpers	55 ft. 0 in.
Over vestibule	53 ft. 0 in.
Width over all	8 ft. 6 in.
Rail to trolley base	13 ft. 0 in.
Body	Wood
Roof	Arch
Air brakes	West. D.2E.G.
Axles	Carnegie steel
Bumpers	Channel
Conduits	Crouse-Hinds
Control, type	West. H-L.
Couplers	Tomlison No. 12
Fenders	Locomotive steel pilot
Gears	Tool Steel Gear and Pinion
Hand brakes	Peacock Nostaff
Headlights	Luminous Arc
Journal boxes	Symington
Lightning arresters	West.
Motors	West. No. 85, inside hung
Paint	Builder's Standard
Sanders	Knight, pneumatic
Springs	Crucible steel
Trolley retrievers	No. 2 Knutson
Trolley base	U. S. No. 14
Trolley wheels	Moore-Jones
Trucks	Baldwin, 78-in. wheelbase
Wheels	37-in. roll. steel

Northwestern Pennsylvania Railway, Meadville, Pa., has specified the following details for five three-compartment double-end passenger cars, being built by the Wason Manufacturing Company.

Number of cars ordered	5
Date of order	June
Date of delivery	October
Builder	Wason
Type	Three compartment
Seating capacity	46
Weight (total)	53,000 lb.
Over bumpers	47 ft. 3½ in.
Over vestibule	45 ft. 11½ in.
Width over all	8 ft. 6¾ in.
Rail to trolley base	12 ft. 6 in.
Body	Semi-steel
Interior trim	Mahogany
Headlining	Agasote
Roof	Arch
Air brakes	Westinghouse
Axles	Standard Car Works
Bumpers	Rico anti-climber
Car trimmings	Wason
Conduits and junction boxes	Wason
Control, type	H-L
Couplers	Tomlinson
Curtain fixtures	Forsyth
Curtain material	Pantasote
Designation signs	Northwestern
Door mechanism	None
Fare boxes	None
Fenders	Pilots-Wason
Gears and pinions	Nuttall
Hand brakes	Pittsburgh drop handle
Heaters	Peter Smith
Headlights	None
Journal boxes	Symington
Lightning arresters	Westinghouse
Motors	Four Westinghouse 306, inside hung
Registers	None
Sanders	Nichols-Lintern
Sash fixtures	Edwards
Seats	Brill
Seating material	Plush and leather
Step treads	Mason
Trolley catchers	Keystone
Trolley base	Westinghouse
Trolley wheels	Erie Trolley Wheel Co.
Trucks	Baldwin
Ventilators	Not yet specified
Wheels	Davis

TRADE NOTES

Die Casting Company, Irvington, N. J., has taken over the business of the Irvington Die & Tool Works.

Edgar N. Dollin, organizer and president of the Acme-Die-Casting Company, has sold his holdings in the company and is retiring from active management.

H. H. Cudmore has left the Mazda lamp department of the General Electric Company to join the Argus Lamp & Appliance Company of Cleveland, Ohio.

R. W. Shauman has been made president of the Universal Concrete Products Company, manufacturer of the centrifugal process concrete pole, to succeed J. R. Blackhall, resigned.

National Pneumatic Company, New York, N. Y., has greatly enlarged its offices at 50 Church Street by taking over the adjoining offices formerly occupied by the Electric Service Supplies Company.

Electric Service Supplies Company, Philadelphia, Pa., announces that its New York office is located temporarily at 30 Church Street, but that on May 1, 1918, will return to larger quarters at 50 Church Street.

Sullivan Machinery Company, Chicago, Ill., announces the removal of its San Francisco office from the Sheldon Building at 461 Market Street to the Hobart Building, 582 Market Street. Ray P. McGrath is manager at San Francisco.

L. A. Starrett, who has been connected with the Westinghouse Electric & Manufacturing Company for a number of years, has resigned his position with that company and will hereafter cover Ohio and Michigan territory for the Ironton Engine Company.

Holden & White, Inc., Chicago, Ill., general sales agents for the Anderson Brake Adjuster Company, have received an order from the Tri-City Railways, Davenport, Iowa, for 270 of these brake adjusters. This order covers two adjusters per car for 135 cars, and is placed for early delivery.

Safety Car Devices Company, St. Louis, Mo., announces that it has received orders for two sets of safety car equipments from the Pacific Power & Light Company, one set from the Boston Elevated and a considerable number of sets of equipments of which the ultimate orders are not as yet known.

Unit Ventilation Company, Queens, N. Y., has been incorporated to manufacture ventilating devices and to do a general electrical and mechanical engineering business. The incorporators are: A. Bautz of College Point; W. F. Brown, 911 Whitlock Avenue, the Bronx, and J. F. Maguire, 375 Fulton Street, Brooklyn, N. Y.

Edward R. Mason, assistant general sales agent of the Ohio Brass Company, has resigned to accept a commission as lieutenant commander in the National Naval Volunteers and has taken up his new duties in the United States Navy. The commission which Mr. Mason holds in the navy is equivalent in rank to a major in the United States Army.

NEW ADVERTISING LITERATURE

Farnsworth Company, Conshohocken, Pa.: A book on its Farnsworth tilting steam traps.

New York Brass Foundry Company, New York, N. Y.: A booklet on the Monitor detector system.

D. R. Sperry & Company, Batavia, Ill., has issued an attractive catalog on the Sperry filter press.

Mitchell-Rand Manufacturing Company, New York, N. Y.: A mailing card containing a few plain tape samples.

Edison Storage Battery Company, Orange, N. J.: Bulletin 606 on Edison batteries for use in storage-battery locomotives.

National X-Ray Reflector Company, Chicago, Ill.: Leaflet "It's Never Too Late," emphasizing the use of this company's products.

V. V. Fittings Company, Philadelphia, Pa.: A forty page catalog on new types of V. V. fittings, safety devices and vapor-proof fittings.

Barrett Company, New York, N. Y.: Booklet on "How a Tarvia Macadam Roadway Is Constructed"; also a booklet, "Tarvia B," on road preservation.

Crocker-Wheeler Company, Ampere, N. J.: Bulletin No. 179 descriptive of its alternating-current oil switch for reversing service for two-phase or three-phase work.

Whiting Foundry Equipment, Harvey, Ill.: Catalog No. 130 descriptive of Whiting cranes. A number of special cranes for railway and transfer service are shown and described.

American Chain Company, Inc., Bridgeport, Conn.: A pamphlet devoted to the Campbell hammer-lock self-spreading cotter pin. Describes method of inserting, locking and removing pins, also gives price lists of all sizes made with the different sizes of packages with weights of 1000 pins.

Viele, Blackwell & Buck, New York City, N. Y.: A bulletin descriptive of the engineering and construction work which this firm has carried on. Photographs are shown of various plants in the United States, Canada and Mexico. The bulletin is well prepared and handsomely illustrated.

Stanley Building Corporation, Chicago, Ill.: A pamphlet on this company's special line of solid woven cotton belting impregnated with a special compound. The advantages claimed for this belting, the economy gained by its use, tables giving horsepower transmitted for various speeds and price lists of various sizes are included.

Western Block Company, Lockport, N. Y.: A pamphlet on this company's line of blocks for use with Manila and wire rope. Catalog includes description and illustration of blocks that can be supplied out of stock. Table of prices and sizes along with description of various iron and steel special blocks, bearings, bushings, small eyehooks, etc., are given.

Solvay Process Company, Syracuse, N. Y.: A blue book entitled "Solvay Alkali" which deals with the various forms and uses of alkali and contains notes on alkalimetry and various chemical and commercial tables useful for the consumer. This edition has been published as the direct result of the popularity of the preceding edition as a ready reference book on these products.

Shepard Electric Crane & Hoist Company, Montour, N. Y.: A 116-page bulletin on hoisting machinery for industrial work. This pamphlet is intended to present in clear and exact form such data as will enable engineers and managers to consider applications of hoisting and conveying units to the various uses for which they are adapted. Various types of hoists and cranes are described and illustrated.

NEW PUBLICATION

Congress of Human Engineering. Bulletin No. 16 of the College of Engineering of the Ohio State University, Columbus, Ohio. 160 pages. Paper.

This interesting little volume contains the text of addresses on the human side of engineering and business delivered at a congress held last October. It will appeal to all employers of men who regard them as more than mere machines.

Electric Railway Journal

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Consolidation of Street Railway Journal and Electric Railway Review

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Six-Cent Fares and an Association Publicity Bureau

THE campaign of the electric railways for increased fares to meet the rising costs of operation brings up again, and more forcibly than ever before, the need for an active publicity bureau for the American Electric Railway Association. We do not believe, with the author of a recent letter in our correspondence department, that such a bureau would interfere with the work being done for individual companies by privately conducted bureaus or present publicity agents. Rather, it would help them in their work and correlate the efforts being made generally to help the public understand the present electric railway situation. This also is the view, as we understand it, of most of those who have contributed letters on this subject to recent issues of this paper. To make the matter concrete we have asked Ivy L. Lee to summarize the discussion which has been going on in these columns by giving his views as to what such a general bureau could do and how it might conduct its service. Mr. Lee's article appears elsewhere in this issue.

The Higher-Fare Campaign Must Include the Public

MR. LEE clearly points out that it would be a grave mistake to suppose that it is needful only to convince individual commissioners or legislators of the correctness of the railway point of view. The prime need is to convince the general public. Once that is done, the public's belief will certainly be reflected in the concrete acts of regulative bodies. In the principal electric railway problem before the public to-day—the need of greater revenues to meet the tide of rising costs—there can be no question that in the beginning, at least, public sentiment was adverse to rate advances. The public, however, can be made to see that what is threatened by a fixed 5-cent fare is not only the prosperity of the railways but really the electric railway facilities enjoyed by the public. Once that point is thoroughly understood it will find its reflection in the acts of the commissions. The situation is not peculiar to any one state. The electric railway problem is the same all over the country. The interests of all companies are affected by the wave of sentiment for municipal ownership and operation, which has been made an issue in New York City for the fall campaign. It certainly seems a fitting time to decide whether some real progress cannot be made toward the establishment of a publicity bureau by the American Electric Railway Association. It will never be needed more than now.

Wooden Cars May Come Back Again

THE condition of the steel market is becoming more tense almost daily. This condition is being felt by the car manufacturers, for their inability to get steel plate and shapes is greatly delaying the delivery of cars on order. At the same time that this condition prevails in the steel market, there is a plentiful supply of wood which might be used for the purpose. The drive in the industry for the use of lighter weight and more durable cars has so accustomed the railway men to thinking only of steel when new cars were under consideration that the tendency is to neglect the possibilities of wood altogether. Perhaps, however, the fact that an emergency exists which makes it practically impossible to get steel plate, and consequently steel car deliveries within a very long delivery period, may serve to deflect attention to cars of wooden construction. They cannot be built as light as steel cars, but, in the event that a company is badly in need of additional rolling stock, there are advantages in reverting for the time being to cars of wooden construction. The steel car will cost less per mile for current to propel it, during all the years it is in service, but for the immediate present a wooden car which could be delivered comparatively very promptly could be earning a substantial revenue during the ten to eighteen months or more that it might be necessary to wait for its steel likeness. The use of wooden cars under these circumstances may be well worth consideration by those companies which are facing abnormal possibilities for increased business without adequate equipment to secure it.

Keep Up Versus Pick Up in Maintenance Work

FOR the purpose of emphasis we wish to reiterate the line of thought which ran through the articles by S. L. Foster and P. Ney Wilson appearing in the issue of the JOURNAL for Aug. 4. It seems trite to say that prevention is better than cure, for there is no argument possible. But assenting to this axiom is one thing and acting upon it is another. The present condition of the track, line and rolling stock on some properties indicates that maintenance work is not keeping pace with deterioration and that a day of reckoning is ahead. The writer remembers that on one property in particular there was some years ago a regular epidemic of trolley wire breaks. As Mr. Foster says, "When a trolley wire breaks the whole system of interdependent elements of operation is paralyzed." The service interruptions in such cases cost more than adequate maintenance would have done. The evil effects on a patron's mind of a series of service interruptions, such as those which were the necessary result of the epidemic of overhead troubles referred to, last much longer than the trouble itself. He feels that such a condition reflects carelessness in many ways besides that shown in the particular breakdown. Mr. Wilson points out that "way engineers delight in construction work, but the steady grind of track maintenance is not so pleasant." The same is true, of course, with regard to equipment and line work. No routine work is inherently pleasant, except as it is considered a part of the thorough performance of duty.

Interpretation of Cost Data on Special Work Reconstruction

SINCE the publication of the first installment of the cost data on special work renewals in the Equipment and Maintenance section of this paper a reader has suggested that further details, such as the proper size of repair gang and the number of man-hours and amount of supervision on each job, would enhance the value of the tables. It is undoubtedly true that data of this kind could be elaborated greatly with some profit to the user, but the problem is to give the results of experience in the form most likely to be useful. The compiler of the tables felt that by averaging the costs over a long period the incidental variations would eliminate themselves in the process. The different special conditions of each job thus tend to neutralize each other, giving a figure comparable with the average cost of work done on other properties.

As an example of the difficulty of going into much detail it may be said that the proper size of track gang for a given job has been studied for many years by the Brooklyn Rapid Transit Company and still no definite figure can be given. Many variables, such as width of street, traffic, number of other jobs being done, labor market, season of the year, weather, characteristics of foreman, and special reasons for speeding up the work affect the size of the gang so that it has not been found practical to work out a proper size of gang for each variable or combination of variables. It may be of interest to note, however, that the average track gang on this system contains about twenty-five men including one foreman. As stated in the explanation accompanying the cost figures, these are based on track labor at 20 cents per hour. The foreman's wages, which would not raise the average wages of the rest of the gang more than 1 or 2 per cent, are included in this figure. The number of man-hours can, therefore, be calculated for each job by dividing the cost as given by 20 cents.

The whole subject of cost data is a difficult one to handle on account of the number of variables involved. As has been emphasized to these columns from time to time it is difficult to make comparisons of data from different properties, particularly with reference to track maintenance costs. As pointed out editorially in our issue for July 21, 1917, the chief value of such data is to encourage close study of local unit costs with a view to justifying expenditure or impelling toward economy.

Tell Your Local Civic Bodies All About Your Troubles

ALTHOUGH we have published some very good examples of higher-fare publicity issued by different companies recently, we believe that as a whole the electric railway companies which are seeking more income are not doing enough talking about it. By this we mean that they are not doing enough in the way of formal talks, given for the enlightenment of public opinion.

In each city where increases of income are sought it is most desirable that a responsible representative of the company, the higher in rank the better, should seek an opportunity to talk about the situation to the local Chamber of Commerce, to the Rotary Club, to the Common Council, to the leading labor organization or in a public forum, etc., and he should see that copies of his remarks are prepared for the press. This sort of publicity work has the true home-made quality and can be most useful in establishing a sympathetic understanding of the business aspects of the situation as the first step toward getting helpful expression of public opinion. The electric railway man wants the public to realize that the service given to the public will suffer if the utility company income isn't sufficient to meet the increased costs of giving service.

A simple, direct, business-like talk, such as any intelligent electric railway manager would make in a friendly chat with a business friend, is exactly the kind of talk that is most useful and most needed. Hifaluting oratory is not the thing. A public that is asked to pay higher fares wants the company and its spokesman to get down to brass tacks. So the talk should be simple, direct and plain. The following outline of points may be helpful.

First—Express your desire to have the public know all the facts, in the belief that they will give you a fair judgment and a square deal.

Second—Show how (with fares fixed) electric railway costs have risen. Show that it takes nearly twice as many nickels to buy electric railway supplies now as it did three years ago, while the fare has not increased.

Cite a dozen or more important items, such as coal, lumber, oil, steel, iron, copper and the like.

Having driven that point home, show the crisis that this fixed fare and rising costs have produced. The average man doesn't care a rap about your troubles. The next thing is to show him that this crisis means trouble for him.

If their investment in electric railways doesn't pay —and it doesn't under present conditions—investors will drop it to go into other things. And this will mean disaster. Disregarding the disaster to the company, either in the form of receivership or anything else, a lack of a constant supply of investment support means some very real and concrete discomforts to the public. A prosperous utility company can give good service, build new lines, put on new and better cars, put in better roadbed, better heating and lighting, keep its cars clean, etc. But the alternative is—

1. That you'll have to give car service on a headway of ten minutes instead of five minutes.

2. That the cars will be crowded.
3. That rails and roadbed will be like the rocky road to Dublin.
4. That cars will be dirty.
5. That new sections of the city will have to go without new car lines.

It was to insure good service and to insure its being kept up that the law declares that investors are entitled to a fair return on their investment. Their companies can prove that they are not getting this fair return. Under the public service law the electric railway companies are not allowed to make big profits, but they can't give service at all without some profit.

After all, there's no occasion for ill feeling or denunciation or any other sentimental outburst in the case. It's a simple matter of the public and the public service commissioners knowing the exact business facts as to the situation with each separate company and of making a ruling accordingly.

And good, homely talks to influential civic bodies along these lines cannot help being useful. For the public good-will is absolutely essential. To get a verdict from the public service commission alone is not enough. The public does not have to accept that as final. It can go back to the legislature.

Neglected Positive Stops—An Insidious Operating Evil

IN an article by John A. Beeler published on another page of this issue attention is called to a feature of electric railway operation that, so far as we know, has been absolutely overlooked heretofore. This is the neglect of what Mr. Beeler terms the "positive stop," by which is meant a stop made by cars at a certain point for arbitrary reasons and not to pick up or discharge passengers. That failure to keep track of such stops as these may constitute an appreciable handicap to efficient operation is almost obvious. Nothing is easier to establish than such a stop, and after it has once been established, nobody is particularly concerned to bring about its elimination, with the result that train crews—who are always influenced strongly by tradition—may keep on making the stop for years, even though the reason for its establishment has been forgotten and long since ceased to apply.

In the past on many electric railways all kinds of positive stops have been introduced with reckless abandon. Stops have been established during progress of track reconstruction, or bridge work, or other temporary interferences, and after the completion of the work apparently no one thinks of removing the stop order. Some stops even mark the place of accidents that have happened in the distant past, while others indicate the stores or residences of people who have or have had "pull."

On a road with 100 cars a total of 5,000,000 such positive stops might well be made annually, and, judging from such data as are available, it is easily conceivable that 200,000 of them might be absolutely unnecessary. The cost of power and wear and tear for each of these may be set at 0.5 cent, giving a total possible saving of $1,000 per year, to say nothing of the savings due to faster schedule speed in case the situation of the eliminated stops permitted actual incorporation in the schedules of the time that was saved. In short, this matter is one that should be promptly looked into by every electric railway to the end that needless stops may be eliminated.

Electric Railways and Power Generation

IN last week's issue of the JOURNAL there appeared two tables showing approximately the situation regarding the generation, purchase and sale of power by electric railway companies as it existed about a year ago. The data were based upon the August, 1916, edition of the *McGraw Electric Railway Directory*, the latest source of information available when the compilation was undertaken. The figures given are not to be analyzed too closely, as no hard and fast line can be drawn which will divide the purchasing and the generating railways, but the data will serve as a general guide. The percentage of generating companies shown is slightly higher than that given in the latest report of the United States Bureau of the Census, but the small difference could easily be due to the manner in which the companies forming groups or syndicates are listed in the two compilations. Roughly speaking from 50 to 55 per cent in number of the railway companies are still generating power. That this group includes many large ones is evident from the fact that about two-thirds of the mileage and of the cars are operated on power so generated.

A study of the situation by states as disclosed by the tables is interesting but is significant only in connection with an analysis of the local power plant conditions. When the power business as such is highly developed, the central station naturally captures a good share of the railway business, because it can offer attractive prices. The railway load improves its load factor and, as was clearly explained by the late H. G. Stott in a paper abstracted in the issue of the ELECTRIC RAILWAY JOURNAL for June 24, 1916, page 1170, the question of purchasing versus generating power comes down ultimately to that of load factor. If a railway load can be taken on by a central station without an increase in equipment cost and operating expense equal to that which would have been incurred by the railway in meeting its own requirements, then the question answers itself.

The advance in the art of power generation has been recently so rapid that plants built only a few years ago are greatly handicapped in competition with those more nearly up to date. The central stations have the greater incentive to modernize their equipment because the cost of power is everything to them. In the case of the railways, while power is a considerable element in operating cost it is not the most important one. The power department may not always, therefore, obtain the support which it needs. Constant modernizing of its equipment, however, will enable it to make a continuously creditable showing.

Railway Stops

The Author Analyzes the Effect of Stop Frequency on Schedules and on Walking Distances and Time Savings for Patrons—Recommendations Are Made for Minimum Stop Spacings and for Methods to Reduce the Number of Stops

By JOHN A. BEELER
Consulting Engineer, New York City

On a railway there will usually be found two reasons for making stops, the first and essential one being to take on or discharge passengers or freight, and the second being to hold the car because of some operating conditions, such as the requirements of safety. Stops which fall in the latter classification are necessary in connection with the movement of any train over the tracks, and they may therefore be termed "positive stops." On steam railroads and interurban railways operating entirely on private right-of-way stops of this character need be but very few. On street railways, however, a number of positive stops are considered necessary, in general, because of (1) steam railroad crossings and drawbridges; (2) street railway crossings; (3) fire stations and dangerous highway crossings; (4) signals, where hand-thrown, and (5) terminals.

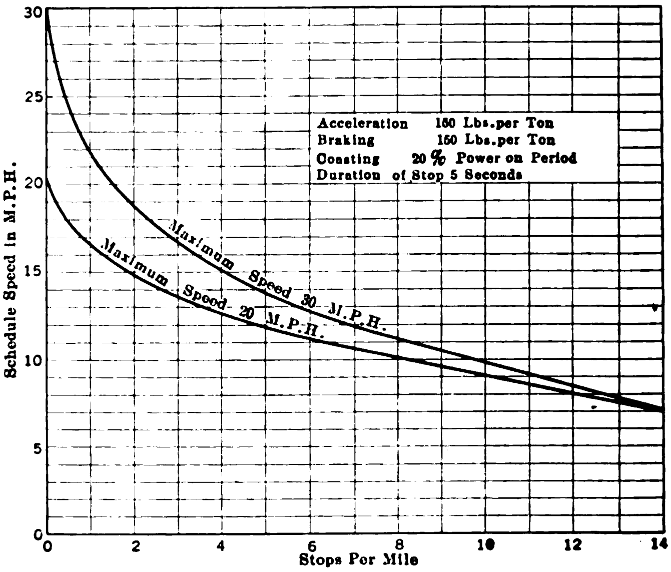
Train stops that are of importance to the public are those for receiving and discharging passengers. At first sight it might appear that cars should stop at any point for this purpose, but this has been found to be impracticable. The earliest steam trains and the horse cars followed the practice, but it was soon abandoned, and definite stopping places were substituted. With the steam railroads this innovation came early in the nineteenth century, but with street railways it was not until the advent of electric traction that any attention was given to the subject.

Effect of Stops on Schedule Speed

The far-reaching effect of such stops, not only on schedules, but on the possibilities of service, are not understood by the average trainman. The number of stops has a very definite bearing on the schedules that may be maintained with a given equipment, and as the stops are more frequent the slower is the possible schedule.

As a concrete illustration, consider a car with an average running speed of 20 m.p.h. Without stops it will, of course, travel a distance of 1 mile in three minutes. Require it to make eight stops within the mile, and it will make but 10 m.p.h., involving a running time of six minutes. In the case of an interurban car with an average free running speed of 30 m.p.h. a mile may be made without stops in two minutes. Let the car make but four stops in a mile, and the schedule is reduced to 15 m.p.h., requiring four minutes to the mile. As an example of this effect of stops upon schedule speed, the accompanying curves show graphically the result with cars operating at maximum speeds of 20 m.p.h. and 30 m.p.h. respectively.

A great variation in the number of stops exists on different lines. No general standard practice seems to exist in the location of stopping places, this being especially true of city electric railway systems. In most cities throughout the country the distance between stops is determined by the length of blocks, and little or no consideration is given to the operating conditions or to the benefits to be derived from more rapid transit. The length of block in different communities, or sometimes in different sections of the same community, varies greatly. In New York, for instance, the blocks are twenty per mile on the north-and-south streets, while on the cross streets in the same part of the city they are only 5.6 to the mile, or 960 ft. in length.



RAILWAY STOPS—EFFECT OF STOPS ON SCHEDULE SPEED

Since a considerable time is required for a car to start from rest and to get up to full speed, it is evident that when the blocks are short the car cannot attain its full speed between blocks. This tends to produce inefficient operation and slow schedules. The difficulty resulting from the "stop-at-every-block" policy has resulted in agitation everywhere throughout the country for the adoption of better methods of locating stopping places.

Unless the public is willing to sacrifice all the benefits ensuing from rapid transit, it is evident that not every intersecting street can be made a stopping place regardless of the length of the block.

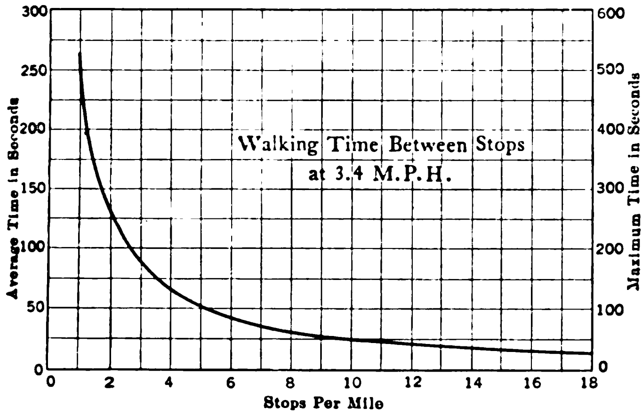
Walking Distances

For the patron, the immediate effect of a change in stopping places is a change in the distance he must walk from his destination in order to board the car. Obviously, the maximum distance a person has to walk on account of the location of stopping places is equivalent to one-half the space between two consecutive stops.

The average walking distance is but one-quarter of this space. To the walking distance must be added the walk from the destination to the railway route, which has to be made regardless of stop spacing. In some cases a change in the location of stopping places may only make a readjustment of the route to be walked rather than an increase in the distance to be covered.

If it is assumed that the average walking rate in residence districts, where there is no street congestion, is 3.4 m.p.h., the time required to walk the maximum and average distances due to the spacing of stopping points is as set forth graphically in the accompanying curve. From this it may be seen that, with stops spaced eight per mile, the maximum walk for a patron requires 1.1 minutes. With fourteen stops per mile 0.6 minute is required, or a difference of only about 0.5 minute from that required with the stops at intervals of eight per mile.

The increase in walking time as above outlined is, however, much less than the time that is saved through increased schedule speed. By way of illustration of this, Table I has been prepared. This shows the comparative time required for a passenger to be transported for a distance of 2 miles in city service under conditions respectively involving fourteen stops and eight stops per mile. The time necessary to walk tho average distance at each end of the trip is also included on account of the respective spacing of the stopping points. The results show that the passenger actually saves 4.7 minutes in time by walking, on the average, an additional distance of 71 ft. at each end.



RAILWAY STOPS—AVERAGE WALKING TIME FOR PATRONS WITH VARYING NUMBER OF DESIGNATED STOPS PER MILE

Similarly, Table II shows the time required for a 10-mile trip in an interurban car under conditions respectively involving ten stops and four stops per mile. The free running speed is 30 m.p.h. in each case. This shows that a saving in time of nearly twenty minutes is made on a one-way trip by making an average additional walk of less than 200 ft. at each end of the trip. In the event that the maximum walk is necessary for any patron, this is less than two-thirds of the maximum walk required by the rapid transit lines in the great cities of the world.

NECESSITY FOR CONTROL OF STOPS

The necessity for a basis for controlling the frequency of stopping points may be illustrated in another way: It has already been shown that a car in city service making a maximum speed of 20 m.p.h. loses one-half of its schedule time when making eight stops per mile. This gives the car only forty-five seconds between stops. Likewise, an interurban car with a maximum speed of 30 m.p.h. is capable of making a schedule speed of only 15 m.p.h., when required to make four stops per mile, thus also losing one-half the time on account of stops, and giving the car only one minute between adjacent stops. Therefore, if the electric railways are going to give the public more service by means of faster schedules, the spacing of stopping points must be controlled.

As previously stated, there is no standard practice for locating stopping points, the length of block generally being the determining factor. In several American cities there has been adopted the so-called skip-stop plan, by which stops have been made at alternate streets. The most notable progress along this line in any American city has been made in Cleveland, Ohio. Under the direction of Peter Witt, former traffic commissioner, a standard has been adopted of an average of about five designated stops per mile. The plan in that city has proved that this spacing is very satisfactory, both to the public and to the company.

In some cities results have been obtained by operating cars during rush hours on the "limited-stop plan," cars being run from the downtown terminal for considerable distances without making stops to discharge passengers, although passengers will be picked up at any regular stopping point. In some other cities express service is given, the express cars stopping only at certain designated places. In Pittsburgh this has been extended so that some of the important trunk lines are given over to express service at all times.

In the largest cities of the world rapid transit is dependent largely on lines constructed on private right-of-way either above or below the street level. With this exclusive right-of-way it becomes possible to regulate the number of passenger stops to meet the real demands of the service, and the infrequency of stopping places is one of the most essential factors in the successful operation of such railways. The average distances between stopping places on elevated and subway lines in the different large cities are shown in Table III on page 260, the general average for all these lines being two and one-half stops per mile.

In each of the cases cited all local passenger stations are included. In some cities, however, there are express trains which do not stop at all of the stations, and in a few cases, such as New York City, a portion of the track is given over entirely to express service. In the

TABLE I.—PASSENGERS' TIME AS AFFECTED BY STOP SPACING

City service; 2-mile car trip.

Number of stops per mile	14	8
Free running speed of car—m.p.h	20	20
Schedule speed making all stops	7	10
Minutes required to ride	17.1	12.0
Minutes to walk average distance each end of trip	0.7	1.1
Total minutes required	17.8	13.1
Minutes saved by passenger	..	4.7
Average walking distance at each end, in feet	94	165

TABLE II.—PASSENGER TIME AS AFFECTED BY STOP SPACING

Interurban service; 10-mile car trip

Number of stops per mile	10	4
Free running speed of car—m.p.h	30	30
Schedule speed making all stops	9.8	15.0
Minutes required to ride	61.2	40.0
Minutes required to walk average distance each end of trip	0.9	2.2
Total minutes required	62.1	42.2
Minutes saved by passenger	..	19.9
Average walking distance each end, in feet	132	330

TABLE III.—FREQUENCY OF STOPPING PLACES ON ELEVATED AND SUBWAY LINES

City	Distance Between Stops		Average Number of Stations Per Mile
	Feet	Miles	
New York	1,991	0.378	2.65
Chicago	1,820	0.345	2.90
Boston	2,600	0.493	2.03
London	3,100	0.586	1.70
Paris	1,632	0.309	3.24
Berlin	3,200	0.606	1.65
Average	2,112	0.400	2.50

table the figures represent the maximum number of local stops. The demand of the public for real rapid transit is well shown by the fact that these lines are much more popular than the surface lines operating over practically the same route. This demonstrates that the public does not consider it any great hardship to walk considerable distances, and even to climb stairs in addition, provided the service obtained is worth the effort.

STOPS ON SUBURBAN SERVICE

It is frequently difficult to distinguish the difference between interurban and suburban railways. Some are on highways, while others are built on private right-of-way. Often the suburban territory is difficult to distinguish from the city territory, and sometimes the stopping places are as frequent along public highways as on the city streets. A minimum number of stopping places is therefore obtained on high-speed lines built on private right-of-way. Such roads approach, to a great extent, steam railroad practice. The frequency of passenger stops on a number of representative interurban railways is shown in Table IV.

In the early days the importance of the stop question was more fully realized by the steam railroads than by electric lines. Such roads give service with local trains that is of the same character as that performed by the high-grade electric interurban lines. This is also true in suburban territory. The extensive business of this character handled by the steam railroads in the vicinity of Boston, for example, permits them to establish stations approximately 1 mile apart. All of these steam railroads give express service in addition to their local service, and a large number of the patrons commonly wait for the express trains on account of the shorter running time. Nevertheless, analysis makes it evident that the reduced running time of the express trains is attained by reducing the number of stops to a minimum and not by an increase in maximum train speed.

The latest and most formidable competitor of the street railway is the passenger automobile. This operates over the street at a high rate of speed and makes few or no intermediate stops. Thus it has a great advantage, and nearly everyone who can afford it prefers this method of transportation, largely because of its time-saving qualities. Nevertheless good street car service is the cheapest, safest and most comfortable method of transportation for urban and suburban communities, although it has not made the advance during recent years in this respect that could have been expected. As a starter in this direction, there is no one item more important than the reasonable elimination of stops.

REDUCTION AND LOCATION OF STOPS

Toward this end it may be said that the saving of a positive stop, as opposed to a passenger stop, is of much greater value. In no way can the elimination of a positive stop be said to discommode the patron. On the average railway many positive stops can be eliminated without sacrificing anything in the way of safety, and in other cases the loss of time at the necessary positive stops can be reduced. These results may be accomplished as follows:

TABLE IV.—FREQUENCY OF STOPPING PLACES ON INTERURBAN LINES

Line	Distance Average Between Stops		Average ber Num-Stops Per Mile
	Feet	Miles	
Portland & Lewiston Interurban Ry	7,392	1.40	0.7
Boston & Worcester Ry	1,742	0.33	3.0
Providence-Fall River Ry	4,435	0.84	1.2
Buffalo, Lockport & Rochester Ry	5,480	1.04	1.0
Cleveland, Alliance & Mahoning Valley Ry	4,400	0.83	1.2
Twin City Rapid Transit Co	4,805	0.91	1.1
Stark Electric Railway	2,716	0.51	1.9
Galveston-Houston Electric Ry	19,008	3.60	0.3
Denver & Northwestern Electric Ry	2,382	0.45	2.3
Denver & Intermountain R. R.	1,951	0.37	2.7
Grand Junction & Grand Valley Electric Ry.	3,484	0.66	1.5
Salt Lake & Utah Railway	10,085	1.91	0.5
Central California Traction Co	4,600	0.87	1.2

At steam railroad crossings the car should be stopped if required by law, but the flagman on duty can in most cases give the proceed signal and save considerable time. This will eliminate the necessity of conductors leaving their cars. Automatic stops can be used to set the brakes at drawbridges when the span is opened or when not properly closed. Also, electric switches can be employed at all important stopping points. Cars on the main line should always be given the right-of-way at crossings and junctions, while warning signs can be placed on highways at approaches to the tracks and at blind alleys and the like.

Signals might well be used at fire stations when an alarm is given, and automatic signals should be generally substituted for hand-operated signals on all important lines, more automatic signals being installed on single tracks. In some cases double track can be substituted for single track to good advantage merely because of the opportunity to eliminate positive stops.

With regard to the location of passenger stops it may be said in general that stopping points should be established at intersecting streets or crossroads, but not necessarily at every such intersecting street. So far as possible stopping points should be spaced at equal intervals and where they will best accommodate patrons. Where a fixed stop is necessary it should, if possible, be made a passenger stopping place also, thus eliminating one stop.

Stops should not be made on single track if in close proximity to double track or sidings where one car may delay another. Stops should be made only where other cars may be clear in passing and not on switches, curves or crossings.

In all cases the track space where passengers should stand ought to be plainly indicated at each stopping point. This location should be opposite the car entrance and not across the intersecting street, nor even 15 ft. away, because one second is lost for each 5 ft. that has to be walked by the passenger after the car stops.

Conditions in each city naturally prevent the establishment of any general rule for universal application. However, as a minimum basis for determining the spacing of passenger stops, it may be said that in thinly populated territories an average of eight stops per mile (spacing of 660 ft.) is a reasonable figure.

The minimum spacing for the congested business districts may be set at ten stops per mile (spacing of 528 ft.).

In the residential sections of cities and in suburban districts a figure ranging between eight stops and five stops per mile (spacing of 660 ft. to 1056 ft.) may be used, the greater spacing being adopted as frequently as practicable.

In suburban districts the closest spacing allowable where any semblance of interurban service is to be maintained is four stops per mile (spacing of 1320 ft.).

The spacings above have been recommended as reasonable for the various kinds of territory stated and are placed far enough apart to allow maintaining reasonable schedules. It is not believed that there is any necessity of using closer spacing of stopping places except under unusual conditions. With the adoption of such spacing of course the probability of making every stop is increased. However, the fact that the car will not stop at intermediate points is of greater value in making up time-tables than the possibility of passing a stopping place when traffic is not heavy, because the time-table department cannot count on any definite number of stops in the more congested portions but must make the running time or the lay-over sufficient to allow for at least a large portion of the stops being made on each trip. The elimination of unnecessary stopping places is probably the most important move that can be made toward improving schedules, whether for congested street traffic or interurban lines.

Another Increase for Massachusetts

Commission Allows Milford & Uxbridge Street Railway to Increase Fare Unit to Six Cents and Raise Workmen's Rate

A GENERAL increase in the fare unit from 5 to 6 cents, and the substitution of morning and evening workmen's strip tickets at twenty for $1 for existing reduced rate tickets, were sanctioned by the Massachusetts Public Service Commission on Aug. 9 for the Milford & Uxbridge Street Railway. The company's petition was filed on May 5, 1917. The commission suspended the operation of the new schedule, proposed for June 4, until Aug. 10.

The main line of the Milford & Uxbridge is 20 miles long, extending from Framingham depot through Holliston, Milford and Hopedale to Uxbridge, with a branch from Milford to Medway, 7.5 miles, and from Milford to Hopkinton, 6.5 miles. Between Framingham and Milford the road is paralleled by the Boston & Albany Railroad, and other parts of the line compete directly with steam railroads. Milford and Framingham together have a population of about 30,000. The remainder of the territory is thinly settled.

In addition to the above owned lines, the company operates under lease the Medway & Dedham Street Railway, about 20 miles long, and provides cars, crews and power for the Grafton & Upton Railroad, 15 miles. No increases were proposed for the leased lines, on which the present 5-cent rate amounts to about 2 cents per mile.

The outstanding capitalization of the Milford & Uxbridge Street Railway on Jan. 1, 1917, was: common stock, $440,000; preferred stock, $100,000; bonds, $500,000, and notes payable, $53,500; total $1,093,500. The permanent property investment is about $32,500 per mile, which the commission holds to be reasonable. About two-thirds of the floating indebtedness represents property improvements and additions or replacements.

Dividends on common stock for the last fifteen years have averaged about 3 per cent. Regular 6 per cent dividends have been paid on the preferred stock since 1912. This, however, does not fully indicate the return received by security holders. In 1907 the Milford Investment Company was organized and took over most of the company's floating debt, amounting between 1907 and 1910 to an average of about $185,000. This was finally paid off by issues of preferred stock. During much of the time the interest paid to the investment company was 9 per cent; the remainder of the time, 7 per cent.

The net income of the company last year was $28,811, substantially the same as for 1915, but considerably less than for 1910-1911, 1911-1912 and 1914-1915. For the first five months of 1917 the operating income of the owned lines fell short $1,840 of expenses and fixed charges. For the same period of 1916 there was an excess of $3,955. Moreover, during the last ten years power was sold to the central station in Milford at a profit of about $7,500 a year but now this revenue is cut in half and will disappear in December. Steam railroad competition has been a severe handicap, and the company has been hit by the present high cost of materials.

The commission's inspection department found the physical property, as a whole, well maintained. In fixing the amount which ought to be set aside for depreciation, the company set the following percentages: Rails, 3 per cent; power stations and equipment, 4 per cent; rolling stock, 2.5 per cent; buildings, 2.5 per cent, these being applied to the book value of the several properties. The company stated that it never had been able to set aside a sufficient amount for depreciation. On Dec. 31, 1916, the accumulated total was only $7,299, when it should have been $255,000.

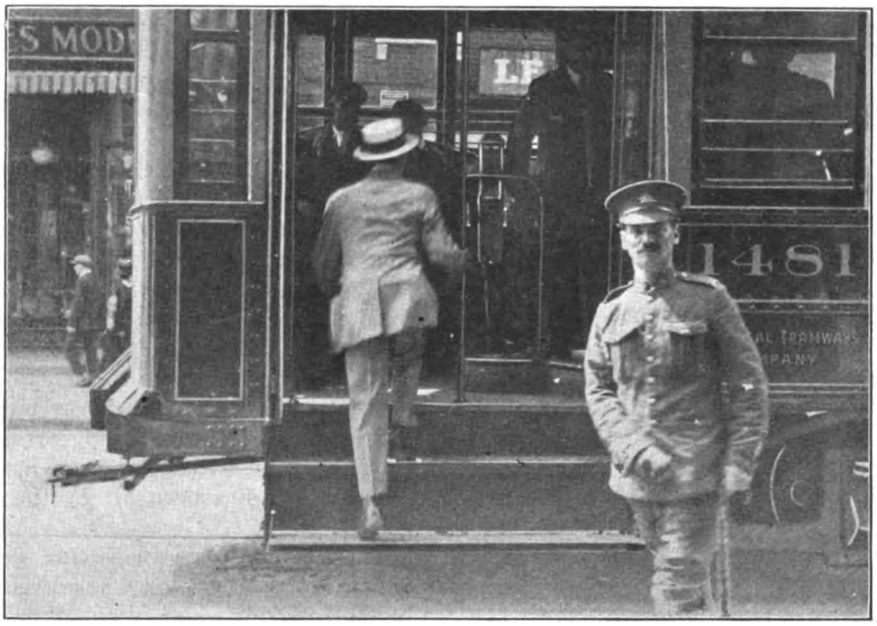
The company estimates that the new rates will yield $45,042 added revenue a year, at the maximum, but that it may not exceed $31,000. The former estimate is based on the assumption that riding will not decrease, while the latter is based on a 15 per cent decrease deduced from the experience of other roads making like unit increases. The commission says it is usually less, rather than more than 15 per cent. The increase, it is said, should be sufficient to provide annually for 6 per cent dividends and $15,000 added depreciation.

Act to Control Trespassing Passed in Connecticut

For many years Connecticut has been among those States in the country that have not by law attempted to prevent the unnecessary waste of life due to trespassing upon railway right-of-way. The Connecticut Legislature has recently passed, however, and Governor Holcomb has just signed, a bill that should do much to eliminate the evil in that State. The bill is an amendment to Chapter 202 of the public acts of 1905. A fine or imprisonment, or both, are provided for violation of the provisions of the act.

Montreal Adopts Air-Operated Doors and Steps

The Montreal Tramways, Pioneer in Prepayment, Has Now Taken the Lead in Adopting Air-Operated Door and Step Control Throughout for All Service, to the Advantage of the Public, the Platform Men and the Railway



MONTREAL DOOR EQUIPMENT—VIEW OF REAR PLATFORM ON REMODELED CAR

THE decision of the Montreal Tramways to equip practically all of its active cars with pneumatic door and step control is a whole-hearted recognition of the fact that the earning power and comfort of a car can be greatly enhanced by the largest possible use of automatic equipment.

Although the pioneer in the use of prepayment since 1905, it is a curious fact that the Montreal Tramways did not find it necessary to go to the inclosed vestibule car until 1914, at which time it placed twenty-five motor cars and twenty-five trailers in operation on St. Catherine Street, the chief traffic artery of Montreal. Of course, when the long rear platform of the earlier cars was open, no door-operating mechanism was required since the passenger operated the swinging entrance and sliding exit body doors themselves. With the introduction, however, of closed-vestibule cars in center-entrance, front-exit train service, it became evident that the value of such cars would be greatly increased by a faster door and step mechanism.

The burden which manually operated equipment placed on the conductor may be judged from the fact that in a round trip of one hour and forty-five minutes a conductor on the St. Catherine Street line might have to open and close doors for a total of 232 stops. During the rush hours, furthermore, the regular headway of two minutes is cut to thirty seconds on the section between Bleury Street and Victoria Avenue. Under these circumstances a saving of two seconds per stop, due to air operation, can prove an important factor in reducing congestion and in speeding up the schedule. Also, as one Montreal official put it: "When a conductor is opening or closing a door by hand he is failing to do something else, such as helping a passenger or collecting fare."

The new arrangement of rear entrance features was developed by Col. J. E. Hutcheson, general manager, with the assistance of A. Gaboury, superintendent, and D. E. Blair, superintendent of rolling stock. After a careful study of loading and unloading conditions, and taking into account the severe temperatures to which the occupants of the open platforms were exposed, a decision was reached as to what arrangements would best suit the situation. The mechanical department then proceeded to develop details, which seem to be of a simple and practical nature. Care was taken that the innovations had due publicity in advance, so that the public was both interested and pleased when the first cars were changed over. On completion of the first improved car, representatives of the City Council, as well as from the different papers of the city, were invited to a demonstration, which proved very satisfactory.

The company had remarkable success in securing wide publicity for the innovation, both with the men and the traveling public of Montreal. The clippings from the English and the French newspapers of Montreal, of which one of the latter is reproduced, show how cleverly an improvement in equipment can be used for the direct promotion of good public relations, as well as reminding the car men in an indirect way of what the company is continually doing for their welfare.

On March 28, 1917, the railway equipped car No. 1476 with the National Pneumatic Company's type OA-M 2⅝-in. x 4½-in. engines which were adjusted to permit the doors to open in 1.4 seconds and to close in 1.6 seconds. These periods cover the complete cycle from the first movement of the operating lever to the end of the door movement. The stroke of this engine is the same for all lengths of door as the size of the exhaust ports can be adjusted to control the speed of operation, thus greatly simplifying the adaptation of the same air engine to various styles of cars.

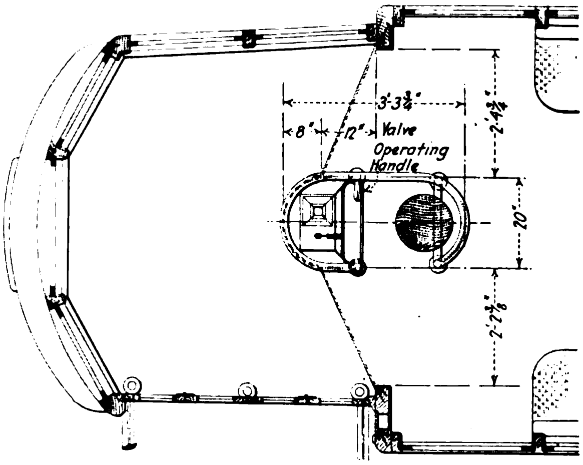
This pioneer car was paired with one of similar type, No. 1474, which had been equipped in August, 1915, with manual control to see whether such control was feasible for cars with 7-ft. platforms. However, the pneumatic equipment proved so satisfactory that the company decided to place the same engine on 590 modern cars and on the 100 new cars for the forthcoming six-motor, two-car train service. While the engines will be furnished by the National Pneumatic Company, tariff conditions made it desirable for the railway to manufacture some parts itself, particularly the step mechanism which has been modified to permit the clearance of a 12-in. depth of snow and ice.

At this writing eight cars are already being operated with pneumatic door and step control, and parts are in hand for ninety-three more. Cars of the 1425-1524 series, as illustrated, which have 7-ft. platforms inclosed with folding doors, are being converted at a cost of about $175 each. While the existing cars for train service have simple light signals to indicate the closing of the doors, the 100 new cars for train operation will carry the National Pneumatic Company's safety interlocking door control, which is interlocked with the control system.

DOOR AND STEP ARRANGEMENT

All Montreal cars are of the two-step type, and of these steps the upper one is stationary and the lower one folds. The vestibule doors are not swung against the bottom step, but against the edge of the platform, leaving the upper step partly exposed. The main reason for doing this was that carhouse contours would be cleared even with the doors opened, whereas if the doors were on the outside edge of the second step there would be a danger of damaging door or step should a car inadvertently be pulled in with doors open. Again, on several types of cars, if the doors were to be outside of the steps it would be necessary to build out at the vestibule rail in order to get a door post.

In practice, nobody tries to get on the exposed step as it is narrow, and there are no outside grab-handles. Furthermore, the window nearest the bulkhead is closed permanently so that reckless passengers cannot get an arm over the window sill.



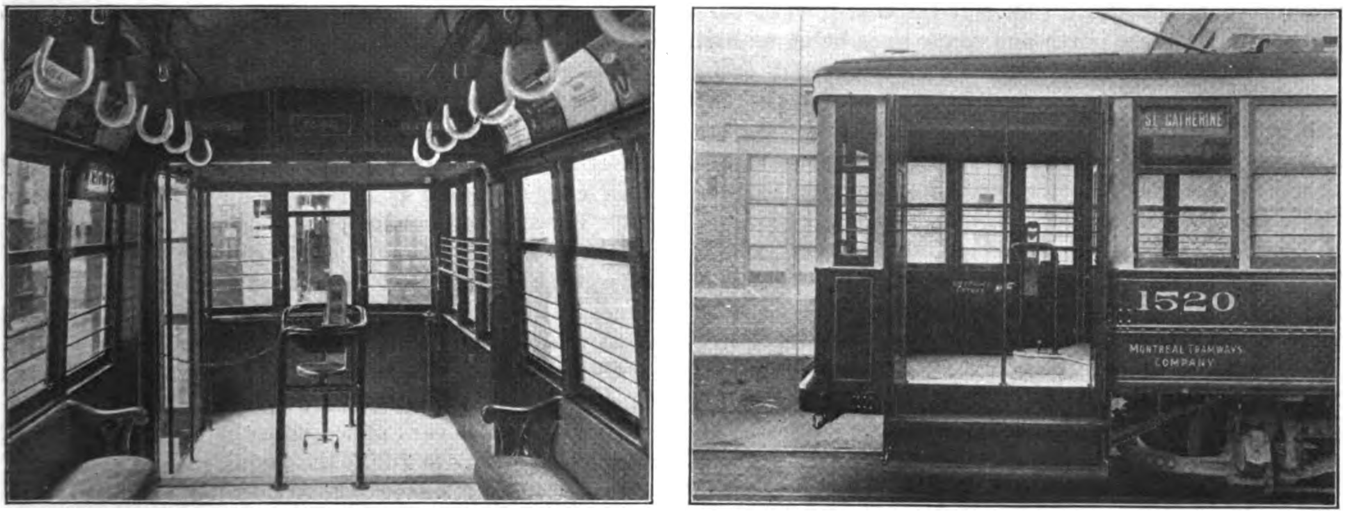
MONTREAL DOOR EQUIPMENT—PLAN OF PLATFORM SHOWING ARRANGEMENT OF FARE BOX AND CONDUCTOR'S SEAT

The successive rises from the ground to the car floor are: to first step, 16 in.; to second step, 9½ in.; to platform, 9½ in., and platform to body of car, 6 in.

IMPROVING THE CONDUCTOR'S POSITION

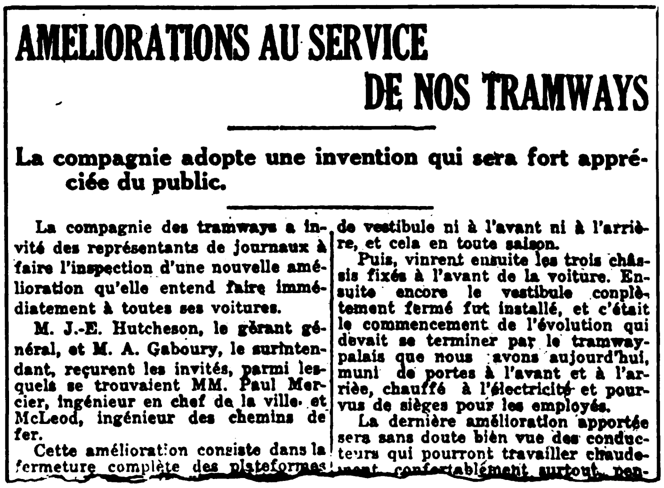
Aside from providing the conductor with the convenience of pneumatic door and step control, the Montreal Tramways has gone still further. As shown in both drawing and halftones herewith, the conductor now stands on a railed peninsula which projects 18 in. outward from the bulkhead line. This peninsula is 6 in. above the platform floor and level with car floor, thus placing the conductor well above the head of his platform passengers and giving him better supervision over them. There is also ample aisle room on both sides of the peninsula for inward and outward passengers.

By this arrangement the conductor is free from all



MONTREAL DOOR EQUIPMENT—INTERIOR AND EXTERIOR VIEWS OF PLATFORM EQUIPMENT jostling by entering or departing passengers, and is in a commanding position to see all that is going on. The opening in the railing at his side allows him to step down quickly to help a passenger up. He may also extend a chain barrier across the exit should that be necessary.

Both the push buttons and the door-operating handles are so placed so that the conductor can give the stopping signals and open the doors without turning around, the mere closing of the doors being in itself the starting signal. The conductor can collect fares while seated on his folding seat since the railing carries either a Coleman or Cleveland pillar-type non-counting fare box, a table for making change and a compartment below the table for transfers, punch and other supplies. The pillar-type fare boxes, of course, may eventually replace the portable style now common in Montreal.



AMELIORATIONS AU SERVICE DE NOS TRAMWAYS

La compagnie adopte une invention qui sera fort appréciée du public.

La compagnie des tramways a invité des représentants de journaux à faire l'inspection d'une nouvelle amélioration qu'elle entend faire immédiatement à toutes ses voitures.

M. J.-E. Hutcheson, le gérant général, et M. A. Gaboury, le surintendant, reçurent les invités, parmi lesquels se trouvaient MM. Paul Mercier, ingénieur en chef de la ville et McLeod, ingénieur des chemins de fer.

Cette amélioration consiste dans la fermeture complète des plateformes de vestibule ni à l'avant ni à l'arrière, et cela en toute saison.

Puis, vinrent ensuite les trois châssis fixés à l'avant de la voiture. Ensuite encore le vestibule conplètement fermé fut installé, et c'était le commencement de l'évolution qui devait se terminer par le tramway-palais que nous avons aujourd'hui, muni de portes à l'avant et à l'arrièe, chauffé à l'électricité et pourvus de sièges pour les employés.

La dernière amélioration apportée sera sans doute bien vue des conducteurs qui pourront travailler chaudement confortablement surtout pen-

MONTREAL DOOR EQUIPMENT—HIGHLY COMPLIMENTARY REPORT ON INSTALLATION BY LOCAL NEWSPAPER—READ IT FOR YOURSELF

THE NEW SIX-MOTOR TRAINS

A most interesting development in connection with the adoption of air-operated doors and steps is their early use on fifty six-motor (of 330 hp.), two-car trains now under construction. Each train will consist of a four-motor leader and a two-motor trailer, and will be operated on the hilly north and south lines, where four motors would not afford sufficient traction for two cars, the grades on these north and south lines being as high as 13 per cent. Flexibility, convenience and easier handling of the semi-trailers in and out of the carhouse for rush-hour make-ready were other factors. The equipment specifications of these cars were published in the ELECTRIC RAILWAY JOURNAL for April 7, 1917, page 673.

The use of six motors for a train of two cars, of multiple unit control, of air brakes, of safety interlocking door control and of air operated doors and steps place Montreal in the front rank of American electric railways for reliability and safety in metropolitan railway operation.

During the last twenty-four months nearly 30,000,000 passengers have been carried on the electric railway lines of the Southern Public Utilities Company, Charlotte, N. C., without a single accident.

One-Man Cars for Massachusetts

Résumé of Two Cases Shows Experts of Public Service Commission Favor Their Use

THAT the operation of the one-man car is regarded as a measure of relief in Massachusetts is evidenced by two recent applications for the Public Service Commission's sanction for their use on "lean" lines. A petition of the Concord, Maynard & Hudson Street Railway for their use on the Acton branch has been granted by the commission, the stipulations being that "when the car is running the operator shall transact no business relative to the collection of fares or the issuance of transfers, and if the operator has occasion to leave his post, he shall remove and retain in his possession the reverse handle of the controller."

The type of car approved is similar to that used at Sedalia, Mo., and is built by the American Car Company, St. Louis. It has a seating capacity of thirty-four, and is equipped with automatic safety appliances. It is mounted on a single truck, and its length over bumpers is 30 ft. 1 in.

The petition filed with the commission on Aug. 3 by the Bay State Street Railway, seeks permission to operate nineteen one-man cars on fifteen different routes, in Revere, Salem, Danvers, Beverly, North Reading, Haverhill,, Quincy, South Braintree, Randolph, Weymouth, Dedham, Hyde Park, Milton and Taunton. Several of the lines are beach resort routes, and for these it is proposed to operate the one-man cars in winter only. The company states that it has constructed two one-man cars with double-end control, of slightly different design. These have been inspected by members of the commission's inspection department. George W. Bishop, chief of the department, indorsed the request of the road, provided the same stipulation as that made in the above-mentioned decision be included in the commission's order. A public hearing on the petition was to be held on Aug. 15.

One of the cars, numbered 7000, was built by the American Car Company. It has cross seats accommodating twenty-eight persons and weighs about 15,300 lb. It has a single truck with wheelbase of 8 ft. and wheels 24 in. in diameter, and is equipped with two GE-258 motors and folding Pfingst fenders. The other car, numbered 7500, was originally built by the Jones Manufacturing Company, but has recently been rebuilt by the Bay State Company. It has longitudinal seats for twenty-six persons and weighs 21,540 lb. It has a single truck, with 6-ft. 6-in. wheelbase, and 33-in. wheels. It is equipped with two GE-67 motors. There are two trolleys and folding Pfingst fenders.

Both cars have two doors, one on the right side of each end, and each is arranged for prepayment service. The controller handle is of the "dead man" type. The cars have combination straight air and automatic emergency brakes and also hand brakes. The emergency features consist of an interconnection of the power, sand and automatic air brake with the opening of the forward door and the unlocking of the rear door. These emergency features are operated by air.

"Both of these cars appeared to be properly equipped and in condition to fulfill the requirements claimed of them," reported Inspector Arthur W. Hodges. He knew of no conditions which would prevent them being operated on the Bay State lines specified in the petition.

What a Publicity Bureau Could Do

The Need of Its Service in Helping the Public to Understand the Present Electric Railway Situation Is Emphasized—The General Principles Which Should Guide Its Work

By IVY L. LEE

ENORMOUS and rapidly accelerating costs of materials and labor are threatening the very corporate existence of numerous electric railway companies. Their only hope is to convince the public, which regards the historic nickel fare almost as a constitutional right, that the electric railways have not only, in all justice, a right to greater revenues, but—more important—if revenues are not increased electric railway service and facilities must be generally cut and in some cases suspended and the public itself will be the sufferer.

In the last analysis the future of the electric railway service depends upon public opinion. Courts, commissions and legislatures, consciously or unconsciously, register the views of the public. This will continue to be so. The public *en masse* of course cannot be constructive, but it is equally sure that individuals representing that mass will not be constructive beyond a point which that public desires that its representatives should go.

If this view is correct, not much progress is made by efforts to persuade individual members of commissions or legislative bodies. Such individuals are like fountains, unable to lift their waters higher than the original reservoir from which they flow. They merely register the original level of public opinion.

If the electric railway problem is to be solved, therefore, the appeal must be primarily to the public. It should be quite frankly so. The appeal should not be made to the public as against any created organization or commission, but to the public in favor of a sound general viewpoint. When the individual legislators or commissioners realize that the public has this sound viewpoint, such individuals will give expression to it in specific and constructive acts.

It is essential, then, that the appeal of electric railways should be to the public, and that the purpose of the appeal should be to inculcate in the public mind a sound general attitude toward the electric railway situation.

II

Electric railway officers generally are agreed that everything feasible should be done to cultivate public good-will. Some of these officers are conducting their daily work with that thought in mind. Others have sought to interpret their enlightened viewpoint not only in deeds, but in speeches, consultations with trades bodies and private interviews. Yet the great mass of the people are apparently unmoved, and there is no real comprehension on the part of the public of the actual situation with which the electric railways are face to face.

The real question before the electric railway companies is: *"In what manner can revenues be raised sufficient to meet the expenditures which the public demands?"*

It does not seem debatable that any plan of action which can accomplish these results legitimately will be approved by the public at large, no matter what criticism may be made by individuals here and there.

A large number of electric railway officers feel that not only do the people fail to understand the fare situation, but that they cannot be made to understand it. This seems to be a counsel of despair, for the chaotic condition in which the railways are now placed is due in large measure to the ignorant ideas which have been instilled in the public mind, and especially to generalizations which have been arrived at on account of certain exposures which have been made of practices which either merited or received public criticism. We are certainly never going to find our "way out" if we concede that darkness must of necessity encompass us.

III

It is absolutely necessary that the public should really be shown that there is something wrong with our system of fixed fares totally unrelated to fluctuating costs of providing service. When the public once really sees this and feels that this is unsound and threatens their transportation facilities, then we can depend upon legislatures and commissions to take hold of the situation and work out constructive details.

It would have been futile to have gone before the public with a propaganda on behalf of a system of regional reserve banks, if the public had not beforehand come to realize quite clearly that something was wrong with our banking system.

Whatever differences of viewpoint there may be on details, electric railway men are almost unanimous in their agreement that there are specific evils in the present situation—common to all companies in the United States—on which a central bureau could do most effective work. The pressing question of the moment is the emergency brought about by the rising tide of costs of materials, taxes and labor. To meet that, the roads are asking that the historic 5-cent fare be disregarded and that 6-cent fares be permitted.

But it would be of much more importance to establish a new principle in the electric railway business, namely, that no particular sum be established as a fixed rate, but that just as in gas, water or electricity service, rates and costs be established in a just relationship, based on the right of a fair return upon the value of property actually used or useful in the public service. For not until this principle is recognized will the interests of all, stockholders, investors and public, be conserved. In short, a fixed 6-cent fare is no more sound than a fixed 5-cent fare.

Again, the absolute inequity of the paving tax, inherited like the nickel fare, from the days of the horse car, is a subject on which a central bureau can do effective work.

Just at present there is a tendency on the part of commissions, in reflection of unintelligent public sentiment aroused by mistakes or misdeeds in previous street railway eras, to adopt primitive measures and permit drastic steps totally subversive of public interest.

There never is a time, indeed, when there are not general questions concerning which the public in all parts of the country need enlightenment and intelligent information.

The propositions for municipal ownership of the electric railways will require the best thought and most intelligent handling. A central bureau could do general work of the utmost value upon this.

But whatever the proposition that is to be laid before the public, it must be done through concrete statement and illustration—clearly, persistently, frankly and in good humor. Then the public will come to see that something is inherently wrong in the situation. Once the public sees that, we can depend upon Congress, state legislatures, municipalities and commissions to take hold of the problem, and, in co-operation with railway officers, work out its solution.

The conversion of the American people to a sound point of view concerning the electric railway problem is too great a task for any man or set of men. Also, there are many views as to what would constitute an absolutely sound point of view; and, of course, what will happen in the long run will be that the American people as a whole will have to grow into the possession of this sounder attitude.

But there are certain essentials of truth concerning which it is both necessary and possible that the people should be informed, clearly, continuously and persistently. It is equally necessary that the process of enlightenment should not be either directed or controlled by any man or set of men, but that it should be going on all the time, and that, wherever necessary, the most effective means possible should be available to give the work direction and impetus.

Anyone who has visited England knows how cold the houses there are. Fires are burning in some of the rooms, but the general condition is chilly. That is to-day the state of the popular atmosphere with reference to the electric railways in this country.

But there are English houses equipped with what they call "central heating plants." Such plants carry hot water or steam heat into the halls. Sometimes there are pipes into the rooms. But each room usually has its own fires; though, if desired, the steam or hot-water heat may also be turned on. If all the fires were burning, and all the radiators turned on, the house would be hot.

Now a central publicity bureau should serve as a power plant for a "central heating system" of ideas designed to develop sympathy and understanding by the public concerning the electric railway problems.

The "central heating plant" would not be doing all the work. Separate fires would be burning in the rooms of the different roads, and the heat could be turned on locally only when wanted. But the boilers would always be at work, and the halls would always be heated, diffusing warmth continually into those rooms where there were no fires at all.

IV

Supposing a central publicity office to have been established to inform the public on the real plight of the electric railways facing rising costs with a fixed fare.

The first problem is how to get this situation before the public. Some headway is being made with public sentiment, but it is slow. I do not believe it can be fast, but I do believe it can be made increasingly effective.

Let this bureau serve as a central office. Under its direction there will be compiled various material, showing by facts and figures, simply stated, the evils of the situation. This material will be in typographical form designed to appeal to many different classes of the community. There should be leaflets, dodgers, matter for newspapers, for lyceum lecturers, for distribution on cars, etc.

In such a campaign it is vital not only to prepare good material which will attract attention and inculcate sound ideas, but to see to it that the material gets to the people.

In the distribution of material the existing organizations of the electric railways should, so far as possible, be utilized. There should be on each railway some designated individual to receive the matter prepared and distribute it over his line to officers and influential employees. Everybody should be made to understand clearly the sole intent and design, and employees should be asked to co-operate. Someone would be expected to see to it that this material got into the hands of the local press and influential citizens.

In addition, the central bureau should distribute certain material direct to a mailing list which could be developed—to include members of Congress, state legislators, mayors of cities, councilmen, presidents of colleges, economists, bankers, writers, lecturers, clergymen, etc. All material sent to this list should be in the name of an executive committee; all matter distributed by individual railways should be in their names. Everything sent out should have a responsible source.

At the headquarters and, wherever possible, by electric railway officers generally, relations should be cultivated with writers, newspaper correspondents and others of influence with a view to seeing to it that they are supplied with accurate data. The material collected by the various bureaus for electric railway economics could be drawn upon freely. In this way, writers of books, magazine articles, editorials, etc., could be provided with information.

It should be the function of the central bureau to keep in touch with the work of the various organizations which are studying electric railway problems, also institutions, such as the American Bar Association, which are urging uniformity of law. The purpose should be to harmonize and bring about co-operation between all interested agencies.

The bureau should be in constant correspondence with electric railway officers all over the United States, whose co-operation would be solicited in the collection and presentation of significant facts and data relating to the existing situation. Many companies and their officers have compiled general matter which would be decidedly illuminating if it could be made clear to the public at large.

V

Certain general principles should be rigidly adhered to in this entire campaign:

1. The source of all printed matter circulated should be made known. In fact, every act should be taken in the full light of day, frankly as a matter of duty not only to investors, but also to the public. Not a letter should be written, not a dollar should be spent, not a line should be printed which the electric railways would not be glad to make known to anybody interested.
2. Expenditures should be restricted to payments for advertising, printing, postage and necessary salaries and expenses in connection with work actually performed.
3. There should be no personalities or criticisms of commissions, individual commissioners, or anybody in public life; similarly, there should be no attacks, direct or indirect, upon labor organizations or leaders.
4. It should be the policy to restrict whatever was published to data contained in official records. Certainly every fact stated should be carefully verified before publication, although statements of fact should not be colorless, but put forward in a manner to carry conviction.

VI

Manifestly, such a plan as that outlined could not start in full bloom. There should be no occasion for haste. The wisdom of each step taken should be carefully considered. If the plan as it progresses proves to be helpful, it will grow. Individual companies will in addition themselves work out ideas suitable for presentation to their local constituencies.

Each company should itself defray the expenses incidental to its individual work. In so far as the bureau is concerned, the scheme should be financed as it progresses. Expenses at first should be small. If results justify their growth, the money will be seen to have been well spent as the work continues.

Experience with such matters would indicate that a campaign conducted along the lines indicated should prove relatively inexpensive. If a few clear-cut ideas are put into real circulation, the automatic fermentation they will produce will keep the situation active. The public will catch the idea and take hold of it on its own account. It isn't the mass of publicity work that counts; it's the quality.

VII

Some of the merits of the foregoing plan may be suggested:

1. It does not assume to direct or restrict what any electric railway management or officer may do on his own account. The subject is too big, the task too great, for that. Every earnest effort anywhere should be encouraged.
2. It does assume to keep the fires burning everywhere on the essentials, and especially on the transcendent essential that the vital necessity of the business is adequate revenue.
3. It is adaptable to changing conditions. Under it there may be co-operation in connection with publicity for increased fare, for labor arbitrations, etc.
4. It aims to co-ordinate, to energize and to work with every agency, every interest—and for the widest public advantage—which is concerned or active in the working out of this problem.

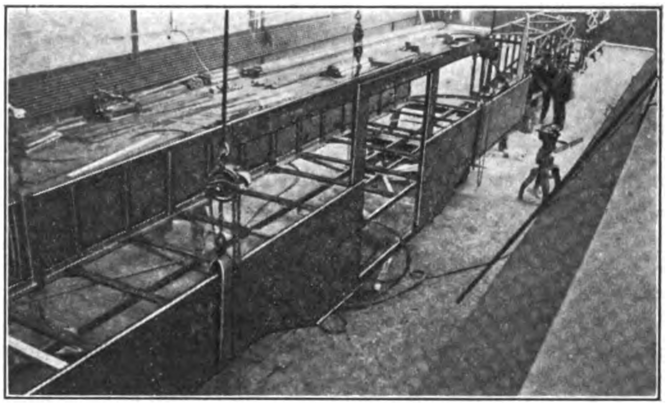
The present situation is undeniably bad; it cannot be remedied too soon. It will take time to get results, but that will be as true to-morrow as it is to-day. An energetic campaign ably conducted along the lines suggested should produce gratifying results at a cost which should be negligible in the light of the good accomplished.

Semi-Steel Trailers Built by Cleveland Railway

The Company Has Undertaken the Construction of Twenty-five Cars in Its New Harvard Avenue Repair Shops

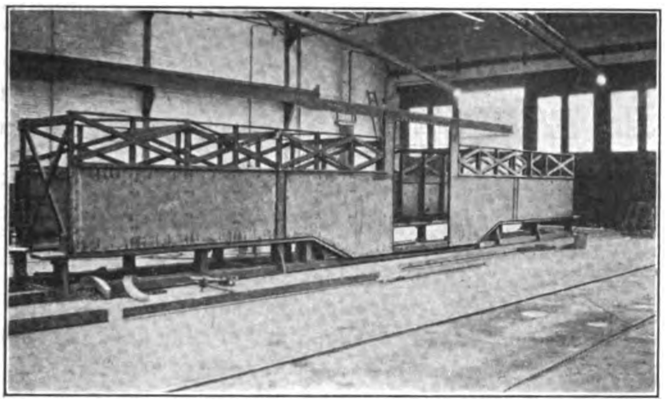
RECENTLY the excellent facilities provided in the new Harvard Avenue shops of the Cleveland Railway tempted the railway officials to undertake the construction of twenty-five 49-ft. semi-steel trail cars, and from the mechanical standpoint this venture has been entirely successful. However, inasmuch as the entire order is not completed, it is not possible to compare cost figures.

For the new cars the under frame is constructed with 4-in. channel center sills and crossings, diagonally braced at the bolsters with steel bars. The side of the car below the windows is constructed as a steel girder with a 4-in. x 4-in. x 5/16-in. angle as a lower member and a ⅜-in. x 3½-in. bar as an upper member, a ⅛-in. steel plate being in between. The channel crossings rest on the horizontal leg of the 4-in. x 4-in. angle, and are secured thereto by large 3/16-in. gusset plates. The ⅜-in. x 3½-in. bar is inside the side plates, which are flanged at the upper edge to give transverse stiffness. The posts are secured to the ⅛-in. side plate by ⅛-in. x 1¼-in. x 1¼-in. angles.

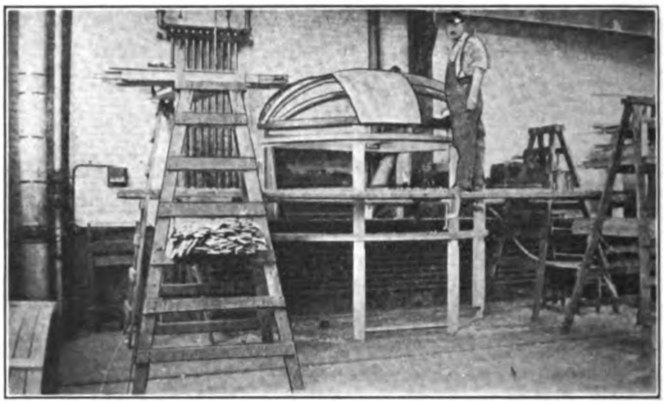


CLEVELAND SEMI-STEEL TRAILER—SIDE GIRDERS IN JIG SUBSEQUENT TO RIVETING AND READY FOR REMOVAL

The roof of the car is of the railway company's standard contour plain arch type. It is built on steel carlines cut from No. 14 sheet steel. At the upper edge of the carline a 1-in. x 1-in. wood strip is bolted, to which the roof boards are nailed. At the lower edge of the carline another wood strip is bolted, to which the headlining is fastened.

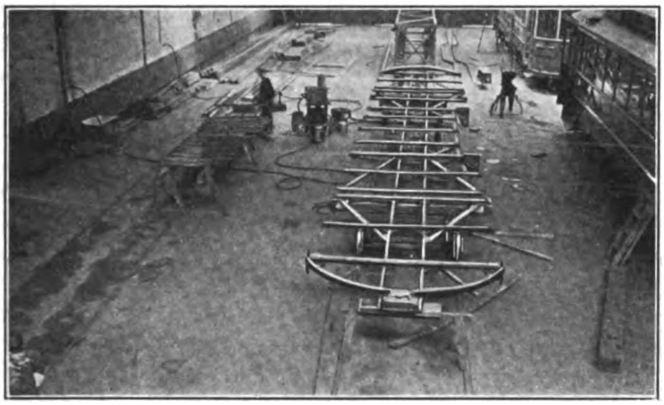


CLEVELAND SEMI-STEEL TRAILER—SIDE GIRDERS BEING SWUNG INTO PLACE PRIOR TO RIVETING TO FLOOR FRAMING



CLEVELAND SEMI-STEEL TRAILER—CONSTRUCTION OF VESTIBULE FRAMING IS SEPARATE UNIT

The floor of the car is fastened to wood fillers, placed between the flanges of the 4-in. channel crossings. It is covered with the usual mat strips running lengthwise with the car. In addition to these, three strips of Kass Safety tread are placed in the aisle to prevent slipping of passengers' feet.



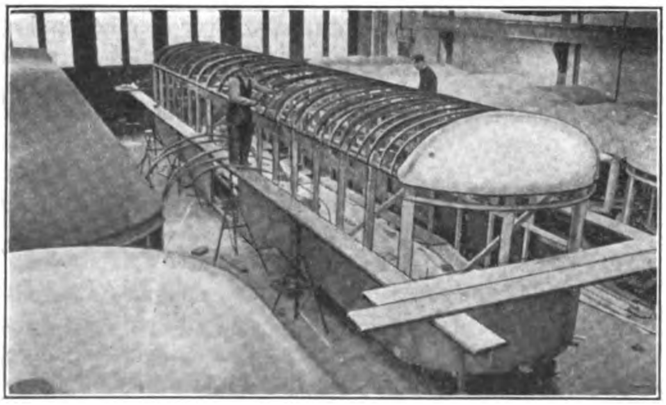
CLEVELAND SEMI-STEEL TRAILER—FLOOR FRAMING ASSEMBLED AND READY FOR ATTACHMENT OF SIDE GIRDERS

Brass sash are used, dropping into pockets between the longitudinal seat backs and the outer wall of the car. The doors are of wood and are arranged to slide into pockets at each side of the doorway, being operated by National Pneumatic door engines. The engine valves are controlled by means of levers and rods, connected to a handle under the money table of the fare box stand. The center window in each end of the car is arranged to be lowered by small increments, Cleveland Trolley Supply Company's sash locks being used for this purpose. This arrangement will give additional ventilation. The interior finish of the car is dark cherry. The seats are upholstered with rattan, over wood frames. The posts are of ash, and miscellaneous framing is of Georgia pine.

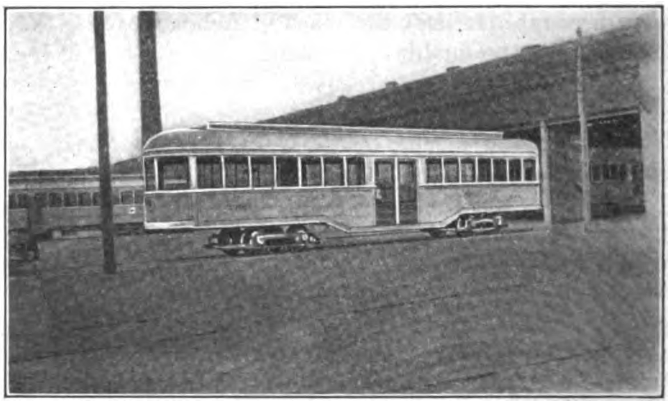
Other equipment used on the cars include Consolidated signals, Cleveland fare box, Nichols-Lintern indicating tail lamps, Peter Smith heaters, Brill 67-F trucks, Tomlinson couplers, Westinghouse semi-automatic air brakes and Agasote headlining. The curtains are of printed duck, mounted on Curtain Supply Company's fixtures. Twenty-two-inch wheels are used, permitting a floor height of 29½ in. The car has seating capacity for sixty passengers.

For the construction of the car bodies the engineering department at the shops furnished the detail drawings for the cars and supervised the initial stages of construction. After material for the work was gotten out, the center sills and crossings were assembled on dummy trucks. The side girders, which were built on a form, or jig, were then hoisted into place at the ends of the crossings and riveted thereto. The posts at each side and the vestibules were then inserted, having previously been assembled in units. The roof was built on the car and the vestibules installed as units.

Throughout the work the shop force was divided into different groups, each being responsible for its part of the work of construction. Weight and cost figures, which are not available at present, will be published at a later date.



CLEVELAND SEMI-STEEL TRAILER—ROOF AND SIDE FRAMING OF CAR DURING INSTALLATION OF INTERMEDIATE CARLINES



CLEVELAND SEMI-STEEL TRAILER—VIEW OF COMPLETED CAR SHOWING ENTRANCE AND EXIT DOORS AT CENTER

Experts Testify to Increased Costs

Authoritative Evidence Presented New York Second District Commission to Show Burden of Higher Material and Labor Costs on Electric Railway Industry

IN amplification of the news account in last week's issue the ELECTRIC RAILWAY JOURNAL has secured from the record before the Public Service Commission for the Second District of New York the details of the general evidence presented in the pending fare cases of twenty-eight electric railways. This evidence, which was introduced at Albany by the committee on ways and means to obtain additional revenue of the New York Electric Railway Association, is an unusually authoritative statement, made under oath before a public tribunal, of the course of prices within recent years. The testimony should attract wide attention throughout the country, both because it was delivered by some of the leading figures in the supply field after careful special preparation, and also because it is generally applicable throughout the country.

Practically every form of material and every class of labor has largely increased in cost in the last five years, and more especially in the last twelve months. It was the consensus of opinion of the witnesses that the end has not yet been reached and that further increases in costs in most lines seem probable. No witness testified that there would be any decrease in costs in the next year or two in his field.

ELECTRIC EQUIPMENT COSTS GO UP

Edmund P. Waller, assistant manager of the railway department of the General Electric Company, testified that beginning with the middle or the latter part of 1914 there had been a steady and continually more rapid increase in the price of the electrical equipment and apparatus manufactured by his company. The percentages of increase in the selling prices prevailing to-day as compared with those existing in the latter part of 1914 are about as follows:

	Per Cent Increase
Railway motors and car equipment	65- 70
Air brakes	60- 65
Locomotives	60- 65
Rotary converters	45- 50
Transformers	50- 60
Switchboards	75- 80
Motor generators	55- 60
Turbines	100-120

Mr. Waller saw no prospect of any substantial reduction in prices for the near future. Roscoe Seybold, manager of the price section of the railway department and car department of the Westinghouse Electric & Manufacturing Company, presented testimony showing approximately the same increases in cost as that given by Mr. Waller.

OILS SHOW FIRST INCREASE IN TWENTY YEARS

Lauren J. Drake, Jr., vice-president of the Galena Signal Oil Company, testified that the prices per gallon and per pound of the various classes of oils and greases manufactured by his company had remained the same for more than twenty years and that no advance was made until April 20, 1917.

The chief method of selling oils to electric railways is on a mileage basis for cars and a kilowatt-hour basis for power houses. The witness testified that while the oils are invoiced to all electric lines at one price (f.o.b. Franklin), with freight to point of delivery added, their guarantees on cost of operation on a mileage basis or kilowatt output basis may vary, depending upon the kind of equipment in the particular service. The company furnishes a certain amount of oils to smaller companies upon a gallonage basis, without a guaranty clause.

The following tabulation, presented by Mr. Drake, shows a comparison of prices on electric railway oils and greases for a period of more than twenty years prior to April 20, 1917, with the present prices, which have been in effect since April 20, 1917:

Name	F.o.b. Franklin Prices for Twenty Years Prior to April 20, 1917, Cents	F.o.b. Franklin Prices Since April 20, 1917, Cents
Galena power house valve oil, per gallon	47	55
Galena power house engine oil, per gallon	27	30
Galena turbine oil, per gallon	32	35
Galena electric car oil, per gallon	17	20
Galena air compressor oil, per gallon	23	27
Galena motor grease, per pound	7½	8½
Galena gear grease, per pound	4	5

HOW BRAKE EQUIPMENT HAS BEEN AFFECTED

W. G. Kaylor of the Westinghouse Traction Brake Company, testified that the list prices of his company had remained substantially the same for a number of years. He stated that "generally our contracts with our regular customers provide that the purchase of air brakes and equipment shall be at 25 per cent from list prices. Since April, 1917, a revision of our prices has been in effect, and our contract customers have been required to pay list prices less 5 per cent, instead of 25 per cent, resulting in an advance of 26.7 per cent on standard air-brake material. Our casual customers are now paying 105 per cent."

James S. Thompson, vice-president of the American Brake Shoe & Foundry Company, testified that about a year ago his company made increases in the selling prices of brake shoes for electric railways. At that time and for some years prior thereto the average price of his company's brake shoes for electric lines had not varied materially. In the latter portion of 1916 the prices were speedily accelerated, and to-day the average price of brakeshoes to electric railways generally throughout the country is an increase of 63 per cent over and above the prices current a year ago.

CAR COST DOUBLED SINCE OUTBREAK OF WAR

One of the most interesting witnesses was W. H. Heulings, Jr., vice-president in charge of sales of the J. G. Brill Company. Mr. Heulings testified that it was almost impossible to measure, by a comparison of the quotations for finished cars, the advance in the price of such equipment. He stated that the J. G. Brill Company had never but once within his experience exactly duplicated an order for equipment. Sufficient changes were always made in the specifications to require an extensive revision in the plans and a consequent revision of price.

He stated, however, that in general it was safe to say that the cost of equipment was at least twice as great as the figure prevailing at the outbreak of the European War, and that the same situation existed with reference to the various parts necessary for current maintenance. Whereas formerly the cost of a car was made up roughly of a dollar of material to every dollar expended for labor, the advance in the price of steel, copper, lumber and other elements entering into the manufacture of cars has been so great that at the present time there is roughly $2 of material for every $1 of labor represented in the cost of equipment. This is true notwithstanding the large increase in labor costs.

MANUFACTURERS' COSTS HAVE JUMPED

Perhaps there has been an impression in some quarters that the large increases in costs have been due entirely to arbitrary exactions on the part of manufacturers. One of the most interesting phases of the testimony presented was the recital by the various witnesses as to how their costs had in turn increased. As evidence of the fact that higher prices have not meant larger profits, Mr. Heulings pointed out that the gross manufacturing profit of his company was less than 1½ per cent on the volume of business transacted, and that were it not for large government orders, utilizing the greater part of the shop capacity, a heavy loss would have been incurred.

By taking the testimony of the various witnesses relating to increased costs of raw materials used by them, some very interesting results may be disclosed. The following table shows the approximate percentage increase in price of the several articles since the latter part of 1914:

	Per Cent		Per Cent
Pig iron	310	Asbestos materials	600
Steel plates	700	Other insulation materials	100
Copper	100	Magnetic sheet steel	375
Steel castings	200	Pennsylvania crude oil	95
Spelter	52	Whale oil	34
Coke	170	No. 1 lard oil	89
Mica	150		

RAILWAY LABOR COST TO GO STILL HIGHER

Prof. Roswell C. McCrea of Columbia University testified on behalf of the electric railways as an expert on labor. Basing his study upon the formal annual reports of the companies to the Public Service Commission and the investigations of the national and New York State governments as to wages and conditions of employment in other industries, he reached some very interesting conclusions. His study of the wages paid by the petitioning companies disclosed substantial increases in every case. Their weighted average wage (in cents per hour) for the more important classes of labor in each year from 1911 to 1915 inclusive compared as follows:

	1911	1912	1913	1914	1915	Per Cent Increase 1915 Over 1911
Conductors	21.7	23.3	25.9	25.7	27.1	24
Motormen	22.2	23.5	25.1	25.8	27.2	22
Roadmen or trackmen	16.6	16.6	18.9	18.5	18.7	12

The witness further testified to the well-known fact that approximately 50 per cent of the operating expenses of an electric railway represent wages, and by far the larger part of this wage expenditure is represented by payments to conductors, motormen and trackmen. The higher cost of labor alone has increased the cost of operation—on the basis of the continuance of an identical standard, both as regards maintenance and the volume and the character of service—more than 15 per cent in the last five years.

Professor McCrea said that owing to the existence of contracts between the companies and the Amalgamated Association of Street & Electric Railway Employees the advance in wages has not been so rapid in the last year as has been the increase in the cost of supplies of every character. It was his opinion, however, that when these wage agreements expire there will be in many cases a sharp increase in wages. He pointed out that in numerous instances the hourly wage rates have not advanced so rapidly as wages for labor in other industries into which electric railway workers could easily gravitate. The railways were therefore more than justified, in the opinion of the witness, in making the advances in wages which have been granted during recent years, and the increasing cost of operation resulting therefrom was a proper charge and should be borne by the public. Against the high wage rates in other industries must be offset, of course, the greater steadiness of employment offered by the electric railway, but even with making due allowance for all such considerations, the Public Service Commission must face the fact that labor costs will probably be considerably increased in the next year or so.

In response to questions as to the outlook for lower wages in the immediate future, Professor McCrea stated that as far as could be seen there was no likelihood of such a development. The great destruction of men and materials in the European War; the large demand which will be made upon this country for goods of every character to facilitate the rehabilitation of the warring nations; the almost inevitable attempts which will be made by European countries to prevent emigration, and the new illiteracy test written into the immigration law will all combine to make labor scarce, and hence wage rates high.

Professor McCrea pointed out that increases in wage rates in the electric railway industry are justified in view of the rapid rise in living costs. While it is possible that living costs may materially decrease, as the result of activities of the federal government and of other influences, even a material reduction would not have any influence in effecting a reduction in the prevailing wage rates.

Several witnesses pointed out that the electric railway is peculiarly affected by the high cost both of labor and of materials. In the first place, the expenditures for labor of an electric railway represent a very much larger proportion of the total operating expenses than is the case with other public utilities. In the second place, the materials which have been subjected to the largest advances in price are those which are used by electric railways. The war has made tremendous demands for the same classes of materials, and the industry has been forced to compete in a famine market, in which the situation each day becomes more serious.

Traffic Recorder Helps Service

Simplified Method of Recording Receipts from Passengers and Their Points of Travel Results in a Large Yearly Saving and Valuable Traffic Records

By GEORGE JACKSON
General Manager North Jersey Rapid Transit Company, Hohokus, N. J.

THE North Jersey Rapid Transit Company line extends from Paterson, N. J., to Suffern, N. Y., a distance of 15 miles, passing through nine small towns with populations of 600 to 7000. It is built according to regular interurban electric railway specifications on its own right-of-way throughout and operates at a schedule speed of about 18 m.p.h.

The fares are based on about 2 cents per mile but are arranged in multiples of 5 cents. There are eighteen station stops, and the maximum fare is 25 cents, so that considerable overlapping of 5-cent fares is necessitated. About half of the traffic is through business to Paterson, and the remainder local business from town to town.

When the company started operation about seven years ago, it decided that some form of duplex ticket was the best method of collecting and auditing fares. The zone system of collecting fares was out of the question on account of the overlapping of zones and the great expense of proper inspection.

We adopted a form of duplex ticket arranged so that the origination and destination points as well as the amount of fare would be punched. These tickets were audited in connection with an adding and listing machine, each station having its number. The auditing of these tickets showed how much cash the conductor should turn in and showed the travel of each passenger. It also made the form against which the inspector's reports were checked.

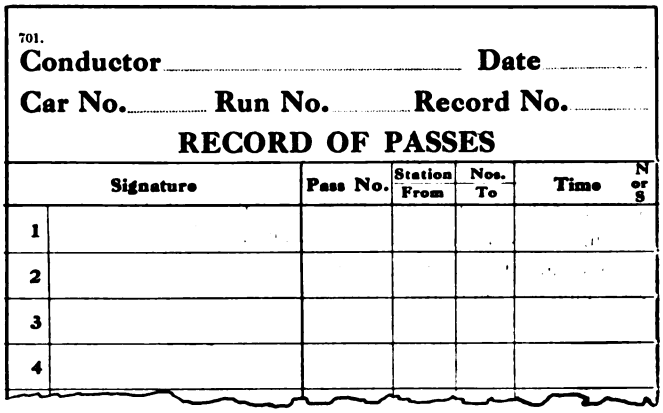
About two years ago we negotiated with the Bonham Recorder Company for the use of its recorders, appreciating that this device would eliminate the expense of duplex tickets and at least half of the expense of office work and would put the whole responsibility of proper fare registration up to the conductor so that intermediate errors in auditing the fares would be eliminated, yet all the information that we had been getting before would still be obtained. We installed eight of these recorders in February, 1917, and after six months' trial we have found them a practical machine both in the matter of operation by the conductor and in facilitating office work. On an investment of $2,800 we are saving $1,275 a year, of which $650 is in clerical expense alone.

The Bonham traffic recorder is a listing machine on which is placed a dial, and it is located in one end of the car. The recorder has a number of type wheels arranged so that by operating rods located along the side of the car, the origination and destination points and, automatically, the proper amount of fare are registered on a slip of paper about 4 in. wide. The number of cash fares and passes or tickets is also shown on this paper, and, where needed, the passenger fare-mileage is shown. The back of the recorder has some hand-set wheels whereby the number of the car, trip, time or other data may be recorded on the paper by the conductor.

OPERATION OF THE RECORDER

The operation of this recorder is as follows:

Before the car comes to a station the origination pointer of the dial is set by a rod running along the side of the car overhead with hand grips placed at regular intervals. Should several passengers board the car at this station, the destination point of each passenger is recorded by turning another rod, which is located about 4 in. from the first-mentioned rod, and then pulling a register cord, which records the origination and destination and amount of fare in the recorder. Where the fare collected is a pass or ticket, a blank is shown in the cash column on the record. We take care of our record of passes by the use of Form 701 (Fig. 1), on which the pass-holder signs his name while the conductor adds the interstation identification of the ride.



701.
Conductor .... **Date** ....
Car No. .... **Run No.** .... **Record No.** ....

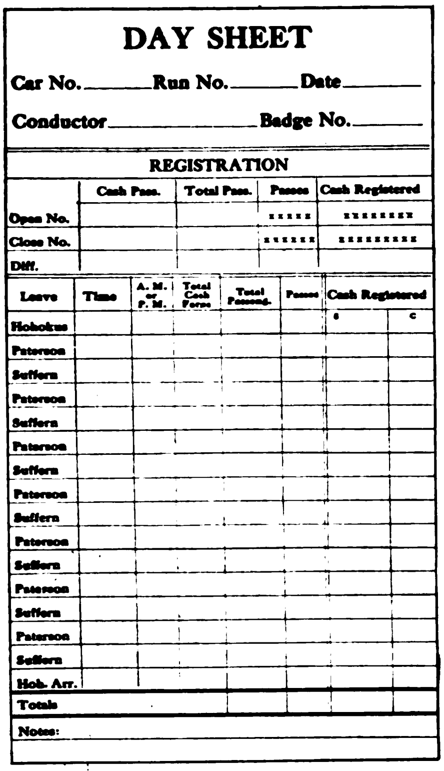
RECORD OF PASSES

	Signature	Pass No.	Station	Nos.	Time	N or S
			From	To		
1						
2						
3						
4						

TRAFFIC RECORDER—FIG. 1—PASS RECORD

With this method of collecting fares both passengers and inspectors see the full operation of the conductor while collecting fares. The conductor does not have access to the register and cannot see the printed record.

The records are taken from each car operated during the day after it has finished its run. In our case this occurs after 12 o'clock midnight. These records and the day sheet are audited during the next morning, the work being completed about 11 o'clock. In about three hours one clerk takes care of approximately 2500 fares, including the inspection of day sheets, the adding of the audit slips, the making up the daily traffic records as to the number of passengers, etc. Each record slip as it comes out of the recorder has the autograph of the conductor made in the manner similar to the auto-



DAY SHEET

Car No.______ Run No.______ Date______

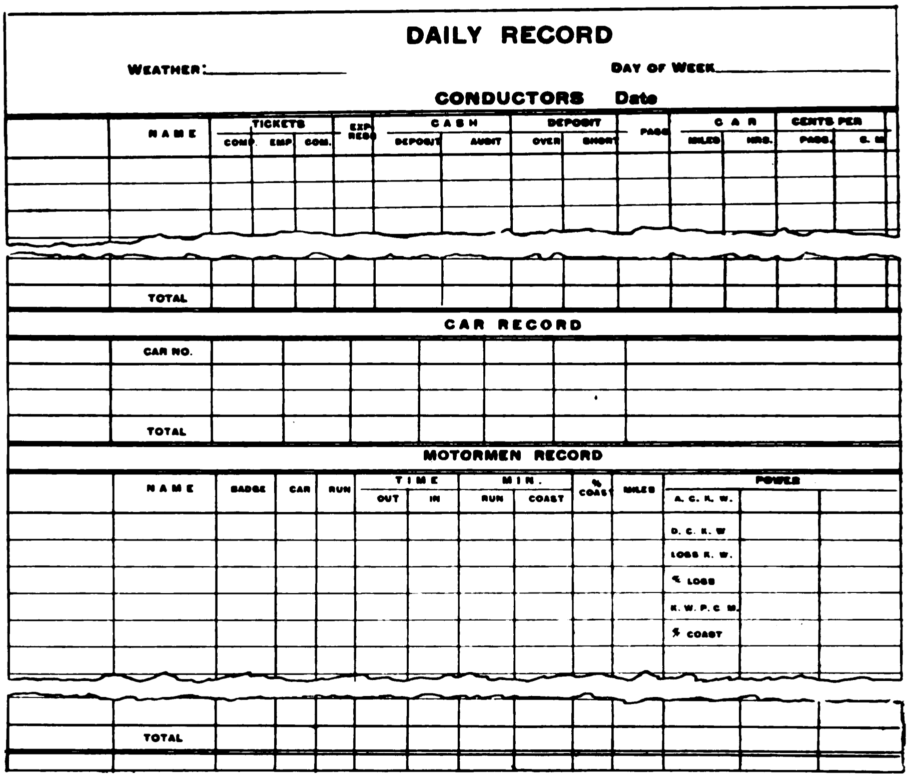
Conductor__________ Badge No.______

REGISTRATION

	Cash Pass.	Total Pass.	Passes	Cash Registered
Open No.			xxxxx	xxxxxxxx
Close No.			xxxxxx	xxxxxxxxx
Diff.				

Leave	Time	A. M. or P. M.	Total Cash Fares	Total Passeng.	Passes	Cash Registered $	c
Hohokus							
Paterson							
Suffern							
Paterson							
Suffern							
Paterson							
Suffern							
Paterson							
Suffern							
Paterson							
Suffern							
Paterson							
Suffern							
Paterson							
Suffern							
Hob. Arr.							
Totals							

Notes:



DAILY RECORD

WEATHER:______ DAY OF WEEK______

CONDUCTORS Date

	NAME	TICKETS			EXP. REG.	CASH		DEPOSIT		PASS	CAR		CENTS PER	
		COMP.	EMP.	COM.		DEPOSIT	AUDIT	OVER	SHORT		MILES	HRS.	PASS.	C. M.
	TOTAL													

CAR RECORD

	CAR NO.							
	TOTAL							

MOTORMEN RECORD

	NAME	BADGE	CAR	RUN	TIME		MIN.		% COAST	MILES	POWER		
					OUT	IN	RUN	COAST			A. C. K. W.		
											D. C. K. W		
											LOSS K. W.		
											% LOSS		
											K. W. P. C. M.		
											% COAST		
	TOTAL												

TRAFFIC RECORDER—FIG. 2—CONDUCTOR'S DAY SHEET; FIG. 4—DAILY RECORD OF CONDUCTORS, MADE UP BY AUDITING CLERKS

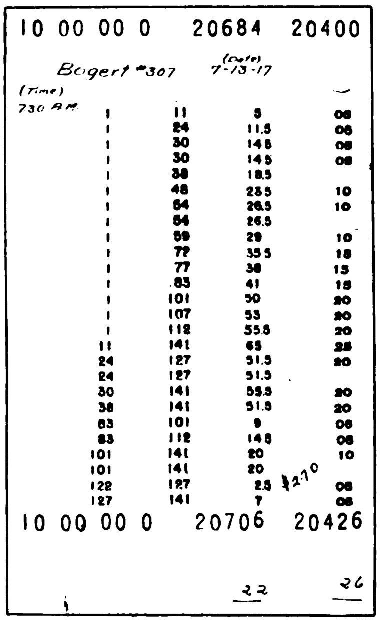
graphic kodak. However, in making up the records for office use, we find it desirable to transfer the signature nearer the actual records, owing to the fact that the autographic name comes out upside down and at some inches distant from the recordings.

USE OF RECORDS

The day sheet (Fig. 2) shows the usual information such as car number, date and conductor, the time of the car leaving each terminal, a column for total cash fares, column for total passenger fares, one for passes, and finally a column for cash registered. The conductor fills in the top of the day sheet and gives the time the car left each terminal, the remainder of the day sheet being completed by the accounting department.

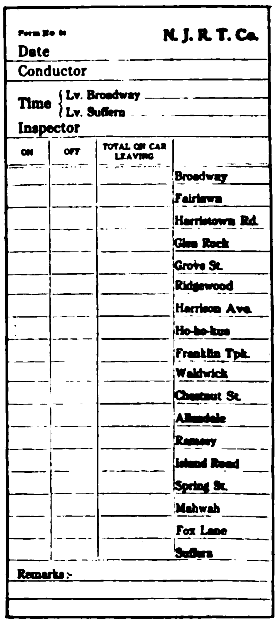
Fig. 3 shows a typical record for a half trip, as made by the recorder. At the left of this record will be seen, top and bottom, the number 10 00 00 0. Of these seven numbers, the first two are used by us to indicate the car. The other five might be employed to designate the train number, trip number or any other identification, but are not utilized by us. The next set of numbers, top and bottom (20,684 and 20,706), show by their difference the cash fares collected, in this case twenty-two. The final set of large numbers, top and bottom (20,400 and 20,426), show by their difference the number of passengers carried, in this case twenty-six, because four passengers rode on passes. Of the four columns of figures in the body of the record, the first shows the point of origin and the second the point of destination of each passenger. The third column is a record of the distance traveled by each passenger, and may be arranged to read in miles or in some predetermined fraction of a mile. In our case it reads at about one-fifth of a mile, but as our fares are based approximately on the number of miles traveled, but not close enough to make this column of use to us, we do not utilize this column. On some roads, however, it might prove useful. The final column gives the fares collected from each passenger, the blank spaces in this column being the four passes already mentioned. These passes are recorded by pulling the "no fare" rope running through the car.

The time shown on the left side of the paper, 7.30 a. m., is written on this record by the auditing department after the record is taken from the machine. It is taken from the day sheet which has been filled out by the conductor. The amount, $2.70 near the lower right-hand corner, is also written in by the auditing department as the amount of cash which should have been collected during the half trip. This record shows, therefore, the amount the conductor is over or short in his



```
10 00 00 0        20684     20400
                    (Date)
      Bogert #307   7-13-17
(Time)
730 AM
           1        11        5       06
           1        24       11.5     06
           1        30       14.5     06
           1        30       14.5     06
           1        38       18.5
           1        48       23.5     10
           1        54       26.5     10
           1        54       26.5
           1        59       29       10
           1        72       35.5     15
           1        77       38       15
           1        83       41       15
           1       101       50       20
           1       107       53       20
           1       112       55.5     20
          11       141       65       25
          24       127       51.5     20
          24       127       51.5
          30       141       55.5     20
          38       141       51.5     20
          83       101        9       06
          83       112       14.5     06
         101       141       20       10
         101       141       20
         122       127        2.5 $2.70 06
         127       141        7       06
10 00 00 0        20706     20426

                    22        26
```



Form No. 6 **N. J. R. T. Co.**

Date

Conductor

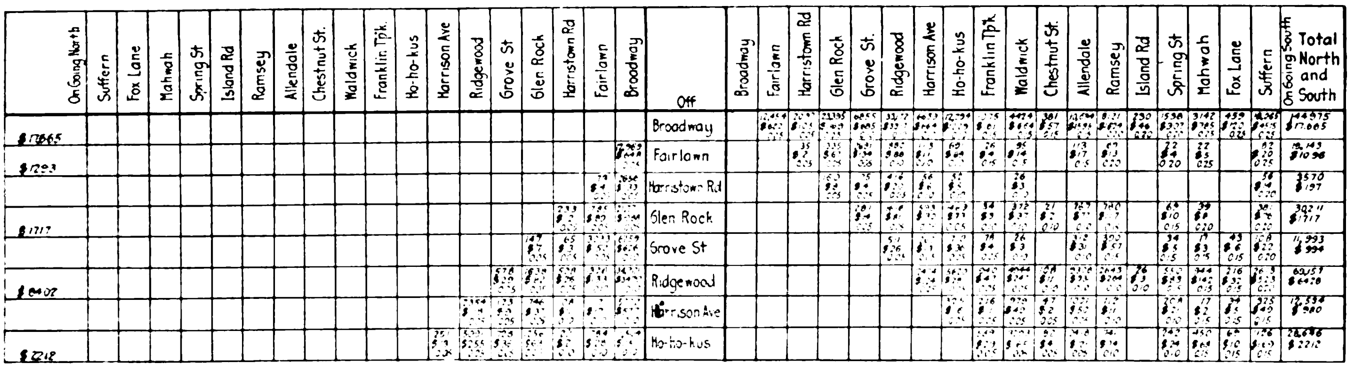
Time { Lv. Broadway ______
Time { Lv. Suffern ______

Inspector

ON	OFF	TOTAL ON CAR LEAVING	
			Broadway
			Fairlawn
			Harristown Rd.
			Glen Rock
			Grove St.
			Ridgewood
			Harrison Ave.
			Ho-ho-kus
			Franklin Tpk.
			Waldwick
			Chestnut St.
			Allendale
			Ramsey
			Island Road
			Spring St.
			Mahwah
			Fox Lane
			Suffern

Remarks:-

TRAFFIC RECORDER—FIG. 3—TYPICAL RECORD; FIG. 5—INSPECTORS' TALLY



TRAFFIC RECORDER—FIG. 6—UPPER HALF OF TABLE MADE UP TO SHOW LOCI OF TRAVEL DURING 1913

cash turn-in, as the conductor does not have access to this record, but is supposed to turn in all his receipts except his own change money. The auditing department also writes in the trip number, which we designate by the time the car leaves each terminal and the number of passengers on each trip. All of these figures are then transferred to the day sheet, Fig. 2, and from the day sheet to the daily record, Fig. 4, on which the records of all conductors are shown in one summary.

One valuable feature of the Bonham traffic recorder is the facility of inspection. Fig. 5 is the slip given to the inspector, who may be a uniformed inspector or a secret service man. The printed records of interstation riding enable an inspector to check up any car through one point or different inspectors to check up the same car through different points without riding the car or otherwise showing themselves.

Since we have installed these recorders, we have obtained an increase in passenger rates of 1 cent on each zone or 5-cent ride. As we are now operating under this new schedule of fares, all the totals in the fourth column in the traffic record are corrected by simply adding 20 per cent. Later we expect to have the cash wheels changed so that the proper fare will be recorded after each registration.

Records Used for Traffic Statistics

From time to time we make use of these traffic records for the purpose of analyzing our interstation travel. This has been done in Fig. 6, which is the upper part of a table drafted to show the loci of travel during 1913. The number of passengers carried between the stations during the year is given on the first line in each square. The receipts are shown on the second line, and the rate of fare on the third line. The data in this table were obtained by averaging twelve weeks, one week from each month, and multiplying the result by fifty-two. Holidays were not included, the purpose of this particular table being to give average figures of the normal travel. Only about half of the table is shown in Fig. 6, as its purpose is to show the method of tabulating the results rather than the actual figures. Statistics of this kind, forming a continuous traffic count, are obviously useful in many ways. Thus, in one instance, where we were asked to put on extra service at the northerly end of the railroad, and in another, where we were asked for extra service on account of entertainments in one of the towns along the line, our records proved clearly that our regular service would carry everyone that would want to use the cars at any special time.

We also wished to know the amount of through-passenger traffic in relation to our total traffic, namely, the number of passengers and the revenue. From the record slips, we learned directly that our through passenger traffic was 42 per cent in number of passengers and 55 per cent in revenue. We also learned that during 1916 our local business paid 6.78 cents per passenger and our through traffic 12.06 cents per passenger, and that the average of all traffic was 9.06 cents per passenger. These figures indicated clearly to us the general desirability of concentrating on the promotion of through travel.

Identification hat checks are used by the conductors when they think it is necessary; otherwise no paper is used with the present system of fare collection.

New Philadelphia Lease Submitted to Councils

City Fixed Charges to Be Paid Before Dividends—No Dividend Guarantee, but Fare Determination by Commission if Rate Falls Below 4%—Board of Supervising Engineers

THE Twining rapid transit lease providing for the operation of the new city lines in Philadelphia and the lines of the Philadelphia Rapid Transit Company as a unified transportation system, was introduced into councils in the form of an ordinance on Aug. 17. The lease was approved by Mayor Smith on Aug. 13. In making an announcement to this effect, the Mayor said that a final conference had been held for several hours by Director Twining and representatives of the company, and that both city and company officials had agreed upon the terms. City Solicitor Connelly had also passed upon the lease and approved it.

Basic Principles Underlying Lease

The lease is based upon the following principles:

1. That the interest and sinking fund payments on the bonds issued by the city to pay for its transit lines must be paid out of the gross revenue of the unified system before any deductions are made for dividends to the company's stockholders.

2. That although the city does not object to a reasonable dividend for the company's stockholders, it must make no guarantees.

3. That the Public Service Commission is the body constituted by law to determine what are just and reasonable rates of fare. That the present rates of fare on the company's own lines should at the beginning be retained with a flat 5-cent fare on the city's lines, and free transfers between the city's lines and between the

city's lines and the company's surface lines; but that if these rates of fare should not be sufficient to enable the company to pay the city's interest and sinking fund charges and a reasonable dividend to the company's stockholders, the commission should be asked to establish just and reasonable rates of fare.

4. That the obligations of the company to furnish efficient service, not only on the city's lines but on its own lines, can best be enforced by the creation of a Board of Supervising Engineers with large powers over equipment, operation, extensions, accounting and reserve funds.

DETAILED POINTS OF PROPOSED CONTRACT

The principal provisions of the newly proposed contract between the city and the Philadelphia Rapid Transit Company follow:

a. The city is to build and mainly equip the lines that have already been authorized by Councils. The company is to supply in the main the power and transmission equipment. If the city desires, the company will also furnish tracks, third-rail, signals and rolling stock, provided it can secure the money for such equipment at not more than 6 per cent.

b. The company agrees to build all extensions of its own system recommended by the Board of Supervising Engineers and approved by the Public Service Commission.

c. Prior to the initial operation of the first section of the city's system, the company is to operate its own lines as at present, but subject to the regulatory power of the Board of Supervising Engineers.

d. The company is to pay as rental for the use of the city's lines an amount equal to the interest and sinking fund charges on the bonds issued by the city to construct the lines.

e. The following payments are to be made in the order named from the total revenue of the unified systems:

1. All expenses of operation and maintenance.
2. Taxes of all kinds.
3. Fixed charges and rentals of the company.
4. Interest and sinking fund payments on securities of the company issued to obtain new capital for extensions to its own lines and equipment for the city's lines.
5. Payments into the various reserve, depreciation and contingency funds necessary for the prudent businesslike operation of the unified system.
6. Payments due the city under the 1907 contract.
7. Payments into the city treasury of an amount equal to the interest and sinking fund charges on the city bonds issued to pay for the city's lines.
8. A dividend to the stockholders of the company. As long as the present 3-cent exchange tickets are maintained, this dividend is limited to 5 per cent per annum. When exchange tickets are abolished by the company, or abolished or modified by the Public Service Commission, the company, if the gross earnings are sufficient, may pay a dividend not exceeding 6 per cent, cumulative from the date of the contract; the provisions of the 1907 contract allowing a cumulative 6 per cent dividend from Jan. 1, 1907, to date being waived.
9. Payments to the Sinking Fund Commission established under the 1907 contract, equal in amount to 4 per cent upon such of the city's bonds as shall have been retired by the use of money previously paid into the sinking fund under Section 7, above. This item will not be payable until about thirty years hence, when the first bonds will be retired.
10. Limited payments into an operating surplus fund.
11. The remainder, if any, is to be divided 50 per cent to the city and 50 per cent to the company, as provided in the 1907 contract.

The foregoing payments are to be cumulative in the order named.

f. At the beginning the fare will be 5 cents on the city's lines. On the company's lines the present fare will for the present be retained. There will be free transfers between (1) the city's lines, (2) the city's lines and the Market Street subway-elevated line, (3) the city's lines and the company's surface lines, except in what is designated the "delivery district."

g. Both parties to the contract recognize the right of the Public Service Commission to determine what is a just and reasonable rate of fare. Whenever the gross revenue for six months is not sufficient to pay all prior charges and a dividend of 4 per cent to the company, the city conceding the fairness of such a dividend, the city agrees to join in a petition to the commission for a determination of what is a proper rate of fare.

h. To regulate the service and generally supervise the operation of the unified system, a Board of Supervising Engineers will be established. The board will consist of three members, one appointed by the city, one by the company and the third jointly by the Mayor and the president of the company. The board will have the power:

1. To report to Councils on the advisability of extensions of the city's lines and extensions of the company's lines, and of its own initiative to petition the Public Service Commission to require the company to construct extensions of its own lines.
2. To supervise the plans for and the cost of transit facilities.
3. To establish rules and standards as to maintenance and service, regulate the routing of cars, establish stations and stopping points and determine the adequacy of equipment.
4. To recommend to the Public Service Commission changes in fares.
5. To decide upon the amount and classification of the depreciation and contingency reserve funds, and to act as trustee therefor.
6. To act as a board of arbitrators on any question arising between the city and the company under the contract.

i. The term of the lease will expire on July 1, 1957, which is the date fixed for the expiration of the 1907 contract.

j. As under the 1907 contract, the city may, on and after July 1, 1957, purchase all of the company's property by paying to the company the par value of its capital stock outstanding at the date of purchase. In addition to this right, between July 1, 1927, and July 1, 1957, the city may purchase the property of the company by paying a like amount, plus any shortage of dividends on the company capital stock now outstanding below 5 per cent for each year from the date of the lease to the date of purchase.

Bureau of Mines Issues Resuscitation Chart

As a part of its work in furthering the movement for accident reduction in all branches of industry the United States Bureau of Mines has issued for free distribution a chart on resuscitation from gas asphyxiation, drowning and electric shock for the purpose of inducing the adoption of the standard Schaefer or prone pressure method of artificial respiration. The chart is 11 in. x 15 in. in size, convenient for framing or use on bulletin boards. Copies of the chart may be obtained on application to the Director of the Bureau of Mines, Washington, D. C.

EQUIPMENT and MAINTENANCE

HAVE YOU A GOOD WAY OF DOING A JOB?
—Pass It Along

In This Issue: F. H. Hill Tells Why It Was Not Feasible to Use a Central Concrete Mixing Plant in Elmira, N. Y.

A Central Concrete Mixing Plant and Why It Failed

BY FREDERIC H. HILL
General Manager Elmira Water, Light & Railroad Company, Elmira, N. Y.

In connection with a large track and paving job which we recently had on hand, an attempt was made to mix concrete at a central plant and transport the mixture to the job, a distance of little more than ½ mile over paved streets. The object of this plan was to minimize the labor of handling materials and also to avoid blocking the streets to the degree that is necessary when the usual methods are employed.

At our main generating station the coal is brought to the plant over a railroad trestle. The coal may be discharged from the cars either directly into a receiving hopper for distribution in the building, or through the trestle to the ground below where it is handled to and from the storage pile by means of a Brown-Hoist electric locomotive crane of 12-ton capacity and equipped with a clamshell bucket. Advantage was taken of this layout for the handling of sand and crushed stone for concrete and ballast. Arrangements were made whereby these materials were to be brought in hopper-bottom cars and discharged below the trestle where they could be reached by the crane. A Ransome motor-driven concrete mixer, having a capacity of ½ cu. yd. to ¾ cu. yd. per batch, was mounted on an elevated platform and arranged to discharge into a receiving hopper having a capacity of about 5 cu. yd. This hopper was erected at such a height that its contents could be discharged through suitable valves into the dumping body of a motor truck. The mixer was fitted with a receiving hopper having a capacity of one batch. The equipment was conveniently arranged with the expectation that a foreman and seven men could operate the plant and mix as fast as a crew of twenty-five to thirty men with a portable mixer on the street.

Upon beginning operation difficulties were encountered which resulted in the abandonment of the scheme and a return to the use of a portable mixing plant on the street. The plans were to mix the concrete and discharge it into the hopper so that the motor truck would always find a load in readiness. It could then be quickly loaded and thereby be kept in continuous operation. It was found, however, that during the time necessary to mix 3 cu. yd. or 4 cu. yd. the first batch assumed an initial set, making it very difficult to get the material out of the hopper. The truck was loaded with considerable difficulty and sent to the street with its load. Here it was necessary to use picks in unloading. A second trial was made by mixing and discharging directly into the truck, the interior of which had been greased. The same difficulty of unloading was encountered, only in lesser degree. Various other experiments were tried, including the use of bottom-dump wagons, adding hydrated lime to the mixture, etc., but all without success. In all cases the loads were discharged onto an asphalt pavement and shoveled into place, requiring considerable labor, and the resulting concrete was not up to requirements.

It was found that our equipment and methods lacked certain essentials which are necessary for the successful operation of a central mixing plant. The first essential is that of maximum possible speed in all operations. The hoists or elevators for handling materials must either in themselves be high-speed devices, or elevated storage bins must be provided for sand and gravel, so that low-speed machinery of large capacity can keep ahead of the mixing. We found that our mixer was operating at much too low a speed. This defect could have been remedied, but even with slow mixing the crane was unable to keep material ahead, and therefore a higher speed of mixing would not have solved the problem. The mixer should be geared to deliver a batch every one and one-half minutes. Preferably a mixer of at least 1 cu. yd. capacity should be used.

It is not practicable to store the mixture even for the brief time necessary to mix a wagon load, because it assumes an initial set almost immediately. The mixer should discharge directly into the distributing carts. Preferably these carts should have circular bottoms and be so arranged as to be completely inverted when discharging a load. Where the concrete is to be hauled a considerable distance special trucks should be provided so that about four 1-cu. yd. bodies could be transported per trip. With such an outfit loading could be done in about six minutes, and, while there would be some set before arriving at destination, the invertible feature of the bodies should permit of quick unloading. Arrangements should also be made so that loads could be discharged from the trucks directly into place, thus avoiding the necessity for rehandling.

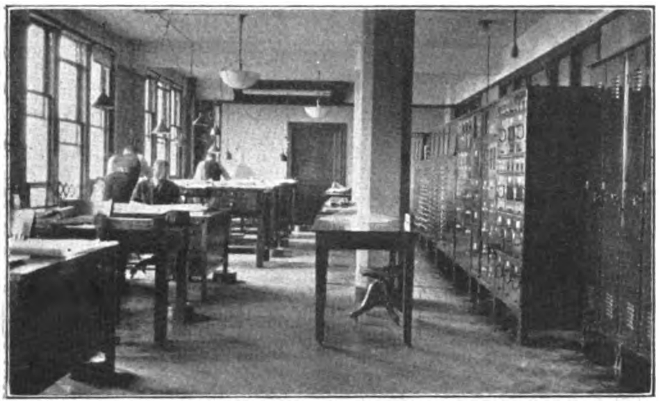
To meet all these requirements would necessitate so much special construction and equipment that a central plant does not appear attractive except for very extensive operations. We are of the opinion that for street railway track construction the portable mixer plant will as a rule work out the best. Careful study should be given to improved methods of handling the material on the street and it is possible that a portable material handling equipment in connection with the mixer could be worked out to advantage.

Applying System in the Office

Uniform Desk Arrangement and Dewey Decimal Filing System Part of Denver Tramway Efficiency Methods

Every desk in the office of the Denver Tramway Company engineering department is arranged so that there is a uniform place in each for certain things. Consequently in the absence of any man another can go to his desk and readily find any matter of company business. This applies to the chief engineer, Edward A. West, as well as to all of his assistants. He is firmly of the opinion, and the engineering department works on this basis, that no man can handle more than one subject at a time and that consequently there should be but one order of business on the desk before him at any time. This uniform arrangement of the desk and concentration upon one item at a time eliminates the frequent occurrence of a matter getting lost in "the pile," and facilitates the rapid movement of company business through the engineering department.

It thus becomes easily possible for any man to clear his desk before leaving at any time, since he has only one order of business before him and there is a place in his desk assigned to this in case it must be held. As a result of this, every desk is entirely free of papers and the like when not actively in use.



OLD FILES REBUILT TO UNIFORM DIMENSIONS

In the chief engineer's office, where frequent reference to various maps is necessary, these are kept from cluttering the desk by having them mounted in a wing cabinet supported on one wall. The number of wings in this cabinet is governed by the number of maps which are in active use. If reference to any one of these is required it may be lifted from its support and laid on the desk for study. When returned, the cabinet is closed up, forming simply a piece of furniture with no prints or paper in evidence.

FILING SYSTEM EMPLOYED

Working along the line of systematization of all the engineering department's business, all individual files of the department which were previously distributed among the several division heads and the chief engineer are now concentrated in one general file which has been completely worked over and all filing done in accordance with the Dewey decimal system. The files previously in use were of various sizes and styles and constructed of both wood and steel. As the company did not care to purchase a complete new set of filing equipment, the wooden files were rebuilt to conform in general dimensions with the modern steel files and all the cabinets were grouped together and painted a uniform green color, giving the appearance of a system purchased all at one time and originally built to standard dimensions. A view of the filing cabinets as they appear now is shown herewith. All filing in the department is done by a single clerk, who is alone responsible for the filing of all engineering department matter.

Paint and Varnish versus Enamel

Two Years' Experience with Eight Cars per Week Through the Paint Shop Favors Enamel

BY G. J. SMITH
Superintendent of Rolling Stock and Shops, Kansas City (Mo.) Railways

At the time the receivers for this company were discharged its cars had been painted a dark Pullman green for a period of about sixteen years. The interior, including the headlining, had been finished in natural wood. The new management decided to change the color standard from a dark to a light color. The idea in mind was that a car of light color could be seen for a greater distance on the street, and also that the light color would make a better appearance and would cause the improvements to be noticed by the public. The new colors selected were used as follows:

The body below the belt rail and including the sashes was painted a deep orange; the side posts, letterboard and headlining, cream; the sash, a deep orange, the same as the body, and there was a small amount of Tuscan red trimming. The original plan was to repaint to the light color only such cars as required complete painting, and on cars which were in such physical condition as would permit of revarnishing, the plan was not to change the color until the cars came in for complete repainting. This plan would have required approximately seven years in which to change the color of all the cars.

At about this period we had been experimenting more or less with air-drying enamels, and as a further study of their use we took a car with the surface in good condition, except for the varnish, and instead of revarnishing the surface we decided to sandpaper it, to touch up such bad spots as had been caused by contact with other objects, and to give the car two coats of enamel directly over the old green surface. After fourteen months this car was brought to the shops and given a thorough cleaning and inspection. In physical condition and appearance it was found to be superior to a car that had been revarnished for the same period of time.

On the strength of this finding we decided to discontinue revarnishing over the dark colors and to change all the cars directly to the light color at once by enameling directly over the old green surface. The result has been entirely satisfactory. Cars which have now been in service two years or more require no additional painting. It is our judgment at present that cars renewed by this process will not require reshopping for painting in a shorter period of time than two and one-half years.

The cost of enameling over the old paint with two coats of enamel is approximately $2.50 more than the cost of revarnishing. This extra cost is made up of approximately $1 for labor and $1.50 for material.

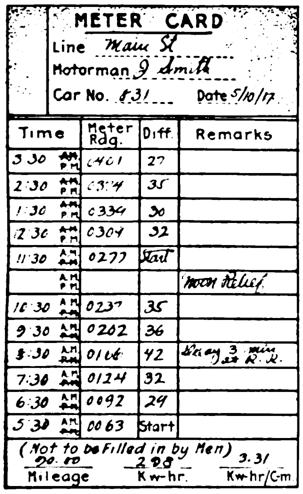
Suggested Power-Saving Test

An Inexpensive Method of Conducting Tests to Determine Actual and Possible Energy Saving in Car Operation

THE engineers of the Sangamo Electric Company have worked out the following plan for securing reliable data regarding power-consumption economies, and they believe that this method will give more reliable results than would less systematic tests extending over greater periods. For test purposes it is recommended that a line representative of the average traffic conditions for the property, and normally using not less than twelve or fifteen regular cars, be selected.

GENERAL PRINCIPLES

On four of the regular cars watt-hour meters are installed in plain view of the motorman, and on four others meters are installed out of sight of the motorman. The first four are designed as "test" meters, and the second four as "reference" meters. The test meters are used to determine the decrease in energy consumption per car-mile due to instruction in efficient operation. The reference meters are used as an index of traffic conditions and to determine the average energy consumption that would have occurred on the "test-metered" cars if instruction in efficient operation had not been given.



METER CARD

Line Main St
Motorman J Smith
Car No. 831 Date 5/10/17

Time	Meter Rdg.	Diff.	Remarks
3:30 ~~A.M.~~ P.M.	0401	27	
2:30 ~~A.M.~~ P.M.	0374	35	
1:30 ~~A.M.~~ P.M.	0334	30	
12:30 ~~A.M.~~ P.M.	0304	32	
11:30 A.M. ~~P.M.~~	0277	Start	
A.M. P.M.			Noon Relief
10:30 A.M. ~~P.M.~~	0237	35	
9:30 A.M. ~~P.M.~~	0202	36	
8:30 A.M. ~~P.M.~~	0166	42	Delay 3 min at R. R.
7:30 A.M. ~~P.M.~~	0124	32	
6:30 A.M. ~~P.M.~~	0092	29	
5:30 A.M. ~~P.M.~~	0063	Start	

(Not to be Filled in by Men)

Mileage	Kw-hr.	Kw-hr/Cm
90.00	298	3.31

SUGGESTED FORM OF METER CARD

In order to eliminate the variable human element in operation, all motormen are rotated regularly through the "reference-metered" cars so that the measurements represent the actual average operating conditions for the line. Inasmuch as the men do not know that their operation is being checked, because the meters are hidden and read secretly, it is assumed that they will operate at present efficiency on these reference-metered cars, and will not practice economical operation. Any increase or decrease in energy consumption per car-mile for the reference-metered cars will, therefore, represent the increase or decrease in severity of traffic conditions, and can be used as a base from which to determine the actual saving obtained on the test-metered cars.

In the test it is desirable to use eight cars of the same type and equipment, if possible, but otherwise each individual reference-metered car should be compared with a test-metered car of the same type.

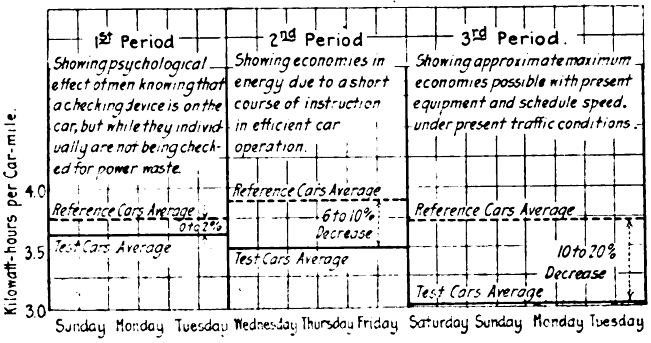
The test is divided into three periods, two of three days' duration each and one of four days' duration. In order that the initial test figures may not be determined under unusually severe conditions, it is advisable that the test be started on a Sunday and continued during the ten following days. The eight cars should be run on the same line, and, if possible, should average twelve or eighteen hours per day.

The first test is to determine the effect upon the men of seeing a checking device on the car, but knowing that they individually are not being checked for energy waste. This is accomplished as follows: All of the men are rotated through both test and reference cars, each man getting at least one-half day each on a test car and on a reference car. The reference meters are read secretly every night at the carhouse. The mileage and energy consumption for the period are totaled and the average consumption per car-mile for the reference cars is determined.

The test cars are run through this first period with the meter dials masked. They are read nightly at the carhouse and the average energy consumption per car-mile for the period is determined as with the reference meters. The per cent difference between the test meters and the reference meters represents the psychological effect sought. Tests already made show that this psychological saving varies from almost insignificant figures to 2 per cent or 3 per cent.

DETERMINING THE RESULTS OF INSTRUCTION

The purpose of the second period of the test is to show the effect of a short course of instruction in efficient car operation. All of the men are rotated through both test and reference cars, each man getting at least a half day on each type of car. The reference meters are read, and the average energy consumption per car-mile for the period is determined as before. The masks are removed from the dials of the test meters, and the motorman reads the meters at the end of each round trip, putting down the results on a card like that reproduced herewith. These cards are handed in daily. The energy consumption per car-mile for the test cars is figured from these daily meter cards.



GRAPHICAL REPRESENTATION OF RESULTS OF POWER-SAVING TEST WITH WATT-HOUR METERS

The difference between the results with the two types of cars represents the economies resulting from the instruction. Practice has shown that this saving varies from 6 to 10 per cent.

It should be noted that while the general average of all readings is reliable, too much weight must not be attached to the daily or trip energy readings of individual motormen, as during this short period they will have encountered different traffic conditions.

MAXIMUM ECONOMY POSSIBLE DUE TO INSTRUCTION

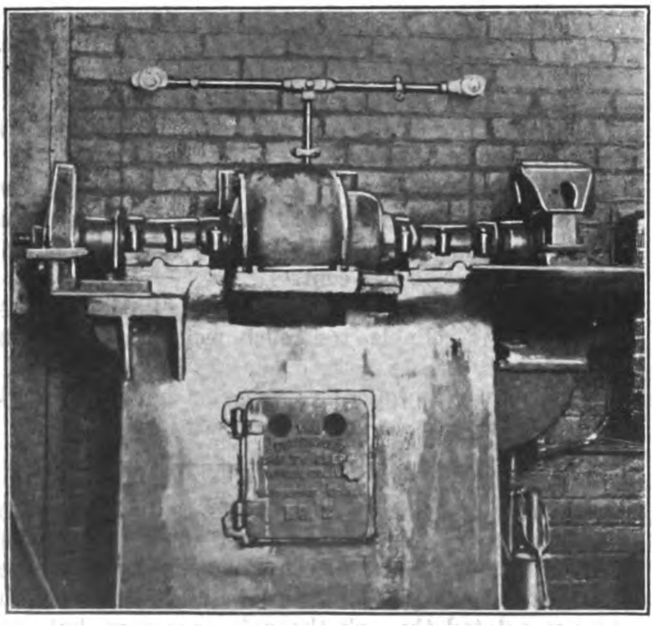
The third test period is utilized to determine the maximum economy possible through instruction in efficient operation with present equipment and scheduled speeds, and under present traffic conditions. All of the men are rotated through the reference cars, but only four or six picked men are used to operate the test cars during this period. Of these, two or three are selected as good operators, while the others are of middling operating efficiency. These men are picked from personal observation rather than from records made with the meters. They are given thorough instruction, and operate each a test car at least two full days. They read the meters at the end of each trip and turn in daily meter cards.

The energy calculations are made for the reference meters as in the preceding two periods, and for the test meters as in the second period. The difference represents the maximum economy that can be expected under existing conditions, and experience has shown that this will amount to from 10 per cent to 20 per cent, depending upon the actual "slack" in the line.

A diagram has been reproduced to show average test results for the three periods. It will be noted that there is an increase in energy per car-mile for the reference cars through the second period, and a decrease in the third period. Such variations are due to varying demands on the service on different days. However, as both test cars and reference cars operate under these same varying conditions, this error is eliminated, and a decrease in energy consumption can be attributed solely to instruction and to the daily checking of the individual man's energy consumption.

Safety Lights Installed Over Grinding Machine

In the shops of the overhead department of the Cleveland Railway, a double-wheel, motor-driven grinder is installed in a room which is rather dark. To eliminate the possibility of anyone touching the wheels while the grinder is running, two red lights were installed above the grinder and connected in the motor-control circuit so that they would be lighted and, therefore, give warning whenever the machine was running. It is impossible for the motor to be running without these lights being turned on. Illumination for working with the machine is provided when needed by a lamp which hangs directly over the machine, the two warning lights being of very small wattage.



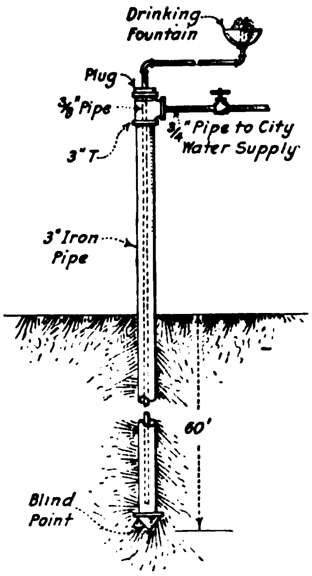
RED LIGHTS WARN OF DANGER WHEN GRINDER IS RUNNING

Shop's Drinking Water Problem Solved

BY T. C. RODERICK

Electrical Engineer Grand Rapids (Mich.) Railway

After we had found it necessary to issue an order against the shop men drinking water from a well near the shop on account of the presence of colon germs, it became necessary to provide them with a satisfactory substitute. The first attempt was a scheme for icing the city water which, aside from its temperature, is satisfactory owing to its treatment at a new filtration plant. The men complained, however, that this water was too cold. An attempt to moderate the degree of icing also proved unsuccessful, for the water was then too warm. Realizing that spring water or well water which has the temperature of the ground from which it is drawn is at the best temperature for human consumption, we devised the following scheme which has proved eminently satisfactory for supplying water free from germs at the ground temperature.



ICELESS COLD WATER DRINKING FOUNTAIN

A 3-in. iron pipe with a blind point at one end was driven 60 ft. in the ground. At the top a T-fitting was installed and into this a ¾-in. connection to the city water supply was tapped. A ⅜-in. pipe extending to the bottom of the 3-in. pipe was then inserted and supported from the plug at the top end of the T-fitting. This small pipe was connected to the drinking fountain a few feet away and inside the shop. Through these connections, the city water pressure keeps the 3-in. pipe filled and forces the water up through the small pipe inside, the larger pipe thus acting as a storage well for the city water. As the water is drawn off at the drinking fountain, it is taken from the bottom of this well, 60 ft. in the ground, and it has the temperature of the sand and gravel and cold water surrounding the 3-in. pipe.

Tests have been made showing that the temperature of the city water as it entered the pipe was 72 deg. while the temperature of that drawn out at the drinking fountain was 52 deg. On an extremely hot day recently, after the drinking fountain had been used heavily all the forenoon by trainmen and laborers as well as by the shop men, a test was made which showed the temperature of the water entering the pipe to be 80 deg., while that which was drawn at the drinking fountain was 56 deg.

The Bay State Street Railway, Boston, Mass., estimates for the year ending June 30, 1918, an expenditure for coal of $1,512,000. This includes 35,000 tons at $7.50 per ton and 125,000 at $10 per ton. The company has paid the following prices for coal during the past four years: 1914, $3.50; 1915, $3.55; 1916, $3.80; 1917, $4.55.

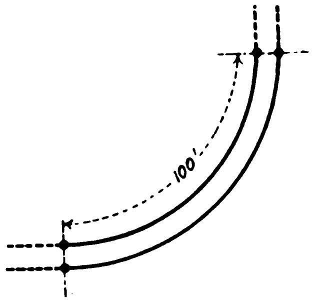
Cost Data on Special Work Renewals—II

By M. BERNARD

Assistant Engineer Way & Structures Department,
Brooklyn (N. Y.) Rapid Transit System

This is the second plate of the series of Cost Data on Special Work renewals. An editorial on the series appears on page 256 of this issue. The first plate was published in the issue for July 21, page 108.

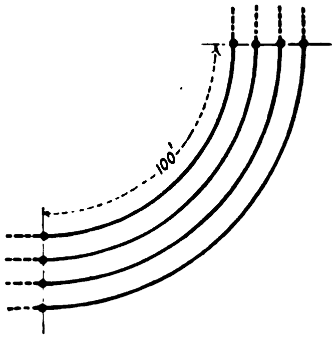
Fig. 3—Single Track Plain Curve (90 Deg.)
Length—100 ft. single track
Construction removed—9-in. girder rail—8-in. granite on sand
New construction—7-in. girder rail—5-in. granite on concrete
Pavement outside of track—Sheet asphalt



	Light Traffic	Average Traffic	Heavy Traffic
Labor	$143.00	$175.00	$200.00
Handling	80.00	95.00	110.00
Miscellaneous	30.00	35.00	45.00
Total (except materials)	$253.00	$305.00	$355.00
Cost per single track foot	2.53	3.05	3.55

Cost of replacement of sheet asphalt not included.

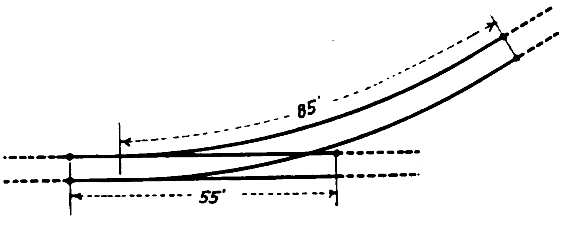
Fig. 4—Double Track Plain Curve (90 Deg.)
Length—200 ft. single track
Construction removed—9-in. girder rail—8-in. granite on sand
New construction—7-in. girder rail—5-in. granite on concrete
Pavement outside of track—Sheet asphalt



	Light Traffic	Average Traffic	Heavy Traffic
Labor	$295.00	$370.00	$415.00
Handling	165.00	200.00	230.00
Miscellaneous	65.00	75.00	90.00
Total (except materials)	$525.00	$645.00	$735.00
Cost per single track foot	2.63	3.23	3.68

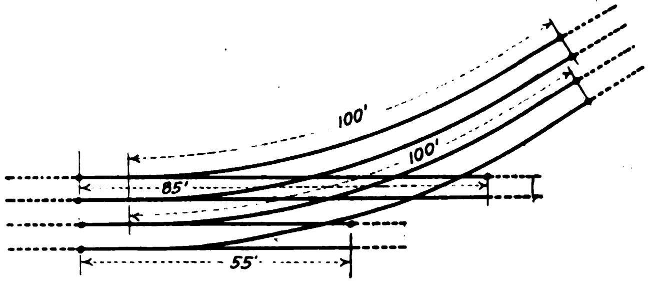
Cost of replacement of sheet asphalt not included.

Fig. 5—Single Track Branch-off (30 Deg.)
Length—140 ft. single track
Construction removed—9-in. girder rail*—8-in. granite on sand
New construction—9-in. girder rail*—8-in. granite on concrete



	Light Traffic	Average Traffic	Heavy Traffic
Labor	$240.00	$290.00	$350.00
Handling	70.00	80.00	90.00
Miscellaneous	35.00	40.00	45.00
Total (except materials)	$345.00	$410.00	$485.00
Cost per single track foot	2.47	2.93	3.46

Fig. 6—Double Track Branch-off (30 Deg.)
Length—340 ft. single track
Construction removed—9-in. girder rail*—8-in. granite on sand
New construction—9-in. girder rail*—8-in. granite on concrete



	Light Traffic	Average Traffic	Heavy Traffic
Labor	$610.00	$715.00	$855.00
Handling	185.00	205.00	240.00
Miscellaneous	90.00	105.00	120.00
Total (except materials)	$885.00	$1,025.00	$1,215.00
Cost per single track foot	2.60	3.02	3.57

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*Hard-center construction. *Explanation:* By "light traffic" is meant either the divergence of cars during progress of work, or a traffic of not more than 150 cars per day of twenty-four hours. "Average traffic" denotes the passage of about 325 cars per day of twenty-four hours, and "heavy traffic" that of 750 or more.

By "labor" is meant the labor cost of tearing out the old paving and special work and installing the new at the location where the work is done. "Handling" signifies the cost of loading the necessary materials at the various storage yards as well as the unloading of same at the place of renewal. It also includes the cost of transportation and the cost of removal of old or left-over material. Since the transportation is done by a subsidiary company, which adds profit and overhead expense to the net cost, this item may differ considerably from that obtained on other railways. Under "miscellaneous" are included the expense of city inspectors, expense incurred when portable crossovers are used for divergence of cars during renewal, watchmen's wages, and incidental engineering expense. The total of these three items —labor, handling and miscellaneous — therefore includes everything except the cost of materials.

On account of the unsettled labor conditions prevailing since the beginning of the war, the costs given are based on pre-war wages, the average track labor on which these costs are based is 20 cents per hour, including the foreman's wages.

Storage Batteries Used for Lighting Manholes

In underground work, difficulty is necessarily experienced because of the lack of light. This is particularly true of manhole work where the only natural light obtainable comes through the entrance to the manhole from the street, and the limited amount of space is such that practically in every position a man is bound to obstruct his own light. Because of this fact a good electric light is essential and a portable light is often the most practical.

PORTABLE OUTFIT FOR LIGHTING MANHOLES

The electric portable lighting outfit shown in the illustration has been developed for this purpose. The set includes an Edison storage battery of five cells and two guarded 12-cp. lamps with reflectors and 11-ft. leads. One of these lamps can be used constantly for twenty hours on a completely charged battery and both of them will burn for ten hours.

The Edison storage battery is particularly adapted to this service because it can be allowed to stand idle indefinitely in any condition of charge or discharge without injury, and without care or attention. The complete outfit weighs 40 lb. The ampere-hour capacity is 37.5, and the normal charging rate for seven hours is 7.5 amp. at 9 volts.

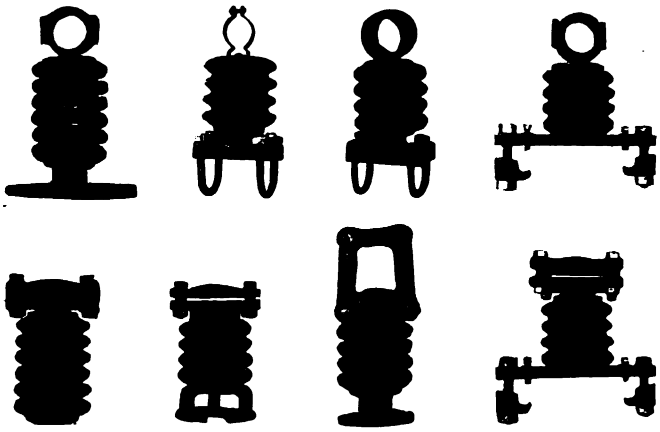
Overhead Men Helped Sale

The accompanying engraving shows how the overhead men of the Wichita Railroad & Light Company, Wichita, Kan., "did their bit" by erecting display advertisements of the Liberty bonds, during the sale last June.

THE LIBERTY BONDS
BUY YOUR SHARE
NEW USE FOR TROUBLE WAGON IN WICHITA, KAN.

Busbar Supports Having Interchangeable Features

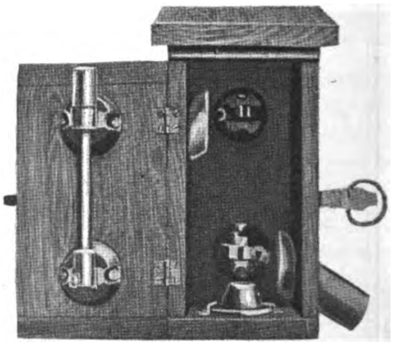
Busbar supports which can be quickly changed into the different types required to meet the local conditions which arise during installation are shown in the accompanying illustration. These supports have been developed by the Delta-Star Electric Company, Chicago, Ill., and since the parts are interchangeable and adjustable and it is possible to make such alterations as changing a flat base mounting to a pipe frame mounting. It is also a simple matter to accommodate a change in the size of busbars by removing the original fitting and installing a new one of a different type or size.


DIFFERENT TYPES OF ADJUSTABLE BUSBAR SUPPORTS

Outdoor Fuse Box for Protection of Distributing Transformers

For housing the fuses which protect outdoor distributing transformers, a fuse box is made which embodies several important safety features. As will be seen from the illustration complete separation of the part to be handled from all live contacts is accomplished automatically by opening the door.

The fuse tube is open at the bottom and is provided with a closed expulsion chamber at the top. Upon the blowing of the fuse the gases are expelled from the bottom of the tube through a porcelain bushing in the bottom of the box. The gases expelled from the fuse tube puncture a piece of paper clamped under the box. This puncture can be seen by the inspector from the ground, and there is no necessity for his climbing the pole. No tools other than a screwdriver are necessary for the installation of boxes. They are supported by a strap hanger-iron screw to the crossarm, and the line lead and transformer lead enter the fuse box through extra heavy bushings in the side of the box. The complete outfit is made by the Westinghouse Electric & Manufacturing Company.


SAFETY FUSE BOX FOR DISTRIBUTING TRANSFORMERS

News of Electric Railways

Traffic and Transportation
Financial and Corporate
Personal Mention
Construction News

Strike Declared in San Francisco

Men Walk Out Without Presenting Demands—Discontent Spread by New Men—City to Parallel Market Street Tracks

On Aug. 11 about 100 platform men of the United Railroads of San Francisco went out on strike, no cause being stated. Many of them abandoned their cars on the street. More men continued to leave their posts until by nightfall on Aug. 14 nearly all the lines of the system were seriously crippled, some being discontinued altogether. The strikers asserted that they had enrolled 1500 out of the total of 1850 platform men. A parade of strikers took place, as well as various other demonstrations, such as derailing cars and urging men to quit their posts, but the cases of violence or serious damage have been few. The company has been breaking in about 600 new men to replace those that will be lost by draft, and it is believed the discontent was begun and spread by these new men.

The Auto-Bus Operators' Union is assisting the strikers. The secretary of that body announced his intention to give all former platform men who could drive automobiles an opportunity to go into business operating jitneys, while the others would be offered a course of intensive training. His boast was that the present total of 500 jitneys could be doubled in forty-eight hours and increased to 2000 within a short time. In reply to this the Police Commission has stated that only 130 more buses could obtain licenses.

Up to the night of Aug. 14 no grievances had been presented, nor had the company been informed as to what the strikers were seeking. They stated, however, they would soon petition to have the working day reduced from ten hours to eight hours, and the pay raised to $3.50 a day, with time and a half for overtime. President Lilienthal, in an announcement to the public, expressed regret for the inconvenience caused, pointed out that in four years wages had been voluntarily raised three times, and cited the efforts the company had made in the form of insurance, personal loans and other fair and generous dealings with the men. He said in part:

"I know that those of our men recently employed came under certain outside influences and that at the present time such defection as is taking place is the result of physical intimidation. We must, of course, depend upon the public officers to preserve peace. But even if they do, the fear of violence, especially when applied to men of families, tends to frighten them off the cars." President Lilienthal also said that the men on strike were no longer in the employ of the company, and that they had left the service by what would seem to be their own voluntary act. The recent scale of voluntary wage increase was published in the ELECTRIC RAILWAY JOURNAL of July 21, page 117.

CITY TO COMPETE ON MARKET STREET

The Board of Supervisors on Aug. 13 voted to lay municipal tracks on Market Street, paralleling the United Railroads' tracks now in service. It was decided to give the municipal cars the exclusive right to operate through the Twin Peaks tunnel. Construction is to be commenced as soon as possible, and municipal cars are to be operating from the ferry through the tunnel by the first of next year. It is pointed out that the most profitable franchises of the United Railroads have but twelve years to run, and that the city will lay plans to develop its system so as to be in a position to take over the private lines advantageously at that time. The compromise plan of the United Railroads for handling traffic on Market Street and through the tunnel, which was turned down by the city, was noted in the issues of July 14 and Aug. 11.

Municipal Ownership Propaganda in Toledo

Plans are being perfected by the Central Labor Union and the Socialists at Toledo, Ohio, for a strong campaign in behalf of the proposed charter amendment providing for municipally-owned street railways. This will be submitted to the voters for approval at the primary election on Sept. 11. The campaign is to be started three weeks before the primaries, according to present plans.

The amendment would give power to the city to issue negotiable bonds and pledge the general credit of the city for the purchase of any public utility. In its terms it is general, but its specific purpose is to purchase the railway property of the Toledo Railways & Light Company. Should the amendment be approved, voters will be asked to authorize the city to issue $3,000,000 in bonds at the November election as the initial payment for the property. Half of this amount would stand against the credit of the city and the remainder would be a lien against the property.

In the event that both the charter amendment and the bond issue were approved, an expert would be employed to make a valuation of the property. The city's budget contains an item of $17,000 to pay an expert for this work.

Director of Law Harry Comminger, when asked in regard to this matter, expressed doubt as to whether such an amendment as this would be constitutional, although he said he had not made an investigation. President Johnson Thurston of the Street Railway Commission declined to express an opinion as to the probable effect of the municipal ownership program on the community plan which has been worked out by the commission and is now in the hands of Henry L. Doherty, chairman of the board of directors.

Strike Settled in Butte

A strike which was begun on the lines of the Butte (Mont.) Electric Railway on Aug. 3 tied up all traffic from that date to the evening of Aug. 9. The company made no effort to operate cars. Jitneys and vehicles of all kinds were pressed into service.

The men insisted that the company must accept their terms as to increased wages without compromise, and the company demanded that the increased wage scale be based upon the copper market. The company's counter proposition to the men allowed 45 cents an hour for first-year men; 50 cents an hour for second, third, fourth and fifth year, and 53⅛ cents after five years of service, with time and a half for overtime after twelve hours, based on the price of copper at 20 cents a pound and over. An amount of 2½ cents an hour would be deducted when copper was below 20 cents; 5 cents when copper was below 18 cents, and an amount sufficient to bring back the old scale when copper was below 15 cents. The union demanded the elimination of the five-year clause, with 53⅛ cents an hour for the first year and 56¼ cents an hour for the second year and after, irrespective of the price of copper, with time and a half for work over ten hours.

The strike was settled at a conference on Aug. 8 between officials of the railway and its employees in the office of Mayor W. H. Maloney. Car service was resumed at 6 p. m. on Aug. 9. The conference agreed on a scale of wages of 47½ cents, 50 cents and 53⅛ cents an hour for men whose employment extended over a period of one, two and more years. The agreement also provides for time and a half for all work over eleven hours. This is a flat scale of wages, fixed independently of the fluctuations of the copper market, in accordance with the men's demands. The men will resume their old numbers and priority.

B. R. T. Must Obey Order

Supreme Court Justice Directs Company to Put 250 New Cars in Service—Company Seeks Injunction

Under an opinion given on Aug. 12 by Supreme Court Justice Samuel H. Ordway, the Brooklyn (N. Y.) Rapid Transit Company must obey the order of the Public Service Commission to put 250 new cars on its surface lines. Previous references to this case were made in the ELECTRIC RAILWAY JOURNAL of July 14 and July 28. The order of the commission was entered on Feb. 8.

Commissioner Travis H. Whitney says that the present decision will have a far-reaching effect in strengthening the powers of the commission. He is quoted as follows:

"The commission was convinced that the company should buy cars and so ordered. After the war situation developed critically, the commission pointed out in an opinion that the company might reapply, stating any new facts resulting from war conditions. Instead of doing so, the company obtained an *ex parte* writ of certiorari which held up the order. The Supreme Court now says that the company must come to the commission if the situation has changed."

The Brooklyn Rapid Transit Company on Aug. 14 notified the commission that it would apply to the United States District Court in Brooklyn for a federal injunction restraining the commission's order. In regard to this William L. Ransom, chief counsel for the commission, said:

"The commission has repeatedly made known its willingness to deal fairly with the company on the basis of any new facts disclosed by due application. The company does not want that. It has made no application based on any conditions due to the war. It is, rather, bent on further delay."

At a hearing before Judge Veeder in the Brooklyn Federal Court on the day set counsel for the company, in asking for a temporary restraining order, asserted that they had been denied a constitutional right of review based on "primitive justice." They stated that the commission had no right to order the purchase of cars, because no evidence of the need of the cars had been submitted, and that the Legislature had unconstitutionally withheld the right of review in giving power to the commission to enforce decisions affecting the liberty and property of a private or corporate person.

Judge Veeder declined to issue a temporary order, but he announced that he would order the case for Aug. 21 before a specially constituted court in Brooklyn, consisting of one United States Circuit Court judge and two District Court judges. At this time the argument of the company for an injunction will be heard.

This court, the first of its kind in the State, is to be organized under the federal statute which provides for two District Court judges and one Circuit Court judge to hear any application for an injunction against a State commission or against the Interstate Commerce Commission.

Buffalo Arbitration Board Reports

The conductor whose discharge on June 1 brought about threat of a strike by the union men on the Buffalo, N. Y., lines of the International Railway, has been reinstated by the board of arbitration. The board's decision said that the conductor did violate the three-year agreement between the company and its men and the rules of the company by leaving his car without relief. Owing, however, to his previous good record during eight years of service, the board decided that he should be reinstated to his former position with full seniority rights. The threatened strike was noted in the ELECTRIC RAILWAY JOURNAL of July 28, and a résumé of the testimony before the arbitration board was given in the issue of Aug. 4.

Because of the success in the above-described case the union immediately demanded the reinstatement of another conductor who was discharged under similar circumstances. The case was referred to the same board of arbitration. After considering the case the board denied the union's request. The decision, which was unanimous, stated that this employee had repeatedly violated not only the agreement but also the rules to such an extent that nothing should be done except to sustain the company's action in dismissing him from the service.

The members of the board of arbitration were Bert L. Jones, vice-president and general manager Niagara Gorge Railway, Buffalo, N. Y., for the company; John B. Kolb, a motorman, for the union, and Frank X. Schwab, a wholesale liquor dealer, as third member of the board.

Kansas City Strike Ends

Company Refuses to Agree to Closed Shop—Federal Courts Issued Restraining Orders

The strike situation on the lines of the Kansas City (Mo.) Railways was cleared up on Thursday, Aug. 16, after a suspension of service since Wednesday, Aug. 8. The beginning of the strike, instigated by former employees and having as its declared object the adoption of a "closed shop," was described in last week's issue.

On Thursday, Aug. 16, a committee of business men passed a proposal and secured a vote of acceptance from the strikers. The company signed it and announced that cars would be run Friday morning. As will be noticed later, the proposal was practically the same as that made by the company on the Sunday before and rejected by the men. The settlement provides for the return of men out since Aug. 1, accredited committees from the various classes of employees, arbitration and no discrimination against union men. The strikers, it is understood, lost their fight for a "closed shop." The company's proposal for individual contracts was refused.

The public in Kansas City varied with regard to supporting one side or the other in the strike. The local unions were very radical in their support of the strikers. The press in general played into the hands of the strikers by exploiting the complaints against wages and conditions, playing up extraneous matters and putting the soft pedal on the demand for complete unionization. This misled a large portion of the public. Many, however, did not at all sympathize with the strikers. The business men tried to be neutral, although they almost universally favored the company's side of the case.

PROGRESS OF THE STRIKE

Several hundred strikebreakers were brought to Kansas City on Saturday morning, Aug. 12, and four cars containing part of these were attacked by strike sympathizers, five of the latter and bystanders being injured. Early Saturday afternoon the mob attacked trucks bearing dishes and food for the strikebreakers and prevented food from reaching the men. In the evening the mob seized and burned a car that had stood under brakes near the carhouse. The mob then tried to set fire to the carhouse, but the fire department extinguished the blaze. About 10.30 p. m., after continuous rioting, the crowd prevailed on the strikebreakers to go to the Union Station, where they were loaded on cars and taken outside the city.

On Sunday night the company, after several conferences with city officials and strike leaders, proposed a settlement involving contracts of employment running to Sept. 1, 1921. The company would treat with duly acredited committees chosen by each class of employees, any non-adjustable case to be arbitrated. It was agreed that all employees who quit work on or subsequent to Aug. 7 should return to work, and that the men dismissed since Aug. 1 should be reinstated. The company, however, would not run a "closed shop," although union members would not be the object of discrimination. These proposals, it is said, were voted down by the men on the advice of the union leaders.

On Monday, Aug. 13, the strikers adopted the following resolution:

"The members of the new carmen's union, through their accredited representatives, notify the representatives of the street car company that we insist that upon a settlement of the difficulties and upon our return to work every employee who may now or hereafter be engaged by the Kansas City Railways shall become a member of the Amalgamated Association of Street & Electric Railway Employees of America, within thirty days."

Although the company had announced that cars would be operated on Monday, no effort was made to run them. The company was said to have more than 600 trainmen under pay at various carhouses, to work when the time came. These were trainmen who had remained loyal to the company, and trainmen formerly employed by this and other companies. The company issued a statement that in view of the disgraceful occurrences on Saturday night there would be no cars operated until police protection was furnished.

Restraining Orders Granted Against Strikers

A restraining order against striking employees, city officials and any and all other agencies, preventing them from interfering with the company in the operation of its cars and the control of its Missouri property, was granted by Judge Martin J. Wade of the Federal Court on Tuesday, Aug. 14. A similar order was issued by Judge Woodrough for the Kansas property. These temporary injunctions were secured in time to prevent the throwing of the company into receivership through a State court.

This receivership move came about through the action of the City Council in appointing on Monday night a committee with representatives from both houses. The first act of this committee on Tuesday was to file an application for receivership against the protest of a committee of business men. The officials of the company were ordered to appear at 2 p. m. Before then, however, the federal restraining orders had been granted, and the hour was changed until Friday morning, Aug. 17, after the hearings on the orders.

Both houses of the City Council passed on Monday night an ordinance providing for licensing conductors and motormen, the fee, $1, to be paid once, license to be indeterminate as long as the trainman was employed in Kansas City. The ordinance has yet to be signed by the Mayor. Applicants would have to be twenty-one years of age, with at least twenty days' experience in operating in Kansas City. Special licenses were provided for in the case of new men, while receiving training for twenty days under licensed motormen and conductors. Fines of $100 to $500 were set for violations.

Tangled Situation in East Cleveland

In a referendum vote in East Cleveland on July 31, the franchise granted the Cleveland Railway by the City Council some time ago was defeated by a majority of 87. The vote was very small, and apparently there was little interest in the matter. Street Railway Commissioner Sanders said that the town had thrown away the best franchise that will ever be offered it. The present franchise on the Euclid Avenue line has three years to run, but the Hayden Avenue franchise expired some time ago.

The defeat of the franchise has caused a renewal of bickerings between the city and East Cleveland over the question of fares and service until a satisfactory arrangement can be made. Street Railway Commissioner Sanders, declaring that he is not taking steps to get even, stated that the suburb will now receive what is justly due it in service as defined in its franchise—one car every eight minutes, with a shuttle service on Hayden Avenue, where the franchise has expired. The fare on this short stretch of track between Euclid and St. Clair Avenues, he said, will be 3 cents, without transfers.

President J. J. Stanley of the company has made an announcement that work on relaying the tracks on Euclid Avenue will be begun within a few days and that the space between the tracks will be paved at the same time. This announcement was brought out by a statement of W. H. Kelly, president of the East Cleveland Chamber of Commerce, that the company would have to prove to the people that its contracts amount to something more than scraps of paper before they will approve any new ordinance. While the city paved its portion of Euclid Avenue last year, the company had not yet touched its space when the vote on the new franchise was recently taken.

In regard to the matter, President Stanley is quoted as follows:

"The railway has been generous to East Cleveland car riders by giving them better service than is required by the existing Euclid Avenue franchise. Under this contract the company is required to give but ten-minute service. Instead, cars operate over the line every one and a half minutes in rush hours, and a three-minute schedule is maintained from Windemere west and a six-minute service from Windemere east outside of the rush hours. The next ordinance which is accepted by the Cleveland Railway will not be on the terms offered in the rejected measure. There is no reason why East Cleveland people should ride any cheaper than citizens of other suburbs."

East Cleveland officials assert that the old franchise provides for an eight-minute service on Euclid Avenue and that the cars must loop past the Union Station in the city. This would disrupt the plan of turning all cars at the public square. It is said that if the company is going to enforce one part of the contract, the East Cleveland officials will probably be able to compel it to observe all the terms of the contract. At least, this is the threat of Mayor Minshall. The East Cleveland officials had been willing to suspend part of the contract so that the company's plan of routing might be carried out.

Peace Agreement at Lima

The strike among employees of the Ohio Electric Railway at Lima, Ohio, which was begun on July 11, was settled on Aug. 13 by agreement between the company and the men. The settlement, it is said, was hastened by the determination of the authorities to prevent a recurrence of the disorder that accompanied the attempt to resume service on Aug. 9. The agreement provides for changes in wages and working conditions, but not for union recognition.

The long strike trouble, as was noted briefly in last week's issue, developed into a riot on the evening of Aug. 9 and resulted in the serious injury of several persons. Eight men are now in jail on charges in connection with the riot.

After this Governor Cox notified the company that no cars should be operated in Lima until further notice. This became necessary because of the State's inability to give the local officials aid from the national guard, on account of its mobilization for federal purposes. E. W. Hines, a banker who was appointed director of safety on Aug. 9 to fill the unexpired term of Col. E. A. Gale, now in federal service, increased the police force and notified strikers and sympathizers against interfering with the operation of the cars. He called attention to the statute which makes such interference a penitentiary offense.

Aug. 13 was fixed as the day to resume operation, and the police department was to endeavor to prevent all trouble. Instead of another outbreak on this date, as was really expected by the city officials, a settlement was reached between the striking motormen and conductors and the Ohio Electric Railway. Both sides made concessions, but the company refused to recognize the union. As far as possible it was agreed to abolish split runs, and cars will be operated in such a manner as to give the men nine and one-half hours' work for ten hours' pay. The wage scale provides 25 cents an hour for the first year, and an increase of 1 cent an hour for each additional year's experience up to five years. Then the men are to receive 30 cents and the same thereafter.

Illinois Traction Increases Wages of Section Men.—The Illinois Traction System, Peoria, Ill., has granted an increase of 25 cents a day to its section men, the wage now being $2.50 per day. The increase affects the entire system.

Flag Printed on Stationery.—The Grand Rapids, Grand Haven & Muskegon Railway, Grand Rapids, Mich., is printing on its stationery a colored representation of the American flag with the following words: "Our flag; a symbol of freedom, opportunity and civilization; long may it wave."

New Wage Scale for Charlotte.—Effective Aug. 1, the Southern Public Utilities Company, Charlotte, N. C., established a new wage scale for platform men, increasing the previous basis to the extent of 5.5 per cent. This is the second recent raise of this amount, a similar increase in the rate of pay for the motormen and conductors having been announced last fall.

Springfield (Mo.) Men Reopen Strike.—It is reported that a settlement of the three-week strike among employees of the Springfield (Mo.) Consolidated Railway was reached on Aug. 11, with an agreement regarding wages, retention of seniority rights and permissible union membership without full union recognition. The next day, it is said, the men repudiated their agreement and went out on strike again for full recognition of the union.

Trenton Asks for Electrolysis Agreement.—The city commission of Trenton, N. J., has asked the Trenton & Mercer County Traction Corporation, the New Jersey & Pennsylvania Traction Company and the Public Service Railway to enter into an agreement with the city for the mitigation of electrolysis evils in Trenton. The city asserts that it is put to considerable expense for replacing water services. One water main lasted only eight weeks.

To Arbitrate Key Route Labor Trouble.—Employees of the San Francisco-Oakland Terminal Railways on Aug. 6 voted, by a large majority, to strike unless the company granted them a wage increase. The grievance committee of the carmen's union, representing the employees, met with company officials on Aug. 8 and listened to a compromise offer made by the company. After a series of meetings both sides agreed to submit the matter to arbitration, and the procedure is now under way.

Labor Men Oppose St. Louis Settlement.—The proposed United Railways compromise, in which the city of St. Louis would become a partner with the electric railway corporation, was strongly condemned in a report made on Aug. 13 to the Central Trades & Labor Union by a specially appointed committee. The committee alleged that the plan would allow the company to dodge taxes and obtain franchises free, and recommended that the central trades oppose the measure that is now being considered by the Board of Aldermen.

Cincinnati Company Carries Grade Crossing Case to Highest Court.—An appeal to the United States Supreme Court will be taken by the Cincinnati Traction Company and the Cincinnati Street Railway in their case against the city of Cincinnati in relation to the Ludlow Avenue grade crossing elimination. The Ohio Supreme Court recently rendered a decision in which the city received a judgment for $61,220. The companies claim that the State law and the municipal ordinance providing for grade crossing eliminations are unconstitutional.

Fare Reduction Refused to Outlying Annexed Village.—In its desire for territory and increased population, Cleveland some years ago took in Euclid Village and the territory between the eastern limits of East Cleveland and the village, a stretch of several miles. The Cleveland Railway had been charging a fare of 8 cents to that territory and collecting 1 cent for transfers. Recently the City Council passed an ordinance fixing the fare at 6 cents, with 1 cent for transfers, but the company has refused to accept it. It holds that 6 cents is not sufficient to pay the cost of operation.

Wages Increased at Bangor.—A voluntary increase in the wages of conductors and motormen was announced on Aug. 14 by the Bangor Railway & Electric Company, Bangor, Me. By the new scale first and second-year men are to be paid 29 cents an hour, third and fourth-year men 30 cents, with 31 cents the fifth year and afterwards. The increase amounts to 4 cents an hour for all grades and gives the men 7.5 cents an hour advance over the rates of Jan. 1, 1917. Car house and construction men also receive an increase. The road is operated by non-union labor. The payroll increase this year will be about $25,000.

Court Rules Against State Forcing Men to Work.—The State case, brought in the name of the Washington Public Service Commission against the Tacoma Railway & Power Company, Tacoma, Wash., and 293 striking employees, was dismissed on Aug. 4 on an order received from Superior Judge Mitchell. The only pertinent issue determined was the sustaining of a demurrer filed by the strikers in regard to their being included as defendants. The court held they could not be forced to work in order to provide "the adequate service" sought by the State. The case was still on trial when the strike was settled by agreement between the company and men, as previously noted in these pages.

St. Louis Company to Buy Coal for Employees.—The United Railways, St. Louis, Mo., will purchase coal in large quantities and retail it at cost to its 5000 motormen, conductors and mechanics in an effort to cut the cost of living. This announcement was made in a general circular sent out to the men over the signature of President Richard McCulloch. Notices were also posted in the thirteen carhouses of the company. It is estimated by the officials that a saving of from 5 to 7 cents on a bushel of coal can be made by the employees. The coal is to be stored in the various carhouses and sent to the homes of the workmen by drays. Order blanks have been distributed to the foremen of the carhouses, and the operating employees will be requested to use them.

Canada Plans to Acquire Railroad Systems.—Plans of the government for nationalization of railroads in the Dominion of Canada on a larger scale were recently announced in Parliament by Sir Thomas White, finance minister. He declared that in addition to the government-owned Inter-Colonial Railway in Eastern Canada, it is proposed to acquire the entire Canadian Northern Railway system of more than 9000 miles, of which 6000 miles are situated in the Western wheat belt. The minister said the company has a common share capital of $100,000,000, of which the government already owns $40,000,000. It is proposed now to purchase the remaining $60,000,000 of common stock from the private owners. The minister said also that the government contemplated the eventual acquisition of the Grand Trunk Pacific Railway.

British and American Railways Compared.—William R. Pomerene, attorney Columbus Railway, Power & Light Company, read a paper before the Kit-Kat Club in Columbus on April 5, entitled "Trams and Trolleys," comparing British and American practice and giving other interesting information in regard to electric railways. The paper has recently been reprinted in pamphlet form. The comparison made was in part as regards general conditions and in part in detail as to the wages paid, fares charged, etc., between Glasgow and Columbus. Mr. Pomerene also referred to the history of American electric railways, including the history of franchises, and pointed out that the original ieda of a fixed fare to last for the greater part of a generation is bound to be unreasonable and unjust to one or the other of the contracting parties. No city, he says, would enter into a contract for twenty-five years to buy all of its coal at a fixed price per ton, nor would a coal operator be willing to furnish his bond to supply all the coal which might be asked within that period at a fixed price. He quoted a number of examples to show that in other lines of business a fixed price, such as many railway franchises provide for the charge for transportation, is likely to be unsatisfactory.

Program of Association Meeting

National Business Men's Convention

An emergency call has gone forth from the Chamber of Commerce of the United States to the business men of the country for a war convention to be held at Atlantic City on Sept. 17-21. It is expected to be the largest gathering of business men ever held. A principal topic of discussion will be the question of how business may render greater service in winning the war. This will include, for example, what may be done to control prices, and how greater efficiency in land and water transportation shall be developed. Moreover, there will be discussed the questions of how the nation shall provide for business enterprises not essential to the nation in war time, the special importance of food conservation to business men, industrial relations and employment problems, and foreign trade, banking and credit in war time. Of particular interest will be the subject of the readjustment after the war. This will include the question as to what will be the course of prices on raw materials and finished products after the war, how the nation shall plan for replacing its men in industry after they return from the war, and what new responsibilities in international relations may be expected after the war.

Financial and Corporate

Annual Report

Philadelphia Rapid Transit Company

The comparative income statement of the Philadelphia (Pa.) Rapid Transit Company for the fiscal years ended June 30, 1916 and 1917, follows:

	1917		1916	
	Amount	Per Cent	Amount	Per Cent
Earnings:				
Gross passenger earnings	$27,504,040	96.32	$24,871,254	96.21
Receipts from other sources	1,049,574	3.68	968,088	3.79
Total earnings	$28,553,614	100.00	$25,839,344	100.00
Expenses:				
Maintenance and renewals:				
Maintenance	$2,712,121	9.50	$2,506,731	9.70
Reserve fund for renewals	1,570,921	5.50	1,369,170	5.30
Total appropriation	$4,283,042	15.00	$3,875,901	15.00
Operation of power plant	1,694,151	5.93	1,441,421	5.58
Operation of cars	7,129,739	24.97	6 447 078	24.95
General	1,498,826	5.25	1,343,326	5.20
Taxes	1,398,412	4.90	1,264,701	4.89
Total expenses	$16,004,171	56.05	$14,372,427	55.62
Net earnings from operation	$12,549,443	43.95	$11,466,916	44.38
Fixed charges:				
Interest	$2,280,179	7.99	$2,308,779	8.94
Rentals	7,365,393	25.79	7,365,433	28.51
Sinking fund, city contract	120,000	0.42	120,000	0.46
Total	$9,765,573	34.20	$9,794,212	37.91
Surplus	$2,783,870	9.75	$1,672,704	6.47

The gross earnings during the year ended June 30, 1917, showed a gain of $2,714,270 or 10.5 per cent over those of the preceding year. This arose from an increase of 10.59 per cent in passenger earnings and 8.42 per cent in receipts from other sources.

The operating expenses, excluding taxes, showed an increase of $1,498,031 or 11.4 per cent. Of this total $986,353 was represented by larger appropriations for maintenance and renewals and to the company's wage fund, which is based on 22 per cent of the earnings. The taxes increased $133,711 or 10.6 per cent. The net earnings from operation, however, gained $1,082,527 or 9.4 per cent.

The fixed charges showed a net decrease of $28,639, owing to the saving in interest charges on account of car trust certificates paid off and the retirement of other capital obligations through the operation of sinking funds during the year. The resultant surplus for 1917 was $2,783,870 as compared to $1,672,704 for the preceding year.

The last fiscal year saw the beginning of the payment of dividends upon the company's capital stock of about $30,000,000. From the surplus earnings for the year ended June 30, 1916, there was paid on Oct. 11, 1916, a dividend of 2 per cent or $599,011, and for the last fiscal year there were paid on Jan. 31, 1917, a dividend of 2.5 per cent or $749,638, and on July 31, 1917, the same amount.

The capital account for "leases, franchises, construction, equipment, advances to leased lines, sinking funds, etc.," on June 30, 1917, amounted to $113,096,797, an increase of $115,650 for the year. This resulted from increases of $386,599 for additions and betterments and $378,540 for sinking fund payments and accretions, offset partly by sinking fund expenditures of $349,000 and the writing off of a proportion of near-side cars against renewals at $512,000, but helped by adjustments of $394,158 for underlying company property for prior years.

The company's renewal fund as of June 30, 1917, amounted to $2,525,000, of which $1,523,321 is in cash and the balance in securities. This fund is maintained for the purpose of having cash and liquid assets available for the financing of renewal expenditures as made from the accumulated unexpended balance of the 15 per cent appropriation of earnings for maintenance-renewal reserve.

Rock Island Collateral to Be Sold

The principal and interest due on June 1, 1917, on the $266,000 of collateral trust notes of the Rock Island Southern Railway, Rock Island, Ill., remain unpaid. The City Trust Company, Buffalo, N. Y., as trustee has given notice that it will soon sell at auction in Buffalo the collateral, consisting of $532,000 first mortgage 5's, due Jan. 1, 1947.

The protective committee for these notes includes Arthur L. Chambers of A. L. Chambers & Company, investment securities, Buffalo; George F. Sowerby and Henry O. Smith, acting under agreement dated June 2, 1917, with the City Trust Company, Buffalo, as depositary; Moot, Sprague, Brownell & Marcy, as attorneys, and S. Fay Carr, counsel.

The deposit agreement dated June 2, 1917, empowers the committee, in case it becomes the purchaser of the bonds, and provided the interest due on the notes on June 1, 1917, is fully paid, to grant an option on the $532,000 bonds at not less than 50 per cent of their par value, plus such premium as the committee shall determine, until June 1, 1920, presumably to the controlling company, the Mississippi Valley Railway & Power Company, and to postpone the payment of interest on the bonds for a period not exceeding three years on such conditions as the committee may determine.

The coupons due July 1, 1917, on the first and refunding mortgage bonds of the Mississippi Valley Railway & Power Company are also in default. As noted elsewhere this week, the plan for funding six coupons thereon was recently authorized by the directors of the company to assist in financing the Rock Island Southern Railway.

Mississippi Valley Adjustment

Plan for Readjusting Finances Without Assessment—Bondholders to Fund Three Years' Interest

Under the plan of readjustment of the Rock Island Southern Railway, noted in this journal in 1915 and 1916, an issue of $300,000 of prior lien 5 per cent bonds was created by the new holding company, the Mississippi Valley Railway & Power Company, for its corporate purposes and for the rebuilding and rehabilitation of the Rock Island Southern property. A portion of these bonds has been sold and a portion deposited as collateral to raise money for carrying out the plan of readjustment and the payment of interest upon Mississippi Valley Railway & Power Company bonds. The sum of at least $150,000 must be provided for rehabilitation and rebuilding of the Rock Island Southern Railway property. In the present unsettled condition of the bond market, and under the present operating conditions of the Rock Island Southern Railway property, it has been deemed inadvisable to sell the balance of the prior lien bonds in the treasury to raise this rebuilding fund of $150,000. Instead of selling such bonds, it has been deemed more wise to waive interest upon the bonds of the Mississippi Valley company, as well as the interest upon the Rock Island Southern bonds.

Agreements have been made with the holders of more than $500,000 of Rock Island Southern bonds which are not on deposit under the plan of readjustment, and therefore not owned by the Mississippi Valley company, granting an extension of the time of payment of interest upon their bonds for three years, provided the Mississippi Valley company, as owner of the majority in amount of Rock Island Southern bonds, also withholds its interest. If interest is not paid by the Rock Island Southern upon its bonds, the Mississippi Valley company is without sufficient funds to pay the interest upon its own bonds. The plan adopted, therefore, is to request Mississippi Valley bondholders to exchange the coupons upon Mississippi Valley bonds for the three years beginning July 1, 1917, and receive therefor, Mississippi Valley bonds, par for par.

Assenting bondholders of the Mississippi Valley company are accordingly asked to send their coupons maturing from July 1, 1917, to and including Jan. 1, 1920, to the company at Rock Island, or to the Central Trust & Savings Bank of Rock Island. There are outstanding about $175,000 of the $300,000 authorized prior lien 5s of 1915 of the Mississippi Valley company, and the interest thereon is being paid promptly, while coupons due July 1, 1917, on about $800,000 of outstanding first and refunding mortgage 5s remain unpaid. The $532,000 of first mortgage 5 per cent gold bonds (dated 1908 and due Jan. 1, 1947) of the Rock Island Southern Railway, which were not acquired by the Mississippi Valley company and which will have three years' coupons funded, are pledged to secure an issue of $266,000 of collateral notes of the Rock Island Southern Railway. This note issue is now being foreclosed, as noted elsewhere this week.

Explaining the situation, G. W. Quackenbush, assistant general manager, says:

"Funds are required for immediate disbursement for track betterments, new railroad ties, additional rolling stock, repairs to roundhouse, and other improvements to the property. Either an extension of tracks should be made into the business district of Rock Island to connect with the bridge line cars to and from Davenport, or a passenger depot should be built at the present terminal. New passenger cars are required or radical improvement to the present cars.

"The present net revenue of the Rock Island Southern Railway is approximately $50,000 per year. An increase in passenger rates of 20 per cent passed into effect on June 22, 1917, and an increase in freight rates is pending. These increases will probably take care of the increased cost of operation due to higher prices for coal and other operating material, so that the net revenue of the property for the next three years should not be less than the present net revenue. The extension proposed to the center of the business district of Rock Island, together with the improvements in the physical condition of the road and equipment, should increase the revenue and decrease the expenses of operation."

Dispute Over Paving in Seattle

Judge Dismisses City's Suit Pending Decision by Public Service Commission in Similar Case

The application of the city of Seattle, Wash., for a writ of mandamus to force the Puget Sound Traction, Light & Power Company to pave the space between its tracks with the same material as was used by the city in paving the rest of the street was denied recently by Judge Kenneth Mackintosh, after he had held it under advisement since March 26. The decision was in memorandum form, and directed attention to the fact that a suit involving the same parties and the same subject matter was before another tribunal of co-ordinate jurisdiction—Public Service Commission. Until the Public Service Commission makes a definite decision, and a final hearing is had in the Supreme Court, Judge Mackintosh will not enter the proceeding to make any ruling in the case.

The application which was submitted by Corporation Counsel Hugh M. Caldwell alleged that the company's action was a violation of its franchise obligations. The answer of the company set up that it had before the Public Service Commission a petition in which it asked to be relieved of paving between tracks whenever the city of Seattle improved the street.

Judge Mackintosh explained that he had not disclaimed jurisdiction, and indicated that he would be willing to entertain another application should the Public Service Commission decline to pass upon the case. Judge Mackintosh's action in recognizing the jurisdiction of the Public Service Commission is in contrast with the attitude of the City Council in forbidding the company to operate one-man cars on certain lines despite the permission granted by the Public Service Commission to operate such cars on those lines.

Corporation Counsel Caldwell of Seattle has now petitioned the Public Service Commission to dismiss the case of the company, in which the latter asks relief from its street paving franchise obligation. It is expected the company will resist the dismissal. A similar petition to disregard franchise requirements by the company was dismissed by the commission several months ago. At that time the commission declined to assume jurisdiction over anything pertaining to street railway operation except rates and public safety.

Auburn & Syracuse Electric Railroad, Syracuse, N. Y.—Five-year 6 per cent gold notes to the amount of $60,000 were paid off on Aug. 1 by the Auburn & Syracuse Electric Railroad at the office of the Trust & Deposit Company, Syracuse, N. Y.

Columbia & Montour Electric Railway, Bloomsburg, Pa.—Judge Evans in the Federal Court at Bloomsburg on Aug. 7 directed the bondholders of the Columbia & Montour Electric Railway to foreclose. The property consists of about 18 miles of line merged several years ago into the North Branch Transit Company, which also took over the Danville & Bloomsburg Electric line. A receiver has handled the affairs of the holding company for about a year. The equipment and rolling stock of the Danville & Bloomsburg line, it is said, have been used on the Columbia & Montour line. The generating plant of the former lies dismantled and abandoned.

Columbus Railway, Power & Light Company, Columbus, Ohio.—E. W. Clark & Company, Philadelphia, are offering an additional block of first refunding and extension sinking fund mortgage 5 per cent gold bonds of 1915 of the Columbus Railway, Power & Light Company. The total amount of this issue of mortgage bonds outstanding is $4,500,000 at the present time.

Gary & Interurban Railroad, Gary, Ind.—The Federal Court at Valparaiso, Ind., has ordered a foreclosure sale of the following subsidiaries of the Gary & Interurban Railroad: The Valparaiso & Northern Railroad and the Gary Connecting Railways, to be sold on Sept. 18, upset prices $40,000 and $50,000 respectively. The Gary and the East Chicago divisions will also be sold on this date at an aggregate upset price of $200,000, and the Laporte division for not less than $75,000.

International Railway, Buffalo, N. Y.—Because of its inability to dispose of $1,175,000 of 5 per cent refunding and improvement mortgage bonds at a price not less than 89 per cent of their face value, for the issuance of which the International Railway received authority on July 11, 1916, from the Public Service Commission for the Second District of New York, the company recently filed a petition to put these bonds on the market at not less than 85. The petition has been granted. The proceeds of the bond sale are to be used for the extension of the company's new Buffalo-Niagara Falls double-track line.

Mansfield Railway, Light & Power Company, Mansfield, Ohio.—Doherty interests, through the Mansfield Electric Light & Power Company, have secured control of the Mansfield Railway, Light & Power Company, which operates the street railway lines at Mansfield and the Mansfield-Shelby interurban line. This company also owns the lighting franchise in Mansfield. It is said that negotiations for this property have been under way for some time.

New Orleans Railway & Light Company, New Orleans, La.—Simon Borg & Company, New York, have lost the legal fight in the Federal Court in New Orleans to have a receiver appointed and permanent writ of injunction issued to prevent consolidation of the New Orleans City Railroad with the New Orleans Railway & Light Company. The banking company filed suit on May 22, 1916, and the court issued a temporary writ holding up the amalgamation until evidence could be presented. The New Orleans City Railroad has been operated under lease by the New Orleans Railway & Light Company.

Norton, Taunton & Attleboro Street Railway, Norton, Mass.—The Massachusetts Public Service Commission has approved the issuance of 1200 shares of new capital stock, at par, by the Norton, Taunton & Attleboro Street Railway. This corporation was organized to own and operate the Norton & Taunton Street Railway, purchased at receiver's sale, the amount of capital stock being approved by the commission as not exceeding the fair replacement cost of the property. The new stock issue is to be used to pay for improvements.

Ohio Service Company, Cambridge, Ohio.—The Ohio Service Company has applied to the Ohio Public Utilities Commission for authority to issue $120,000 of three-year 6 per cent convertible trust notes. The amount now outstanding is $1,301,000.

Reading Transit & Light Company, Reading, Pa.—William P. Bonbright & Company, New York, have announced the sale, at 98½ and interest, of the new issue of $2,300,000 of two-year 6 per cent secured gold notes of the Reading Transit & Light Company, dated Aug. 1, 1917. A previous note regarding this issue was published in the ELECTRIC RAILWAY JOURNAL of Aug. 11.

Tri-City Railway of Illinois, Rock Island, Ill.—At a recent special meeting of stockholders of the Tri-City Railway of Illinois it was unanimously voted to increase the capital stock by $500,000 to a total of $3,500,000.

West Virginia Traction & Electric Company, Wheeling, W. Va.—William P. Bonbright & Company, New York, have announced the sale, at a subscription price of 98½ and interest, yielding 6¾ per cent, of an issue of $1,800,000 of two-year 6 per cent bond-secured gold notes of the West Virginia Traction & Electric Company, dated May 1, 1917, and due May 1, 1918, but callable at 100½ and interest on forty days' notice. Previous items regarding this underwriting were published in the ELECTRIC RAILWAY JOURNAL of May 5 and May 26.

Electric Railway Monthly Earnings

AURORA, ELGIN & CHICAGO RAILROAD, AURORA, ILL.

Period		Operating Revenue	Operating Expenses	Operating Income	Fixed Charges	Net Income
1m., June,	'17	$186,330	*$137,513	$48,817	$35,800	$13,016
1 " "	'16	177,844	*113,729	64,115	36,053	28,061
6 " "	'17	998,088	*741,590	256,498	214,594	41,903
6 " "	'16	946,832	*641,567	305,265	218,509	86,756

BANGOR RAILWAY & ELECTRIC COMPANY, BANGOR, ME.

Period		Operating Revenue	Operating Expenses	Operating Income	Fixed Charges	Net Income
1m., June,	'17	$65,662	*$40,422	$25,240	$18,738	$6,502
1 " "	'16	64,368	*39,263	25,105	17,586	7,519
12 " "	'17	862,877	*488,713	374,164	221,471	152,693
12 " "	'16	800,890	*431,849	369,041	211,409	157,632

CHATTANOOGA RAILWAY & LIGHT COMPANY, CHATTANOOGA, TENN.

Period		Operating Revenue	Operating Expenses	Operating Income	Fixed Charges	Net Income
1m., June,	'17	$128,805	*$81,223	$47,582	$29,628	$17,954
1 " "	'16	102,680	*63,375	39,305	29,992	9,313
12 " "	'17	1,301,091	*907,416	393,675	357,675	36,000
12 " "	'16	1,182,352	*748,054	434,298	357,341	76,957

COLUMBUS RAILWAY, POWER & LIGHT COMPANY, COLUMBUS, OHIO

Period		Operating Revenue	Operating Expenses	Operating Income	Fixed Charges	Net Income
1m., June,	'17	$311,975	*$236,732	$75,243	$47,019	$28,224
1 " "	'16	280,350	*160,497	119,853	42,875	76,978
12 " "	'17	3,747,491	*2,474,273	1,273,218	531,282	741,936
12 " "	'16	3,307,057	*1,934,061	1,372,996	501,734	871,262

COMMONWEALTH POWER, RAILWAY & LIGHT COMPANY, GRAND RAPIDS, MICH.

Period		Operating Revenue	Operating Expenses	Operating Income	Fixed Charges	Net Income
1m., June,	'17	$1,550,770	*$955,369	$595,401	$427,519	$167,882
1 " "	'16	1,322,295	*742,346	579,949	419,968	159,981
12 " "	'17	18,147,509	*10,580,010	7,567,499	5,111,143	2,456,356
12 " "	'16	15,841,539	*8,445,477	7,396,062	4,847,814	2,548,248

CUMBERLAND COUNTY POWER & LIGHT COMPANY, PORTLAND, ME.

Period		Operating Revenue	Operating Expenses	Operating Income	Fixed Charges	Net Income
1m., June,	'17	$244,435	*$175,843	$68,592	$68,465	$127
1 " "	'16	242,379	*147,443	94,936	66,736	28,200
12 " "	'17	2,975,271	*1,960,379	1,014,892	814,160	200,732
12 " "	'16	2,759,843	*1,634,506	1,125,337	789,862	335,475

EAST ST. LOUIS & SUBURBAN COMPANY, EAST ST. LOUIS, ILL.

Period		Operating Revenue	Operating Expenses	Operating Income	Fixed Charges	Net Income
1m., June,	'17	$296,753	*$198,621	$98,132	$64,598	$33,534
1 " "	'16	244,082	*142,965	101,117	62,714	38,403
12 " "	'17	3,362,412	*2,106,159	1,256,253	767 220	489,033
12 " "	'16	2,702,763	*1,612,650	1,090,113	752,601	337,512

GRAND RAPIDS (MICH.) RAILWAY

Period		Operating Revenue	Operating Expenses	Operating Income	Fixed Charges	Net Income
1m., June,	'17	$104,828	*$72,133	$32,695	$18,972	$13,723
1 " "	'16	108,702	*72,645	36,057	13,036	23,021
12 " "	'17	1,303,090	*865,153	437,937	211,141	226,796
12 " "	'16	1,255,468	*834,096	421,372	166,667	254,705

LEWISTON, AUGUSTA & WATERVILLE STREET RAILWAY, LEWISTON, ME.

Period		Operating Revenue	Operating Expenses	Operating Income	Fixed Charges	Net Income
1m., June,	'17	$75,669	*$56,652	$19,017	$15,678	$3,339
1 " "	'16	72,030	*43,039	28,991	16,094	12,897
12 " "	'17	846,133	*626,273	219,860	184,686	35,174
12 " "	'16	763,749	*502,356	261,393	192,258	69,140

NASHVILLE RAILWAY & LIGHT COMPANY, NASHVILLE, TENN.

Period		Operating Revenue	Operating Expenses	Operating Income	Fixed Charges	Net Income
1m., June,	'17	$194,493	*$126,143	$68,350	$40,321	$28,029
1 " "	'16	190,109	*123,400	66,709	42,512	24,197
12 " "	'17	2,431,587	*1,529,333	902,254	496,976	405,278
12 " "	'16	2,251,525	*1,393,930	857,595	515,237	342,358

PORTLAND RAILWAY, LIGHT & POWER COMPANY, PORTLAND, ORE.

Period		Operating Revenue	Operating Expenses	Operating Income	Fixed Charges	Net Income
1m., June,	'17	$490,652	*$275,098	$215,554	$176,699	$38,855
1 " "	'16	473,664	*262,100	211,564	181,032	30,532
12 " "	'17	5,664,193	*3,070,129	2,594,064	2,173,776	420,288
12 " "	'16	5,456,967	*3,074,746	2,382,221	2,192,060	190,161

*Includes taxes.

Traffic and Transportation

Fare Increases Considered

Several Doherty Companies, Feeling Assured of Consent of Public Service Commissions, Will Probably Raise Fares

The greatly increased costs of operation, due to the war, have made it imperative for several of the properties operated by the Doherty Operating Company, New York, to consider increasing fares. R. F. Carbutt, in charge of the Doherty railway companies, is arranging with the managers of the traction companies to see what readjustment of fares can be made.

At a recent meeting of the executives at the New York office Mr. Carbutt reported that as changes in rates will probably be universal, there would be little opposition encountered on the part of the public utility commissions in the various states in which the Doherty traction companies do business. He said that as the increases to be asked for were directly based upon greatly advanced costs of operation which could easily be shown, the public service commissions would be convinced of the justice of the traction companies' demands. Already several rate changes have been made on Doherty properties, and arrangements are being made to adjust matters for all the traction companies.

The abolition of the sale of six tickets for 25 cents, a system which is in operation on some Doherty roads, will probably be the first step taken. In fact, one Doherty property has already abolished the six for a quarter idea. Not all the traction companies are decided as to what method to adopt in raising fares.

California Road Asks Rate Increase

Higher Costs and Large Portion of Business Taken by Automobiles Are the Reasons Given

The Petaluma & Santa Rosa Railway, Petaluma, Cal., which operates between Petaluma and Sebastopol and from Forestville to Santa Rosa and has steamers running between Petaluma and San Francisco, has filed with the Railroad Commission of California an application for authority to raise its passenger fares and freight rates. The company says that, while its net operating revenue for 1916 showed a return of 4.12 per cent on the value of its property as fixed by the Railroad Commission, if it had spent the sum needed for betterments the net return would not have been more than 3 per cent. It cites the fact that when the present rates were established it cost the company $36,000 for labor and fuel to operate two steamers, while now the cost is $60,000 a year, with prospect for further increases. The company says that it pays $1.05 a barrel for fuel oil, but that its contract at this price will expire the first of next year and then it will be fortunate to secure fuel oil even at a 50 per cent increase. The company figures that the gross increase in revenue resulting from the changes requested will be about $30,000. It avers that its present income is not sufficient to meet operating expenses and interest on outstanding obligations and to maintain properly its service and the property.

The fares and rates now sought to be changed, according to the company's statement, were established under competitive conditions so as to invite an increased population. The company has met its operating expenses and fixed charges by assessing $10 a share on its stockholders and by rigid economy. Land along the property has increased in value since the road was constructed from $75 and $100 an acre to $500 and $1,000, but automobiles and the steadily increasing cost of labor and material have prevented the net revenue from keeping pace with this development. The company wants to spend $250,000 within the next five years for additions, replacements and improvements.

Grade-Crossing Order Issued

Gates at Nearly 150 Crossings to Be Kept Down During Early Morning Hours by Order of New York Commission

The Public Service Commission for the First District of New York, on a motion made by Commissioner Charles S. Hervey, has issued an order directing the New York Central Railroad, the Long Island Railroad and the Staten Island Rapid Transit Railway to keep the gates at 143 grade crossings lowered from midnight until 5 a. m. as a measure of protection to vehicle traffic. The order specifies also that gates at two of the crossings on the Staten Island Railway, which is operated by the last-named road, be kept closed between 2 a. m. and 5 a. m.

A hearing held on the matter on June 6 was reviewed in the ELECTRIC RAILWAY JOURNAL for June 9, page 1072. Preliminary to that hearing an investigation had been made by the commission and data collected on the use made by vehicles and pedestrians of the principal crossings between the hours in question. The police department indorsed the plan and at the request of the commission made an additional investigation of all the 145 crossings, after which it recommended the list of crossings which should come under the commission's order.

The order takes effect on Aug. 22 and will remain in force for one year, unless abrogated in the meantime by the commission. All of the railroads involved are said to be in favor of the plan. In his opinion, Commissioner Hervey said that the crossing gates were not a sufficient safeguard to the public on account of negligent watchmen. The inspections disclosed that watchmen were frequently asleep during the early morning hours. Time clocks, to be punched at half-hour intervals, were tried out at certain crossings, but some gatemen found means of evading the scheme. Even thorough inspection by roundsmen had not proved altogether successful. The installation of signal semaphores to give a stop indication when the gates were up, had also been considered.

Bay State to Modify Special Rates

The Bay State Street Railway, Boston, has filed with the Public Service Commission of Massachusetts a schedule of changes to be made in reduced-rate workingmen's commutation and excursion tickets. This was to be effective on Aug. 16, but the commission has suspended its operation until Oct. 1, pending a public hearing or investigation. Some of the tickets are to be withdrawn, and others formerly sold at twenty rides for $1.40 are increased to $1.92. Others formerly sold at ten rides for 50 cents are increased proportionately. Excursion tickets on the Quincy, Taunton and Brockton divisions are provisionally withdrawn in the new tariff. The commission in its suspending order stated that, in its opinion, the changes might seriously affect the rights and interests of the public.

Wreck on Shore Line

Nearly a Score Killed in Collision Caused by Failure of Car to Take Siding

A head-on collision between two interurban cars of the Shore Line Electric Railway, Norwich, Conn., occurred late in the afternoon of Aug. 13. The accident happened near North Branford, about 12 miles from New Haven. The cars, it is said, were running at about 35 miles an hour, and as a result of the impact nineteen persons were killed and between forty and fifty seriously injured.

Evidence given by the car men and by passengers places the blame for the accident upon the crew of the westbound car, which should have waited on a siding about a half mile from the spot where the accident occurred. No specific reason was stated as to why the car had not sidetracked to wait for the eastbound car. After the accident the crew of the westbound car are said to have stated that they were sleepy on account of working overtime. The motorman escaped serious injury by jumping when he saw the collision was inevitable.

Six-Cent Fare Denied

The Rhode Island Public Service Commission on Aug. 14 denied the petition of the Bay State Street Railway, Boston, Mass., to be allowed to charge a 6-cent fare on its lines in Rhode Island. The commission ordered the company to establish an additional 5-cent fare zone in Portsmouth which, it held, will give considerable relief and should be given a fair trial before the 6-cent fare is considered. This will increase the through fare from Newport to the Massachusetts State line from 15 cents to 20 cents and the rate per mile will be 1.35 cents.

In its decision the commission stated that, although it had in mind the needs of electric railways during the present period of high prices, not enough evidence had been produced to prove that a 1-cent increase in the fares in Newport would not be unreasonable. It was evident to the commission that the company is not earning a reasonable return from its lines between Newport and the Massachusetts State line. The present establishment of fare zones seems to result in a preference to the town of Portsmouth. It was to remedy this that another fare zone was ordered and also in order to increase the rate paid by the through passenger.

Fare Reduction Considered in Buffalo

An appraisal of the physical properties of the International Railway, within the city of Buffalo, N. Y., is now being made by the municipal authorities in connection with the city's efforts to have the Public Service Commission order a reduction in fare from 5 cents to 4 cents. George E. Pierce, city attorney and acting corporation counsel, attended hearings in Albany on the application of several railways for permission to increase their fares from 5 to 6 cents, and facts elicited there before the Public Service Commission for the Second District are to be used by the city in its action. The International Railway, through Thomas Penney, vice-president and general counsel, has questioned the authority of the commission in the matter of making rates and this question must be settled before hearings are held on the city's application. The municipal authorities contend that the earnings of the company are sufficient to warrant a reduction in the rate of fare charged on its Buffalo city lines.

Skip Stop Introduced in Toledo

Scheme Is Being Tried Out on One Line—Outlook for Success Favorable

The Toledo Railways & Light Company, Toledo, Ohio, began skip-stop operation on Aug. 13 on its Cherry-Union Depot line in that city. The company had talked for several years of introducing the skip stop in Toledo, but no definite action was taken, due mainly to numerous objections which were made. During the last month several conferences were held with the city officials and a plan was agreed upon by which this form of express service was started on the Cherry Street line. This line is the busiest and one of the longest in the city. The schedule under the old arrangement provided for a one-way trip of forty-four minutes. The time of the run is reduced to thirty-six minutes under the skip-stop plan. It is thought possible by the company that this saving of time can be increased. The distance between stops under the old system was 510 ft. outbound, while under skip-stop operation it is 670 ft. Inbound cars stop 775 ft. apart now, instead of 550 ft. as formerly.

Previous to the introduction of the new system the company ran a set of posters informing the public of its intention to introduce the skip-stop. This was followed by two other posters, which pointed out the benefits of the plan. A final announcement called attention to the effective date of the change and also instructed patrons to look for white circles on poles at stop corners. Advertisements describing the new service were also run in the local papers.

Only a few objections to the plan as started have thus far been received. If the system proves a success upon the initial line it is the intention of the company to start it on the remainder of the system wherever practicable.

Electric Heaters for Calgary Cars.—Arrangements are being made to install electric heaters in the cars of the Calgary (Alta.) Municipal Railway for use during early-morning and evening hours in the spring and fall. The coal stoves will be retained and both systems will be used in the extreme cold weather.

Free-Transportation Privilege Withdrawn. — The Quincy (Ill.) Railway, a part of the Illinois Traction System, has rescinded its order, made some time ago, which allowed men in the government service free transportation. The great increase in the number of uniformed men in the district was said to be the reason for the action.

Trade in Ticket Books Made Unlawful.—A bill passed recently by the California State Legislature makes it unlawful to sell a railway ticket or commutation book to a second person not entitled to its use. The law states that any one who resells any instrument for passage on a common carrier shall be guilty of a misdemeanor.

Illuminated Car Numerals in Indianapolis.—Monitor-deck and side signs on the Virginia Avenue cars of the Indianapolis Traction & Terminal Company, Indianapolis, Ind., have been dispensed with and in the future the cars will be designated by illuminated numerals only. If the new system is successful on the south side line, cars of the entire Indianapolis railway system will be so numbered eventually.

Portland Employees Have Outing.—The employees and officials of the Portland Railway, Light & Power Company, Portland, Ore., with their families, on Aug. 8 enjoyed their annual picnic at Estacada. The general offices of the company were closed and every employee who could be spared participated in the day's outing. The employees' band and orchestra provided music. Athletic contests filled the program for a greater part of the day.

Injuries Caused from Short Circuit.—A blowout at the switchboard in the power station of the Toledo Railways & Light Company, Toledo, Ohio, on the morning of Aug. 13, caused a suspension of service for one and one-half hours. A score of manufacturing plants, dependent for power, also were closed down. Two men who were cleaning the board were badly burned, and several others received minor injuries. The damage is placed at $3,000.

New Company Publication in Wheeling.—*Traction News* is the name of a little four-page leaflet being published weekly by the West Virginia Traction & Electric Company, Wheeling, W. Va. An article which appeared in the first issue states that "its purpose is to establish a closer relationship between the management, the employees and the traveling public" and invites patrons to make use of its columns by sending in suggestions freely.

Car Posters Warn Against Pickpockets.—Large posters printed in red ink have been placed in all the city cars of the International Railway, Buffalo, N. Y., urging passengers to "Beware of Pickpockets." Within the last month several hundred passengers have reported the loss of various sums of money, and the police have arrested a number of professional pickpockets but there have been no convictions. The thieves usually infest crowded cars in the downtown section during rush hours.

Better Service Planned in Bellingham.—At a recent meeting of the City Council of Bellingham, Wash., the Puget Sound Traction, Light & Power Company proposed service improvements to be made in that city. The company plans to inaugurate within thirty days a schedule which will give more frequent service between 6 a. m. and midnight. The new schedule will be delayed until the completion of six more light cars of the type now operating in the city, which will replace heavy cars in the regular service. The latter will be used only as trippers and on occasions when the traffic is unusually heavy.

Fare Tariff Revised and Service Reduced.—The Railroad Commission of California has authorized the Los Angeles & San Diego Beach Railway, San Diego, Cal., to revise its fare schedule so that monthly commutation tickets are increased in price, school tickets are put on a different basis, family commutation tickets are abolished and other changes are made. The company is also permitted to reduce its service to seven daily trains. The reason for these changes is the loss of traffic, due principally to the competition of privately owned automobiles. Jitneys have not been an important factor in the competition.

Economics of Service Explained.—In an editorial which appears in the August issue of the magazine published by the Southern Public Utilities Company, Charlotte, N. C., the reasons for the desire of a public service company to give continuity of service are set forth. It is pointed out that when a company fails to furnish service it not only loses revenue, due to the cessation of income from customers, but its interest charges, cost of labor, depreciation, etc., continue, together with the inconvenience and extra expense incurred in restoring service as quickly as possible. Obviously the annoyance to patrons is the smaller item.

Seattle Opposes Elimination of Tickets.—The city of Seattle has filed a protest with the Public Service Commission of Washington against the application of the Puget Sound Traction, Light & Power Company to discontinue selling 4-cent tickets. This application was to be effective on Aug. 12 and was noted in the ELECTRIC RAILWAY JOURNAL for July 28, page 164. The city's protest alleges that to discontinue the sale of twenty-five tickets for $1 would be a violation of the company's franchise obligations and that this is not authorized by the public service commission law. It requests that the action by the company be suspended until a hearing can be held in the case.

Company Fined for Ignoring Schedule.—The Virginia Railway & Power Company, Richmond, recently was fined $100 on each of two charges in police court for failing to maintain the proper schedule on two of its city lines. The penalty inflicted was the maximum allowed by law. Figures were submitted to show that the company had run too few cars during certain eight-hour periods. The company took appeal, contending that although it had violated the terms of its franchise it was meeting the public demand and, taken as a whole, was exceeding its schedule requirements. This was due to the fact that it operated more cars than required during rush hours and operated on some lines beyond the limits required.

More Revenue Needed in Salt Lake City.—The Utah Light & Traction Company, Salt Lake City, has filed a modified rate schedule with the Public Utilities Commission asking for permission to discontinue the sale of 4-cent tickets, to charge 1 cent for transfers and to raise the fare 5 cents on the Sandy-Midvale and Bountiful-Centerville lines. In a recent statement General Manager H. F. Dicke said that during the past three and one-half years only 4 per cent has been earned on the value of the property and that a fair return has been earned in only one year of the past eight and one-half. Competition from low-priced automobiles is given as one reason for the decline in revenue besides the general increase in operating expenses.

Compromise Jitney Ordinance in Spokane.—A compromise which, it is believed, will be satisfactory to pro-jitney and anti-jitney factions in Spokane, Wash., will be offered in a new city ordinance to be submitted by Commissioner Fassett. The commissioner's proposal is to allow the jitneys to operate over electric railway routes only for two-thirds of their complete trip. In other words, more than one-third of the trip must be made over streets having no railway service. Commissioner Fassett's scheme is considered by Spokane officials to be the first feasible plan for solving the present problem. Sentiment in the Council at present leans toward keeping the jitneys off the car lines, at least partially, and it is believed this proposal will be well received.

Increase in L. I. R. R. Mileage Rates Held Up.—The Public Service Commission for the First District of New York has refused permission to the Long Island Railroad to put into effect an increase in its mileage rates from $10 to $11.25 for a 500-mile book, pending the decision of the commission upon a number of increases proposed by the company and now under consideration. The mileage-book rates have been increased outside the city of New York, upon approval by the Second District Commission, and the company attempted to put into effect an increase in New York City, assuming that this commission had exclusive jurisdiction to fix a uniform rate for the whole system. It is to this course that the First District commission order applies. The company also does not think it practicable to apply the new rate only to lines in the Second District.

Information Booth for Idle "Sammies."—A free information booth which has been maintained by the San Diego (Cal.) Electric Railway has been proving a great convenience to the soldiers and sailors who have recently been stationed in the vicinity of San Diego as well as to visitors who are unfamiliar with points of interest about the city. To make it of more assistance to the men it has been requested that those in charge of special entertainments mail a card with full particulars to the company's publicity department. This information is then transmitted to the agent at the company's ticket office in the Union building and the agent in charge of the information booth.

Commission Will Represent Public Before I. C. C.—The Public Service Commission for the First District of New York announces that hereafter it will participate actively, through its counsel, in proceedings before the Interstate Commerce Commission which involve freight and passenger rates vitally affecting the public interest of the city of New York. Many cases greatly affecting freight rates, and thus the cost of commodities largely used in New York City, are heard each year by the Interstate commission at Washington, merely as an issue between shippers and railroads, without representation of the public point of view and the public interests. The New York commission, therefore, hereafter will undertake to fulfill the duty of expertly representing the public interests of the people and shippers of the city.

Court Rules Against Jitney Bonding Company.—Under a ruling of the Supreme Court on Aug. 7, jitney operators in the State of Washington cannot supply their own surety bonds through a mutual insurance organization, except on terms prescribed by the State Insurance Commission. This decision eliminates the Mutual Insurance Company of Seattle unless the company posts $250,000 in assets with the State insurance department, which was the amount fixed as security required for a mutual jitney bonding company in that State. The company petitioned the Supreme Court for a writ directing Commissioner Fishback to license it on the liability security requirements for general mutual insurance business. The Supreme Court, in denying the writ, held that it cannot control the insurance commissioner's statutory discretion in demanding what he considers security ample to insure protection.

City Council Asks Inspection of Niagara Gorge Route.—The City Council of Niagara Falls, Ont., has asked the Dominion Railway Board of the Province of Ontario to inspect the roadbed and tracks of the Park and River division of the International Railway, Buffalo, N. Y., operating between the Upper Bridge at Niagara Falls, Ont., and Queenston, Ont., along the lower gorge of the Niagara River. This division of the International Railway forms a part of the Great Gorge Route belt line trip, the other part being the line of the Niagara Gorge Railway on the American side between Lewiston and Niagara Falls, N. Y. The action of the Canadian City Council has been taken on account of the serious accident which recently occurred on the latter line on the American side, as noted in the ELECTRIC RAILWAY JOURNAL of July 7. In this accident, because of track undermining, a car dropped into the gorge near the Whirlpool Rapids.

Ambitious Plan for Jitney Corporation.—The General Motor Transportation Company of Oakland, Cal., has filed with the Railroad Commission of that State an application for authority to issue $250,000 capital stock, of which $500 has been subscribed, to engage in a general jitney business for passengers and freight. The intention of the company as stated to the commission is to operate a passenger stage line from Oakland, through San José, to Palo Alto on the east side of San Francisco Bay and from Oakland to San José, through Palo Alto, using the transbay ferry and running down the west side of the bay. The company specifies its intention to haul fruits, vegetables and general merchandise and to do general cartage, the purpose being primarily to serve the farmers. No rates are stated, but the company expects these to vary, depending upon demand and the cost of operation. It wants to sell its stock at $90 a share, the par being $100. The company wishes to sell at the present time $50,000 of the total authorized stock issue of $250,000.

Personal Mention

C. D. Rogers has been appointed president of the Bristol & Norfolk Street Railway, Randolph, Mass., to succeed H. F. French.

H. K. Tennant has been appointed comptroller of the Quebec Railway, Light, Heat & Power Company, Ltd., Quebec, P. Q.

W. F. Bellinger has been made chief load dispatcher of the system of the Georgia Railway & Power Company, Atlanta, Ga.

Lyman K. Brown, treasurer of the Fonda, Johnstown & Gloversville Railroad, Gloversville, N. Y., has resigned on account of ill health.

Howard H. George, formerly of the engineering staff of the Public Service Railway, Newark, N. J., has been promoted to the rank of major, engineers, Officers' Reserve Corps.

Robert E. Jones, claim adjuster for the Bay State Street Railway, Boston, Mass., has been promoted to fill the vacancy made by the resignation of John Kelley as chief district claim agent.

Harry L. Bolinder has been made claim adjuster for the Bay State Street Railway, Boston, Mass., to succeed Robert E. Jones. Mr. Bolinder was heretofore secretary to John T. Conway, general superintendent of the company.

R. D. Long, manager and purchasing agent for the Muskogee (Okla.) Electric Traction Company, has been appointed general manager of the Shawnee-Tecumseh Traction Company to succeed O. W. Weddle, resigned.

George Drury, district claim agent for the Bay State Street Railway at Lowell, Mass., has entered government service as first-class yeoman. Walter Hickey, starter at Lowell, has been transferred to the claim department.

F. G. Grimshaw, assistant engineer of electrical equipment for the Philadelphia terminal division of the Pennsylvania Railroad, has been promoted to the position of superintendent of motor power for the New Jersey division at New York.

R. M. Boykin, engineer for the North Coast Power Company of Portland, Ore., has been elected vice-president and appointed general manager of the company, following the resignation of H. L. Harries, who is at the military training camp at Presidio.

Lionel S. Marks, professor of mechanical engineering at Harvard and Massachusetts Institute of Technology, has been assigned by the national advisory committee on aeronautics to take charge of investigations relating to airplane engine design now being made by the Bureau of Standards.

F. P. Will, who resigned on June 1 as superintendent of the Burlingame (Cal.) Electric Railway to become general agent and warehouse manager for the Modesto & Empire Traction Company, Modesto, Cal., has been appointed city freight solicitor of the latter road to succeed W. T. Vary, resigned. The office of general agent has been abolished.

F. P. Gutelius, vice-president of the Schenectady (N. Y.) Railway and the Delaware & Hudson Company, with headquarters at Albany, N. Y., has taken over the duties of general manager of the latter road with the title of vice-president and general manager during the absence of General Manager James T. Loree, who entered military service on July 31.

J. F. Usener, formerly chief engineer of power stations of the Houston (Tex.) Electric Company, has been appointed chief engineer of the Galveston-Houston Electric Railway, to succeed Charles Learmouth, who has been transferred by the Stone & Webster Management Association to El Paso as chief engineer of the El Paso property. Mr. Usener has been connected with the Houston Electric Company ever since it was electrified. He will now have charge of the plants at League City, La Marque, South Houston and Sampson Street.

William Siebert, superintendent of surface transportation for the Brooklyn (N. Y.) Rapid Transit Company, was entertained recently at a dinner given by members of the transportation department, the occasion being his thirtieth anniversary in the service. Colonel T. S. Williams, president of the company, in behalf of Mr. Siebert's associates, presented him with a silver loving cup.

Francis L. O'Bryan, formerly electrical engineer of the Boston & Worcester Street Railway, Boston, Mass., has joined the staff of the Edison Electric Illuminating Company of that city. Mr. O'Bryan is well known in the electric railway field of New England for his original work in the development of the motor-driven semaphore-type signals in use on the Boston & Worcester. He will be engaged in the purchasing department of the Edison company.

George A. Harris, general auditor of the Fonda, Johnstown & Gloversville Railroad, Gloversville, N. Y., the Adirondack Light & Traction Company and the Edison Electric Light & Power Company of Amsterdam, N. Y., has been appointed auditor and treasurer of the three companies to succeed Lyman K. Brown, who has resigned as treasurer. This promotion is in recognition of his services with the above companies in the treasury and auditing departments for twenty-five years. Mr. Harris is also secretary and treasurer of the East Creek Electric Light & Power Company of St. Johnsville, N. Y., and four other companies allied with the Fonda, Johnstown & Gloversville Railroad.

G. M. Cameron, who has been master mechanic and engineer of buildings for the New York State Railways, Rochester Lines, during the last nine years, has located in Cleveland, Ohio, to become associated with David W. Morrow in general engineering work, with electric railway building design and construction as a specialty. While Mr. Cameron was connected with the New York State Railways he designed and constructed a number of railway buildings, power houses, substations, central station buildings, etc. He was graduated from Ohio State University in 1904 with the degrees of mechanical and electrical engineer. Soon afterward he entered the service of the Jeffrey Manufacturing Company of Columbus, in the mine locomotive department, and resigned one year later to accept a position with the Electric Controller & Supply Company in Cleveland. In 1906 he was appointed draftsman, as applied to power plant and equipment design, for the Cleveland Electric Railway and two years later became chief draftsman and engineer of buildings of the Rochester Railway. He was appointed master mechanic of that company in January, 1910.

Frank I. Hardy, who, as reported last week, has been appointed general superintendent of the Northern Ohio Traction & Light Company at Akron, Ohio, has been general manager of the Chicago, South Bend & North Indiana Railway, South Bend, Ind., for the last year. Mr. Hardy has been actively engaged in steam and electric railway work for the last twenty years, serving successively in different capacities the Southern Pacific Railroad, the New York Central & Hudson River Railroad, the Union Traction Company of Indiana and the Fort Wayne & Northern Indiana Traction Company. He was employed by the last-named company in 1905 as division superintendent and later became superintendent of transportation. In July, 1911, Mr. Hardy was appointed superintendent of transportation for the Chicago, South Bend & Northern Indiana Railway, with entire charge of operation and traffic matters. Five years later he was promoted to the position of general manager of the company, the position he has just relinquished, to succeed C. D. Emmons, who became vice-president and general manager of the Boston & Worcester Street Railway, Boston, Mass.

F. I. HARDY

C. A. Goodnow, assistant to the president of the Chicago, Milwaukee & St. Paul Railway, has been elected vice-president of the company. Mr. Goodnow is widely known for his work while in charge of the St. Paul electrification, the Seattle division of which is now under way. He was born at Baldwinsville, Mass., in 1853 and entered railway service at the age of fifteen as a telegraph operator for the Vermont & Massachusetts Railroad. He became superintendent of construction of the Chicago, Milwaukee & St. Paul in 1886 and later became general superintendent of the road. From 1902 till 1913 he held executive positions with several other steam roads and since that time has been assistant to the president of the Chicago, Milwaukee & St. Paul.

R. B. Stearns, vice-president of the Milwaukee Electric Railway & Light Company, has been elected senior vice-president in charge of operation of the Bay State Street Railway, Boston, Mass. In commenting upon this appointment President P. F. Sullivan made the following statement: "New conditions have placed such a heavy burden upon the officials of our company that it has been necessary to divide some of the work. Mr. Stearns has been asked to come with us because of the conspicuously successful work he has done in the West. In Milwaukee he had charge of a property with 450 miles of track, doing a business in excess of $6,000,000 a year. During his six years with that company he won not only the loyalty of his employees but the friendship of the public. Under his management practically all the cars were rebuilt and standardized maintenance was adopted, two new car stations were designed and finished, many miles of new track were laid, and other improvements of service made. His dealings with the employees were particularly successful. He inaugurated the Employees' Mutual Benefit Association and the Employees' Mutual Building, Savings & Loan Association, and carried through other plans which developed the cö-operative spirit and produced desirable results for both employees and company." President Mortimer of the Milwaukee company, in announcing Mr. Stearn's resignation, said: "When Mr. Stearns made known to me the nature of the position with the Bay State Street Railway I could only advise him to accept it as an act of simple justice to himself. He will be in direct charge of the operation of all the departments of the company, and while his work in Massachusetts will probably be no more difficult than his work here, his responsibilities will certainly be greater. No man having direct charge of any street railway can ever be a hero in the eyes of the public; the only hero is one who attacks. Mr. Stearns here has had the most difficult of tasks and despite it all he was never known to lose his temper or answer attacks in kind." After graduation from Purdue University in 1889, Mr. Stearns' first activities were in Chicago in connection with the Columbian Exposition, the Drainage and Hennepin Canals and the elevated railroads. At one time he was chief engineer of the Northwestern Elevated Railroad and later general manager of the Chicago & Milwaukee Electric Railroad. He became assistant general manager of the Milwaukee company in 1911 and vice-president a few months later.

R. B. STEARNS

Obituary

Dr. Levi T. Durbin, company physician for the Denver (Co.) Tramway, recently died suddenly at the age of fifty-nine. He was one of the veterans in the Tramway service, having been in its employ for twenty-six years. Mr. Durbin was born in Wooster, Ohio. He was graduated from the University of Denver School of Medicine in 1884. Later he became an instructor at that institution and had been connected with the Denver Tramway since 1891.

Construction News

Construction News Notes are classified under each heading alphabetically by States.

An asterisk (*) indicates a project not previously reported.

FRANCHISES

Phoenix, Ariz.—The Phoenix Street Railway has received from the City Commission a three-year extension of time on its franchise to double track West Washington Street to the capitol and to pave a portion of that street and other streets of the city.

Long Beach, Cal.—The Pacific Electric Railway has asked the Railroad Commission of California for permission to remove its tracks from East Ocean Avenue from First Place eastward. A hearing on this question will be conducted by the commission on Sept. 17.

Atlanta, Ga.—The Georgia Railway & Power Company has asked the Board of County Commissioners for a franchise to double-track its line on Peachtree Road from "Dead Man's Curve" to Buckhead.

Alton, Ill.—Franchises have been drawn up and presented to the Councils of the various towns along the proposed right-of-way of the new interurban line of the Alton & Edwardsville Railroad between Alton and Edwardsville. The right-of-way has practically all been secured. H. H. Ferguson, Alton, is interested. [Aug. 11, '17.]

***Galesburg, Ill.**—The Public Utilities Commission of Illinois has issued an order granting a certificate of convenience and necessity to the Galesburg, Rockford & Northern Railroad to construct a line from Galesburg to Rockford, via Kewanee, Dixon and Oregon. The commission also authorized the company to issue $26,700 in capital stock and bonds in the sum of $50,000, and also to purchase the Dixon, Rock Falls & Southwestern Railway, operating between Hooppole, Yorktown and Tampico.

Oak Park, Ill.—The Chicago & West Towns Railroad has received a twenty-five-year franchise from the Oak Park village board. New lines in Division Street and in Harlem Avenue from Division to Twelfth Street are provided for.

Cheektowaga, N. Y.—The International Railway has asked the City Council for a franchise to construct a double-track extension in Cheektowaga.

Easton, Pa.—The Northampton Traction Company has received permission from the Public Service Commission of Pennsylvania to construct an extension to College Hill. Eventually the company expects to construct an extension from College Hill to the western section of the city.

TRACK AND ROADWAY

Montgomery Light & Traction Company, Montgomery, Ala.—This company plans to double-track its line from Montgomery to Pickett Springs, a distance of 6 miles.

Pacific Electric Railway, Los Angeles, Cal. — Extensive trackage improvements have been begun by the Pacific Electric Railway in Long Beach, which will amount to about $25,000.

Oakland, Antioch & Eastern Railway, Oakland, Cal.—It is reported that the Western Pacific Railroad and the Oakland, Antioch & Eastern Railway have entered into an agreement whereby the former road will finance the latter in the construction of a branch line to tap Suisun and the Vaca Valley. It is understood that the branch will extend from a point on the Oakland, Antioch & Eastern main line near Montezuma to Suisun, where connections will be made with the Vaca Valley and Suisun branch of the Northern Electric Railway. The project, it is said, will involve an expenditure of about $500,000.

Cienfuegos, Palmira & Cruces Electric Railway & Power Company, Cienfuegos, S. C., Cuba.—A report from this company states that it will construct an extension from Palmira to Cruces, about 10 miles.

Miami (Fla.) Traction Company.—An extension will be built by the Miami Traction Company to Buena Vista.

***Pocatello, Idaho.**—An attempt is being made to finance an electric railway in Pocatello. Richard Douglass, Gate City Motor Company, is reported interested.

Chicago, North Shore & Milwaukee Railroad Company, Highwood, Ill.—This company is placing temporary tracks on County Street, Waukegan, between Clayton and Madison Streets, which is said to be preparatory to the building of a new loop for cars passing up Genesee Street to Clayton Street, west on Clayton to County Street, south on County to Washington and thence east to Genesee Street.

Indianapolis Traction & Terminal Company, Indianapolis, Ind.—The Board of Public Works of Indianapolis has confirmed five resolutions providing for the vacating and widening of parts of Brookside Avenue to make possible the construction of a double-track line to the plant of the Premier Motor Corporation. The proposed line will extend from Brookside Avenue and Eighteenth Street to Twentieth Street and in Twentieth Street from Brookside Avenue to Olney Street.

Wichita Railroad & Light Company, Wichita, Kan.—This company will construct new track in Wichita where paving is to be done.

United Railways & Electric Company, Baltimore, Md.—Automatic signals of the Nachod type have been installed by the United Railways & Electric Company on its Halethorpe line, about 2¾ miles.

Springfield (Mass.) Street Railway.—It is understood that plans are under way for a through passenger trolley route from Springfield to Worcester via Palmer, Ware and West Brookfield. This is to be brought about by the taking over of the Ware & Brookfield Company's branch between Ware and Gilbertville by the Springfield Street Railway and the operation over it of the cars of this company, which now operate only between Palmer and Ware. A connection is being built at West Brookfield between the track of the Worcester & Warren line and that of the Ware & Brookfield line. When this is completed cars can run between Spencer and Ware without change. At Ware a connection is to be made between the tracks of the Ware & Brookfield line and the Springfield line. The new arrangement also contemplates a trolley freight service to Gilbertville.

Worcester (Mass.) Consolidated Street Railway.—Plans have been filed by the Worcester Consolidated Street Railway with the Public Service Commission of Massachusetts for the proposed extension of its tracks in East Worcester and Albany Streets, as approved by the Board of Aldermen, to be used in connection with its freight business entering and leaving the proposed trolley freight stations to be erected between Albany and Shrewsbury Streets.

Grand Rapids (Mich.) Railway.—Work has been begun by this company reconstructing its Grandville Avenue line on Ellsworth Avenue from Fulton Street to King Street.

***Las Cruces, N. M.**—H. M. Gray of Las Cruces and associates are promoting the construction of an interurban electric railway from Las Cruces to El Paso, 44 miles. The proposed line will extend through the irrigated portion of the Rio Grande valley, which is thickly populated. It is said that financial arrangements for the construction of the line have been made and that the work will be begun as soon as the survey is finished and the right-of-way obtained.

Piedmont & Northern Railway, Charlotte, N. C.—This company is building an extension to Camp Wadsworth.

Southern Public Utilities Company, Charlotte, N. C.—Bids have been asked by the Southern Public Utilities Company for the construction of two extensions, each 1 mile long, into Camp Greene, near Charlotte.

Oklahoma (Okla.) Railway.—Right-of-way has been secured by the Oklahoma Railway within the city limits of Guthrie. The ground acquired by the company will be used for trackage and a direct line in and out of the city and for terminal building purposes. The line now running to the park will be abandoned by the interurban line, but city street car service will be inaugurated in its place. Work will be begun immediately on the building of track over the acquired land to a juncture with the interurban south of the city. The new line will shorten the time between Guthrie and south stations.

Port Arthur (Ont.) Civic Railway.—Plans are being prepared by the city engineer for the erection of two new bridges over the McIntyre River, one for each track.

Johnstown (Pa.) Traction Company.—Plans are being contemplated by the Johnstown Traction Company for the construction of extensions in the Seventh and Seventeenth Wards and in Woodvale.

Philadelphia, Pa.—Sealed proposals will be received by the Department of City Transit, Philadelphia, William S. Twining, director, for the following work appurtenant to the Frankford Elevated Railway: Contract No. 524—Steel frame work and railings, concrete floors and parapets, side inclosures, roofs, drain gutters and spouts for ten station platforms and connecting passages or foot bridges between station platforms and station buildings at Allegheny Avenue, Tioga Street, Torresdale Avenue, Ruan-Church Streets and Orthodox-Margaret Streets.

Philadelphia & West Chester Traction Company, Upper Darby, Pa.—This company will construct an extension of its Collingdale line to the Sharon Hill section.

Columbia Railway, Gas & Electric Company, Columbia, S. C.—A double-track line from the limits of Columbia to Camp Jackson has been completed by the Columbia Railway, Gas & Electric Company and operation will be begun at once.

Northern Texas Traction Company, Fort Worth, Tex.—A double-track extension of the Arlington Heights line will be built by the Northern Texas Traction Company to Camp Bowie. the United States army training camp established near Fort Worth.

Port Arthur (Tex.) Traction Company.—It is reported that the Port Arthur Traction Company will construct an additional line in Port Arthur, paralleling its present main line through the city at a distance of 6 blocks.

Salt Lake, Garfield & Western Railway, Salt Lake City, Utah.—Work on the elctrification of the Salt Lake, Garfield & Western Railway and the extension of its lines to Garfield is now under way. It is stated that a contract has been entered into between the company and the Utah Light & Traction Company providing for the use of the street car tracks by Saltair trains. The road is being engineered and equipment designed by H. A. Strauss of Chicago.

Monongahela Valley Traction Company, Fairmont, W. Va.—Plans are being made by this company for the construction of an extension from Bridgeport to Rosemont, Flemington, Galloway, Wendell and Simpson to reach the coal mining towns.

SHOPS AND BUILDINGS

Southern Pacific Company, San Francisco, Cal.—This company contemplates the construction of a one-story brick passenger station at Victoria, at a cost of about $25,000.

Sioux City (Iowa) Service Company.—This company will construct an 80-ft. x 244-ft. addition to its carhouse at Greenville at a cost of about $12,000.

United Railways & Electric Company, Baltimore, Md.—This company plans the construction of a new waiting station at Overlea.

Youngstown & Suburban Electric Railway, Youngstown, Ohio.—It is reported that this company contemplates the construction of a new station and power station at Columbiana.

Tulsa (Okla.) Street Railway.—This company plans to construct an addition to its carhouse in Tulsa to take care of new equipment expected this fall.

Tacoma (Wash.) Municipal Railway.—L. A. Nicholson, city engineer, has been instructed by the City Council to prepare plans and specifications for the construction of a new carhouse for the Tacoma Municipal Railway on the tideflats.

POWER HOUSES AND SUBSTATIONS

Fort Smith Light & Traction Company, Fort Smith, Ark.—The erection of a new power house to cost about $250,000, either on the site of the present power house on the Arkansas River or on Poteau River in Le Flore County, is under consideration by the Fort Smith Light & Traction Company. The present plans provide for a plant of 5000 hp. capacity. The present plant has an output of 4200 hp., which it is proposed to enlarge and improve so that the two plants will have a generating capacity of 10,000 hp.

Georgia Railway & Power Company, Atlanta, Ga.—A petition has been presented to the Railroad Commission of Georgia by the Georgia Railway & Power Company for permission to issue $2,500,000 in bonds, the proceeds to be used for the installation of the sixth unit in the Tallulah Falls power station, the construction of a new reservoir on the Tallulah River, above Rabun Lake, to be known as the Burton reservoir, and the construction of a new power station, 2 miles below the Tallulah Falls plant, near the junction of the Tallulah and Chattooga Rivers, at the point where they form the Tuglo River.

Chicago, Milwaukee & St. Paul Railway, Chicago, Ill.—According to recent reports the Chicago, Milwaukee & St. Paul Railway Company will begin work the latter part of August on the construction of a $25.000 substation on the tideflats, in connection with the electrification of its lines in Tacoma and in the State of Washington.

Chicago & Joliet Electric Railway, Joliet, Ill.—On account of the necessity to take current from the Public Service Company's new steam plant at Joliet, at the generating pressure of 12,000 volts instead of at 2300 volts as at present, this company is installing transformers and lightning protection for this service at Joliet. An underground cable connection between the railway substation and the Public Service Company's new substation under construction at the corner of Jackson and Ottawa Streets will also be provided. In planning for the changes necessary, it was decided to construct and equip an entirely new railway substation at Joliet and to install an automatic substation at Dellwood Park between Joliet and Lockport. The latter station will enable the company to release 5000 lb. of aluminum cable, and the sale of this and the equipment in the present Joliet substation, at the prevailing prices, will pay a large part of the cost of the new equipment. The new Joliet substation will be located at the northwest corner of St. Louis and Osgood Streets, adjoining the carhouse and shops of the company. Two General Electric Company 750-kw. synchronous converters and six 260-kva., 13,200/445-volt transformers with the necessary switchboard equipment for the Joliet station, and one 300-kw. converter together with three 100-kva. transformers and automatic control equipment for the Dellwood station have been purchased. It is expected to have these stations in operation by Jan. 1, 1918. In order to release the aluminum cable at once, a 250-kw. motor-generator set for temporary use has been installed at Dellwood Park.

St. Joseph Railway, Light, Heat & Power Company, St. Joseph, Mo.—One of the provisions which are being made by the St. Joseph Railway, Light, Heat & Power Company to increase the steaming capacity of the boilers for the coming winter, is to install larger stokers. Two of the 440-hp., 21 x 10 tube, B. & W. boilers are equipped with five-retort Tayler stokers. An extra retort is being added to each of these stokers, which will increase the steaming capacity approximately 20 per cent. The Tayler "power dump" feature is being provided as well as additional draft capacity. Two of the 440-hp. boilers are equipped with Green chain stokers, containing approximately 90 sq. ft. of grate area each. These stokers are to be replaced by wider and longer ones of the same make, containing 136 sq. ft. of grate area. This change will add approximately 50 per cent to the steaming capacity of the two boilers.

International Railway, Buffalo, N. Y.—A new substation about 75 ft. x 90 ft. will be built by the International Railway on North Division Street.

Toledo Railways & Light Company, Toledo, Ohio.—Henry L. Doherty & Company report that about 500 men are at work on the construction of the great power plant of the Toledo Railways & Light Company on the Maumee River, near the center of the city. It is expected that the first unit will be in operation by Dec. 1.

Tacoma (Wash.) Municipal Railway.—L. A. Nicholson, city engineer, has been instructed by the City Council to prepare plans and specifications immediately for the construction of a concrete substation for the Tacoma Municipal Railway on the tideflats.

Manufactures and Markets

Discussions of Market and Trade Conditions for the Manufacturer, Salesman and Purchasing Agent

Rolling Stock Purchases Market Quotations Business Announcements

Manufacturers and Purchasers Should Be Honest with Each Other

"Wolf" Cry of Purchasers as Trying to Manufacturers as Inconsistent Alibis of Latter Are to Railway Men

In the condition of disregard for each others' interests existing between some manufacturers and some railways, it seems quite evident to the outside interested observer that both parties are at fault. In trying to overcome the long-delivery condition of the market, the railway men have formed a habit of telegraphing their orders for materials, sending them by special delivery, marking them rush, and in other ways conveying the impression of very urgent need. This has become such common practice that the manufacturers are treating such markings as matter of fact, with the result that the railway company really in trouble is much in the same predicament as the man who cried "wolf" —it may get no special attention on a wired order. The purchasers should realize, knowing as they now do the general condition of the market and the difficulty the manufacturers face in getting materials, that not every order can be treated as truly a rush order, and that the surest way of guarding against shortage of material is to anticipate their needs and place the order far enough in advance to assure delivery before their supply is exhausted. In other words, the manufacturer should not be expected to continually disrupt the routine through his plant in order to cover someone's neglect to order material until he was out of it or nearly so. Some purchasing agents are helping in this situation because of their knowledge of the market, by disregarding requests of various department heads to wire in an order for such and such material, and then sending the order by mail in the usual way.

IRREGULARITIES IN DELIVERIES SHOULD BE AVOIDED

On the other hand, the manufacturers should be consistent when offering explanation of failure to make delivery as promised. Incidents are related by the purchasing agents which strike them as either disgusting or humorous, depending on the circumstances and their frame of mind. In one instance, when the purchasing agent was trying to find out the reason for non-receipt of material as promised, the manufacturer replied that it was absolutely impossible to get cars. However, the fact that this same manufacturer had shipped twelve carloads of the same material to the same purchaser on an order placed later at a much higher price, naturally caused the purchasing agent to think that there were considerations other than the car shortage question entering into the alibi.

Another purchasing agent on several different occasions has experienced the embarrassment, upon cancellation of orders, of receiving a reply from the manufacturer that the material had been shipped a few days previously. This occurred after previous report had been made shortly before cancellation that it would be impossible to ship for thirty or sixty days, and the purchasing agent had accordingly scoured the country to supply his needs from another source. This, he said, had occurred too frequently to warrant belief that there was no juggling of the order of shipments. Another interesting case was one in which the purchasing agent had received a letter dated July 31, saying that the manufacturer would be unable to ship the order promised for delivery July 1 until the middle of August, and then only part of it with the remainder to be shipped the last of August. A few days after this the railway company took on a government contract which required the use of this material. The purchasing agent accordingly wired the manufacturer to this effect, and the latter replied that the order had been shipped complete early in July.

The manufacturers are endeavoring certainly to avoid such errors as these, but perhaps calling attention to them in these columns will serve as a reminder to tighten up on these details of the customary follow-up.

War Conditions Help Standardization

Many Railways Forced to Use Standardized Products, No Other Being Obtainable—Cost of Special Apparatus Prohibitive

Many railways that have found it imperative to build additional mileage on account of cantonments or extensions required by franchises have applied to the steel mills to be included on future rollings of standard rail sections such as are used by the steam railroads. The railways have been forced to follow this procedure, as deliveries on special sections are quoted from twelve to fifteen months, with no guarantee that the amount desired will be forthcoming at the end of that time. A good many railways, of course, cannot avail themselves of this opportunity because the most of their mileage is laid on paved streets in the cities where girder rail is required. Interurban railways find that it is much cheaper to purchase 100-lb. standard section as used on steam roads than lighter sections which are practically impossible to obtain except in second-hand markets.

GOOD DELIVERIES ONLY ON STANDARDIZED PRODUCTS

In many cases standardized products are the only ones obtainable at present, and those few engineers who formerly have insisted upon special products are accepting the inevitable as the only possible means to an end. In speaking of standardization a well-known engineer in the railway and central station industry recently said: "Our industry, like others, is burdened with a few 'over-educated' engineers who cannot see any good in standardization. They must design their own turbines, boilers, condensers and meters, and even the push buttons for the wardrobe closets do not escape. These 'brainstormers' of engineering bless the manufacturer with contracts filled with conditions and changes in specifications that take at least 50 per cent more time to fulfill and obtain a product that is as a rule inferior to the standard. It is pretty safe to assume that the builders know more about their own business than the average outsider."

While visiting a plant in New England which makes a considerable amount of railway castings, forgings, etc., the writer arrived at the plant while the manager was discussing with one of the salesmen an order which had just been received. The order was for a very small number of special castings which this company had been able to make for a large customer, but on which there was no profit. Although the order was a small one, the company hated to disappoint the large customer and the order was accepted. In speaking of this order the manager said: "If we should return such orders to the companies from which they were received with a check for $50 we would still be money ahead."

Heroic efforts are being made by the United States government to speed up production, and without standardization this would be an impossibility. The prosperity of many industries is due directly to standardization. Manufacturers have not only been able to produce apparatus and accessories in large quantities and at greatly reduced prices compared with those prevalent before standardization was introduced, but are also in a position to make fairly good deliveries on those products.

Forced Reconstruction Work Helps Steel Tie Sales

Pavement Improvements or Extensions Responsible for Much Work—Inquiries Good, but Most Sales for Forced Work

The number of miles of reconstructed and extended track is less this year than ever before, according to a well-known sales manager of rail products. Ninety per cent of the business is forced reconstruction on pavement improvements or extensions on account of franchises. Practically no work has been voluntarily done in paved street work. Although sales in 1916 showed a 100 per cent increase over the previous year, this year's sales for six months have amounted to more than that secured during all of the year 1916. Most of this business was secured in the Central West.

The demand for steel ties and crossing foundations has been greatly increased by companies that are putting in concrete construction for the first time. The use of steel ties has so reduced the depth and width of the foundation slab that the cost of the excavation and of the concrete is cut in half. This has virtually made the steel tie a wartime tie. Labor is not only conserved but materials as well, and the effect of saving space in shipments has its effect on conserving cars in shipping. To build 1 mile of track requires 880 steel ties, and 1000 of these ties can easily be loaded on two standard steam freight cars. On the other hand, 2640 wooden ties are required for a mile of track, for which six to eight cars must be provided.

RAILWAYS USING STANDARD RAIL SECTIONS

The company in question has had more business pending than was obtained altogether. If conditions were normal the business transacted would be more than double what it is at present. High prices and inability to obtain labor has caused the postponement of work in many cities. Those in which war industries are being carried on have had the greatest labor shortage. At one city on the Great Lakes the engineer in charge of the track work was an old experienced man and had purchased his material months in advance so that the work would not be delayed by the high prices and poor delivery situation. The work which he had planned, however, cannot be completed because labor is so scarce and can be obtained only at a prohibitive figure. Many companies find that they are unable to get rails for new work and have been forced to substitute standard section rail used by the steam railroads. Of the latter many railways are laying the 100-lb. Dudley, as used on the New York Central, and the 100-lb. A. R. A., or any other sections that can be obtained. Many roads which use a special section will now find that they are at a very great disadvantage because the standard sections that are now available cannot be used on their property. As much of the business has been transacted in the Middle West little trouble has been occasioned on account of car shortage. Embargoes, however, have held up shipments to the East very badly. On one shipment to the State of Connecticut made early in December the company reported late in January that the shipment had not been received, and on being traced it was found just outside of the shipper's yard.

RAW MATERIAL, PRICES AND DELIVERIES

Contracts covering raw material are in effect and, with the exception of one or two small items used in steel tie and crossing foundation work, practically no trouble has been encountered in obtaining them. The prices of steel ties and crossing foundations have increased 20 per cent, and the only reason the increases have not been considerably greater is that the company was fully protected by long-time contracts. No difficulty is being experienced in making prompt deliveries at the present time. As a rule frog and switch manufacturers require six months for delivery of crossing foundations. The only product on which this company has been unable to get prompt deliveries is malleable-iron clips. Deliveries on the dates promised have been made but the stock on hand has gradually been reduced. The high prices of special track work, manganese, steel crossings, etc., has greatly increased sales of steel ties and crossing structures.

Steel Shortage May Influence Wooden Car Purchases

Considerable difficulty is being experienced by some of the car manufacturers in obtaining steel plates for use in building electric railway steel cars. One manufacturer has actually had to go back to several of its customers and tell them that if they could by any means or influence get the steel, that the cars would be promptly built. In at least one case the customer made a very determined effort to get the necessary material from some source, but, at latest reports, had been unsuccessful in obtaining a promise of anywhere near satisfactory delivery.

While this condition prevails in the steel market, the manufacturer referred to had plenty of lumber in its own stock, with which first-class wooden cars could be built. This condition brings up the consideration that it may be necessary for those companies which require additional equipment promptly to forego some of the operating economies possible with the lighter weight steel car, for the sake of getting delivery on a slightly heavier wooden car which may be earning considerable revenue during the many months that it will be necessary to wait for a steel car.

Report on the Coal Situation

In its report for Aug. 11 the United States Geological Survey states that during the three weeks ended July 28, the "lost time" reported by the bituminous coal mines represented between one-fourth and one-fifth of the production of the country. The causes were approximately as follows: Car shortage, 16 per cent; labor trouble or shortage, 4½ per cent; mine disability, 4 per cent. More than 800 mines in twelve States are now furnishing weekly statements.

The chief topic of interest in oil, paint and varnish circles is the recent increase in raw and boiled linseed oils which have advanced 10 to 12 cents a gallon in the last two weeks. Poor progress of the growing seed crop as shown by reports from the Department of Agriculture and a sharp advance in oils of all kinds are said to be responsible for the increase.

NEW YORK METAL MARKET PRICES

	Aug. 3	Aug. 17
Prime Lake, cents per lb.	29	28
Electrolytic, cents per lb.	29	28
Copper wire base, cents per lb.	36	36
Lead, cents per lb.	10⅞	10⅞
Nickel, cents per lb.	50	50
Spelter, cents per lb.	8¾	8¾
Tin, Straits, cents per lb.	63¾	62¼
Aluminum, 98 to 99 per cent, cents per lb.	56	56

OLD METAL PRICES

	Aug. 3	Aug. 17
Heavy copper, cents per lb.	23½	24½
Light copper, cents per lb.	20½	21½
Red brass, cents per lb.	19	19½
Yellow brass, cents per lb.	15½	16
Lead, heavy, cents per lb.	8½	8½
Zinc, cents per lb.	6	6
Steel car axles, Chicago, per net ton	$45.00	$41.00
Old car wheels, Chicago, per gross ton	$31.50	$31.50
Steel rails (scrap), Chicago, per gross ton	$43.00	$39.00
Steel rails (relaying), Chicago, per gross ton	$60.00	$55.00
Machine shop turnings, Chicago, per net ton	$16.50	$17.00

CURRENT PRICES FOR MATERIALS

	Aug. 3	Aug. 17
Rubber-covered wire base, New York, cents per lb.	36½	34½
No. 0000 feeder cable (bare), New York, cents per lb.	36½	36½
No. 0000 feeder cable (stranded), New York, cents per lb.	33¾	33¾
No. 6 copper wire (insulated), New York, cents per lb.	33	33
No. 6 copper wire (bare), New York, cents per lb.	36	36
Rails, heavy, Bessemer, Pittsburgh	$38.00	$38.00
Rails, heavy, O. H. Pittsburgh, per gross ton	$40.00	$40.00
Wire nails, Pittsburgh, per 100 lb.	$4.00	$4.00
Railroad spikes, 9/16 in., Pittsburgh, per 100 lb.	$7.00	$7.00
Steel bars, Pittsburgh, per 100 lb.	$4.50	$4.50
Sheet iron, black (24 gage), Pittsburgh, per 100 lb.	$8.35	$8.35
Sheet iron, galvanized (24 gage), Pittsburgh, per 100 lb.	$9.55	$9.55
Galvanized barbed wire, Pittsburgh, cents per lb.	$4.85	$4.85
Galvanized wire, ordinary, Pittsburgh, cents per lb.	$4.65	$4.65
Cement (carload lots), New York, per bbl.	$2.22	$2.22
Cement (carload lots), Chicago, per bbl.	$2.31	$2.31
Cement (carload lots), Seatle, per bbl.	$2.60	$2.65
Linseed oil (raw, 5 bbl. lots), New York, per gal.	$1.13	$1.24
Linseed oil (boiled, 5 bbl. lots), New York, per gal.	$1.14	$1.25
White lead (110 lb. keg), New York, cents per lb.	12¾	12¾
Turpentine (bbl. lots), New York, cents per gal.	42½	42½

ROLLING STOCK

Cataluna Railways, Barcelona, Spain, are in the market for forty cars.

Pensacola (Fla.) Electric Company is reported to have purchased four large interurban cars for its Bay Shore line.

Sand Springs (Okla.) Interurban Railway lost one motor car and six trailers in a fire which partially destroyed the company's carhouse. The loss is estimated at $25,000.

Henry L. Doherty Company, New York, N. Y., is reported to be considering the purchase of a large number of cars for its St. Joseph, Mo., Toledo, Ohio, and other properties.

Clinton, Davenport & Muscatine Railway, Davenport, Iowa, has been considering the use of one-man cars for some time and expects to be in the market for some equipment of this type in the near future.

Northwestern Pennsylvania Railway, Meadville, Pa., has specified the following details for two trailer box freight and for two double-end package freight cars being constructed by the Wason Manufacturing Company.

	Double-End Package Freight	Trailer Box Freight
Number of cars ordered	2	2
Date of order	June	June
Date of delivery	September	September
Builder	Wason Mfg. Co.	Wason Mfg. Co.
Type	Double-end, package freight	Trailer box freight
Carrying capacity	30 tons	30 tons
Weight (total)	50,000 lb.	40,000 lb.
Bolster centers, length	29 ft.	
Over bumpers	45 ft. 11⅝ in.	36 ft.
Over vest bule	44 ft. 11⅝ in.	34 ft. 4 in.
Width over all	8 ft. 8⅛ in.	8 ft. 6 in
Rail to trolley base	12 ft. 10 in.	
Body	Steel underframe—wood body	Steel underframe—wood body
Interior trim	Sheathed with spruce	None
Headlining	None	None
Roof	Arch	Arch
Trucks	Peckham	Wason diamond frame with used GE-57 motors

TRADE NOTES

Shepard Electric Crane & Hoist Company, Chicago, Ill., has opened an export department at 30 Church Street, New York City.

Davis-Bournonville Company, New York, N. Y., has moved its Detroit office from 88 Adams Avenue W. to 427 Grand River Avenue.

Edward H. Hill, secretary and treasurer of the McQuay-Norris Manufacturing Company, St. Louis, Mo., died Aug. 11 after an illness of several weeks.

George B. North has been appointed general sales manager of the Hazard Manufacturing Company, Wilkes-Barre, Pa., and will be located at 533 Canal Street, New York City.

L. S. Henley, formerly electrical engineer for the Cornwall Ore Banks Company, has accepted a position with the Westinghouse Electric & Manufacturing Company, Philadelphia, Pa.

Henry D. Lindsley and **Thomas T. Desmond** announce the organization of their business as investment bankers and engineers under the name of Lindsley, Desmond & Company, with offices at 31 Nassau Street, New York City.

Theodore Swann, who has been sales manager of the Alabama Power Company for the last three years, has resigned to become president and general manager of the Southern Manganese Corporation.

George Cutter Company, South Bend, Ind., announces the appointment of R. W. Ten Broeck and A. B. Sonneborn as sales representatives for the state of Michigan, with offices at 426 Ford Building, Detroit.

Safety Car Devices Company, St. Louis, Mo., advises that the Monroe, La., safety car described in the Aug. 11 issue of the ELECTRIC RAILWAY JOURNAL is equipped with its well-known air-operated Safety combination instead of manually-operated doors and steps, as mentioned in the article.

Roy L. Baker has resigned as power sales engineer of the Commonwealth Edison Company, Chicago, Ill., to become manager of the steam and electrical department of the Railway & Mine Supply Company, 332 South Michigan Avenue, Chicago, Ill.

Adrian D. Joyce, general manager of sales and distribution of the Sherwin-Williams Company, has been appointed by the Federal War Industries Board to membership on a special committee for the standardization of paints and varnishes in connection with war purchases. On the committee with Mr. Joyce are six other prominent paint manufacturers of the country.

Ohio Brass Company, Mansfield, Ohio, reports the following changes in its organization: J. E. Slimp, who has represented the company for a number of years, first in the South with headquarters in Atlanta and later in New England with headquarters in Boston, has been transferred to an important position in the home office at Mansfield, Ohio. L. A. Wilson has been appointed to represent the company in New England. He will make Boston his headquarters. Mr. Wilson has a wide acquaintance in the New England territory where he has traveled for a number of years in the interests of the lamp department of the General Electric Company.

National Board of Fire Underwriters, New Yok, N. Y., headquarters at 76 William Street, has issued a poster about 11 in. x 14½ in., containing seven suggestions on how to prevent fires. The card is illustrated with border sketches and is issued with the indorsement of the Council of National Defense. It is headed "A Patriotic Duty of Every American Is to Prevent Fire." Some 60,000 of these cards are being mailed to the leading manufacturers throughout the country with a booklet of directions for the prevention of fire, under the title of "Safeguarding Industry." Copies will be sent to any manufacturer on request, without expense to him.

Peter M. Kling, consulting engineer Laconia Car Company, has severed his active connection with that organization. He says in his letter of resignation that having devoted thirty-four years of the best part of his life to the car industry, he felt that he was now entitled to enjoy a much-needed rest. Mr. Kling has long been prominent in the car building industry, and his experience dates back to the days of animal traction. When superintendent of the Brownell Car Company, he was largely responsible for the Brownell "accelerator," easy-access car. Later he was successively vice-president and general manager of the St. Louis Car Company, general manager of the John Stephenson Company, and manager of the passenger car department of the Pressed Steel Car Company. In 1912 he assisted the mechanical department of the Brooklyn Rapid Transit Company in developing its new type of cars while engineer of car construction for that company.

NEW ADVERTISING LITERATURE

Edison Storage Battery Company, Orange, N. J.: Bulletin 819 on Edison electric portable lighting outfits.

Sterling Motor Truck Company, Milwaukee, Wis.: A new publication, "Driver Dan, the Sterling Man," of interest to truck users.

Walter A. Zelnicker Supply Company, St. Louis, Mo.: Bulletin No. 221, listing offerings in rails, locomotives, cars, cranes, pipe, piling and tanks.

Spray Engineering Company, Boston, Mass.: A bulletin describing its Spraco pneumatic painting equipment. This is a further development of the Spraco paint gun which was recently developed.

Leonard Bundy Electric Company, Cleveland, Ohio: A bulletin descriptive of its safety-type knife switches, panelboards, cabinets, etc. It is also distributing a bulletin descriptive of knife switches only.

Society for Electrical Development, Inc., New York, N. Y.: A bulletin, "Aims and Achievements." This is a brief summary of what the society is accomplishing for its members and for the entire electrical industry. This bulletin describes just what this society is, how it has grown, what its work includes, its members, its officers and committees.

Ohio Brass Company, Mansfield, Ohio: Pamphlet descriptive of the O-B cam tip for overhead line material, with views of trolley frogs, crossovers, section insulators, etc., fitted with these cam tips, also illustration showing method of attaching wire to these clips. The pamphlet is entitled "Saving Time on the Line."

Electric Railway Journal

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Head-On Collisions Are Not Unavoidable

THE distressing head-on collision on the Shore Line Electric Railway in Connecticut last week, in which passengers were killed, emphasizes again the necessity of electric railways taking every precaution against accident. The hearing to determine the causes of this disaster, conducted by the Connecticut Public Utilities Commission, is now in progress, and we do not consider it proper for us to anticipate its verdict. We trust in the interests of electric railway travel that the inquiry will be searching and will demonstrate conclusively that on single-track roads head-on collisions as well as any other kind can be prevented. This means proper equipment, supplemented by the maintenance of discipline and obedience to orders on the part of the trainmen; but these things the public has the right to expect on the part of those who solicit passenger travel. If the road is a high-speed interurban line greater precautions are necessary than on a city or suburban railway. The first requisite of travel is safety, and the public should be convinced that every step has been taken to this end.

Reducing the Power Peaks Means Lower Cost

OF late much thought and no little publicity has been focused on the matter of energy consumption of electric cars. Devices for improving the efficiency of the motormen, personal instruction of motormen, rerouting and rescheduling of runs and new designs of cars and car equipment, all have done their share in cutting down the number of watt-hours necessary to carry a passenger a mile. Naturally the advantage of decreased energy consumption which has received most attention is the direct saving of energy—the saving of something which has a fixed and tangible dollars and cents value. Another advantage which we think has not been sufficiently emphasized is the actual reduction of the peak load which obtains when the energy consumption of a system as a whole is reduced either by energy saving methods on the platform or by changes in the scheme of operation. Ordinarily this advantage is not of so much moment, but in times such as these it may become of paramount importance. If power is purchased, a reduction of the maximum demand means lower rates; if it is generated by the railway itself, a reduction of 10 or 15 per cent may be the total of the difference between carrying the peak with present plant and buying new peak load equipment. Nowadays, even when one can afford to pay the price, both in first cost and fixed charges, and buy new equipment, long time deliveries of such equipment are the rule. It is interesting, therefore, to know that some of the companies are raking over the energy consumption field very thoroughly in an effort to hold down the peaks until new equipment now on order can be received and installed.

Foresight Shown in the Proposed Philadelphia Lease

A FEW months ago, in commenting upon the negotiations for operation of the new city rapid transit lines by the Philadelphia Rapid Transit Company, we said the idea that the city should go to any length in order to maintain a 5-cent fare limit was neither far-sighted nor public-spirited. We added that we hoped the question of an adequate electric railway fare would be faced squarely in Philadelphia. According to the abstract of the revised lease printed last week, we are glad to say that this has really come to pass. Under a partnership agreement modeled along up-to-date lines it is now proposed that fixed charges on city capital be paid before company dividends and that no company dividends be guaranteed by the city. If the gross revenue for any six months, however, is not sufficient to meet all prior charges and pay a 4 per cent dividend on the agreed capital stock, the city shall join with the company in asking the Public Service Commission to determine a just and reasonable fare. In other words, the proposed lease expressly recognizes the undesirability of holding the undertaking down by contract to a fixed fare until 1957. This is most commendable. The old idea of a fixed fare to last a generation or two is bound to be unfair to one or the other of the contracting parties, but the large cities have not been quick in recognizing this. Philadelphia, however, is seriously thinking of taking the step forward. It is to be congratulated upon its foresight in planning; we hope we shall be able also to congratulate it upon its wisdom in acting.

Is Skimping on Maintenance Justifiable?

THERE is naturally an antipathy among operating men to spending the unprecedented amount of money necessary to maintain electric railway property in the same condition that would prevail in normal times. The evidence of a skimping policy on many roads in this work is readily noticeable to the trained eye and ear. It is especially discernible on the rolling stock, for this bemoans its neglect audibly as well as visibly. Then, too, the track and overhead maintenance can be pinched for a time without serious deterioration, but the cars must be maintained consistently and persistently or their depreciation proceeds at a startling rate.

We appreciate that the managers are in an unenviable position when they must choose between a respectable net return with a badly run-down road and an average maintained road with a sadly depleted profit balance, even despite a substantial increase in the gross business. Nevertheless, we wish to reiterate the wisdom of maintaining the railway property in reasonably good condition regardless of the cost. If it could be prophesied with any degree of certainty that the war would come to an end this winter or next spring and that, in that event, there would be a reversion of material prices back to normal or less, or near normal, then we would be able to see some justification for skimping on the maintenance expenses during the interim.

But the exact contrary seems a much more logical prophecy at this time. There is little discussion which appears now, attributed to close students of the war, which anticipates less than two years more of the awful cataclysm, but if the period should happily be less there is no evidence that there will be any material drop in prices with a declaration of peace, in view of the large amount of reconstruction work which will have to be done. With such an outlook, then, is it not better economy to maintain equipment up to good practice this year and have only a normal maintenance expenditure next year rather than to cut down this year and be forced next year to pay heavily to keep the property in operation, probably at the same or more inflated material prices? The manager who insists before his board of directors on maintaining his property in continuous good condition will, in our opinion, return the largest share of profit to the stockholders in the long run, regardless of market conditions.

A Mistake to Apply for Uniform Railway Fare

ELECTRIC railways are no quicker than the public to realize their changed status under the public service law. Had they appreciated it better they might not have made, what seems to some, the mistake of applying to the Public Service Commission for the Second District of New York for a uniform 6-cent fare. They would have applied for that rate of fare—whatever it might be, varying with different companies—that would pay, on the average with due regard to all contingencies (as the law requires), all operating expenses, including depreciation, and also a fair return on the capital used in rendering the service.

The law in New York State stands for just that. And this puts the utility company in a totally different position than it was in before the time of the present public service law. In those days the relationship between company and public was largely regulated by terms of a franchise or by contract. The fare was stipulated at 5 cents, and the company could make as much of profit out of that 5 cents as its inventive ability and efficiency of management could produce. Until the Ulster & Delaware decision, the commission did not believe it had power to raise fares even if the companies were losing money.

This status resulted from considering the electric railway as essentially a private business conducted for profit. Public utilties are no longer so regarded in the law or by the public. They are regarded as necessary public services, which must, therefore, be kept operating at all times. The public must pay the cost of that service and a fair profit besides. But in return for this assurance of a "fair profit" the company must forego the chance of speculative profits, such as a manufacturing company might make, whether it were 10 or 20 or 50 per cent.

There is nothing sacrosanct about the nickel fare. If it is not enough to pay the costs of service it must be more, or service will suffer. If it is too much the public service commission can reduce it. If a company now getting a 5-cent fare cannot give good service and pay a fair profit on proper capital with a 6-cent fare, it has every right to apply for 7 or 8 or 10 cents as fare, whichever is the sum needed. And the public service commission's legal duty is to permit whatever fare is justified under the law after full determination of all the factors in the business affairs of each petitioning company. This covers capitalization, honesty and efficiency of management, determination that the trouble is not merely of a temporary nature, but one that is continuing. The burden of proof is on the company. It is a problem of business, not of sentiment. We are glad to note that under the proposed rapid transit lease in Philadelphia, as mentioned last week, these facts have been clearly recognized. Back of any commission, however, is its creator, the Legislature. If the public is not convinced of the correctness of the commission's finding, it can go back to the Legislature. It is necessary, therefore, to educate the public as well as the commission to these business facts.

The mind of the public should not regard any certain rate, whether 5 cents or 6 cents or 4 cents, as a fixed, unvarying measure of the value of a street car ride. That value varies. It is different in different cities. It is different in different years. There is no more reason for a uniform 6-cent fare than for a uniform 5-cent fare. It would be based on a bygone conception of the electric railways' status.

Importance of Seizing Every Opportunity for Publicity

ELECTRIC railways are constantly before the public in one way or another. To-day they want franchises extended; to-morrow they may want to make changes in the streets; on one day the city wants new paving between tracks; on the next day there are damage suits in the civil courts or ordinances proposed that affect the electric railway lines. Possibly there is a strike, or one is threatened. In all of these things there is need of an enlightened and sympathetic public interest. And in the long run the electric railway company's interest will be appreciated—it will get a square deal—only so far as it has gained the understanding and the good-will of the community which it has faithfully served.

Some electric railway managers say that the average man has no interest in the companies' affairs, that all he wants is to ride when he wants to and as he wants to for the price he wants to pay, and there his interest stops. That's the viewpoint that steam railroad men had ten years ago, but they have changed. One by one they have broken away from their "standpat" views, taking the public into their confidence at every opportunity. In the various controversies with the brotherhoods the railroads kept the public advised of every step taken by both sides. These controversies lasted nearly four years and—if newspapers reflect opinion at all—at the end the people of the country overwhelmingly favored the carriers when the eight-hour day issue was raised.

When the railroads sought an increase in rates they used every avenue of publicity possible to give the reasons that made the move necessary. It took time to convince the public, but it was accomplished to an amazing extent. People didn't interest themselves in steam railway matters of their own accord. They became interested in spite of themselves, because the steam railroad people were determined that they should become interested.

Electric railway problems will interest the average man much quicker than matters affecting the steam lines, because the street car is an essential part of his daily life.

At the opening of the war when the steam railroads organized to assist the government, about the first thing they did was to give full publicity to every step they took. The newspapers have had full reports of what the railroads are doing. Every little thing they have done to help the situation has been explained to the public.

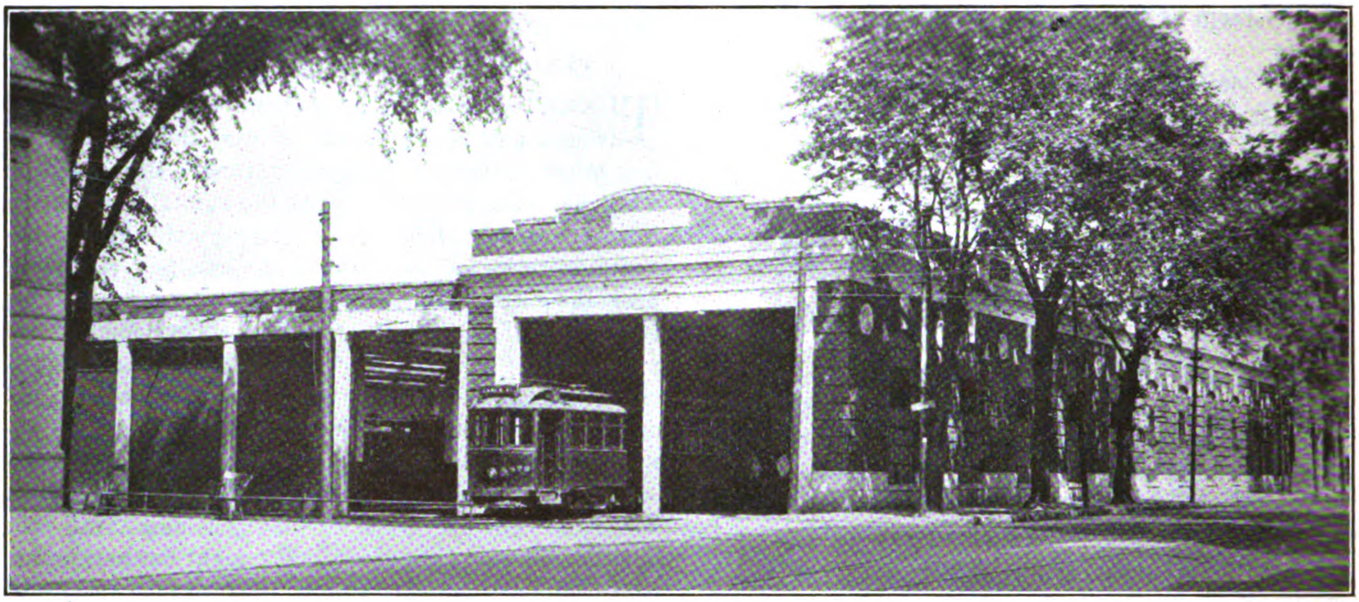
The name of their chief committee was "The Special Committee on National Defense of the American Railway Association." The name was manifestly too long for popular use. Furthermore, the committee was constantly referred to as a subsidiary of the advisory committee of the Council of National Defense, with which it had no direct connection. In the interest of fair publicity it was suggested that the committee adopt the name "The Railroads' War Board" in order that the railroads should get credit for the great work they were voluntarily doing. The name took immediately, and since then there has been no confusion. The railroads are making great progress in conserving the transportation supply, and they are telling the public how they are doing it, and the public knows who is doing it.

Every individual electric railway in the United States can be just as active in publicity work as the steam railroads. Constant vigilance on the part of some one man in each company is needed, however. He must watch for and develop opportunities for publicity, and when his company takes any action that affects the people of the community the first thought should be of publicity. It is constant effort of this sort that will be the saving of the electric railway industry.

Growing Traffic Justifies Heavy Extra Expenditure

THERE seems to be more building activity in the freight side of the electric railway industry than in any other branch at the present time. Most building work has been postponed until the capital expenditure involved would not be so out of proportion to the advantages to be gained. But in the handling of freight over the electric lines, the growth of business is so great and the prospects for future development and profitable returns are so promising, that the railways cannot afford to delay the provision of necessary and adequate terminal facilities. The Detroit United Railway, for instance, whose new freight terminal was described in the issue of the ELECTRIC RAILWAY JOURNAL for Aug. 11, has been turning business away for months, not only local short-haul freight but across-the-State shipments in carload lots, because the capacity of the system was limited by its existing terminal facilities in Detroit—the throat through which most of the commodities had to pass. The cost of the new terminal was perhaps 100 per cent above what it would have been in normal times, but it will make possible the handling of 400 or 500 per cent more traffic than can now be handled, and the increase in business to utilize this capacity is for the most part in sight. Traffic that has been sent another way will soon be coming to the electric terminal because the teams and trucks will be able to unload and get away without the delay which is so prevalent but at the same time so costly to the manufacturer and merchant shipper. This fact will be appreciated by the shippers just now even more than in normal times, for the congestion at the steam-road terminals is causing unusual truck delays. Through these facilities for quickly releasing the teams and trucks, many shippers who have not hitherto used the electric lines will be induced to do so now, and once they have formed this habit and come to know the rapidity of the electric shipping service, they will doubtless continue to avail themselves of these advantages.

So, despite the extra expenditure involved in the construction of freight terminals at the present time, there are advantages to be realized which perhaps offset the over-investment. This view receives support from the fact that the Indianapolis interurbans are also constructing a very large freight terminal at this time and that the D. U. R. has already broken ground for another extensive terminal on the opposite side of the city from the one referred to above. If sufficient earnings can be assured to pay a good return on the investment, however high, the general abnormal condition of the material market should not be allowed to stand in the way of development of the industry or of business. Without doubt, the hauling of freight is the most promising direction in which an interurban railway can turn as a means of increasing its gross business, and it also offers the best possibility for increasing the net income. No time should be lost by electric lines in availing themselves of the opportunity offered in this branch of the business.



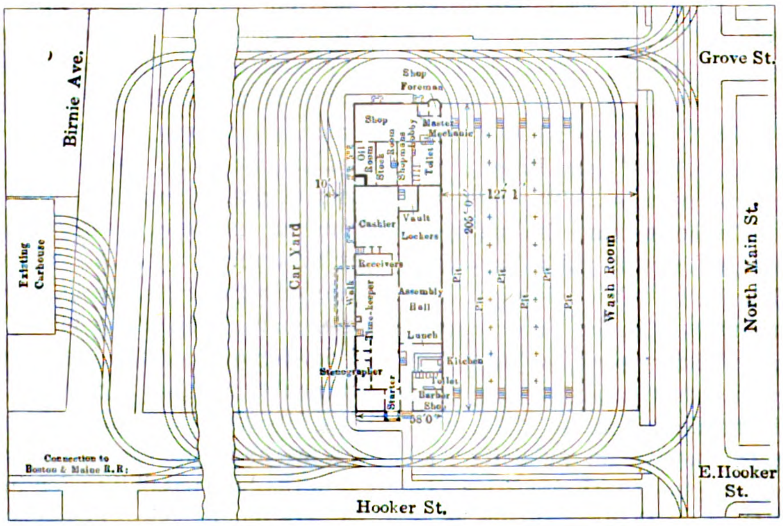
NEW SPRINGFIELD CARHOUSE—VIEW OF BUILDING FROM SOUTHEAST SHOWING CAR LEAVING WASHROOM

Springfield Street Railway Completes Model Carhouse

Efficient Handling of Car Movements and Adequate Provision for Running Repairs and Inspection Were Considered Fundamental in the Design of the New Hooker Street Plant

TWO hundred and thirty-five double-truck cars can be accommodated in the yard and interior tracks of the recently completed Hooker Street carhouse of the Springfield (Mass.) Street Railway, one of the latest installations of its kind in New England, and an excellent example of combined operating and light maintenance facilities in a single plant. For several years the company has felt the need of additional carhouse facilities within easy reach of the business center of Springfield. Its existing shops and carhouse at Carew Street have been overtaxed by the growth of traffic, and the company was fortunate in being able to secure land for a new development within a mile of the older property, adjoining the Birnie Avenue storage carhouse and conveniently located with regard to the rapid supply of cars for downtown service and for the needs of the industrial district at Brightwood.

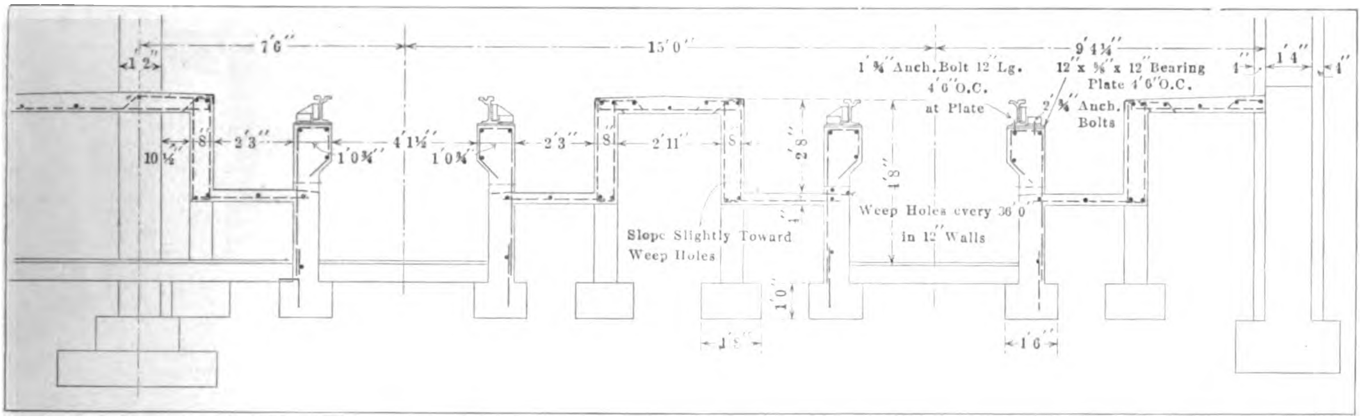
The new carhouse was not designed to supersede the Carew Street shops in heavy maintenance work, but is planned to permit inspection and running repairs to be handled at low cost, thereby relieving the former of much work which occupied valuable trackage space nearer the urban center.


Birnie Ave.
Existing Carhouse
Connection to Boston & Maine R.R.
Car Yard
Shop Foreman
Shop
Master Mechanic
Oil Room
Stock Room
Shopmens Lobby
Toilet
10'
127' 1"
205' 0"
Cashier
Vault
Lockers
Receivers
Walk
Time-keeper
Assembly Hall
Lunch
Kitchen
Stenographer
Starter
Toilet
Barber Shop
58' 0"
Pit
Pit
Pit
Pit
Pit
Pit
Wash Room
Grove St.
North Main St.
E. Hooker St.
Hooker St.

NEW SPRINGFIELD CARHOUSE—LAYOUT OF CARHOUSE AND TRACKS

GENERAL FEATURES OF THE CARHOUSE AND YARD

The carhouse at Hooker Street is about 190 ft. x 205 ft. in plan, and is situated, as shown in the accompanying general layout drawing, at the intersection of Hooker and North Main Streets. On the North Main Street side is a washroom with two tracks, each 200 ft. long, and adjoining this is a pitroom with six tracks running through from end to end. The office portion, which faces on the storage yard, contains the operating offices, including quarters for cashier and receiver, together with a barber shop, lunchroom and assembly hall with a seating capacity for 255 persons. In the basement, space for a poolroom has been provided. In the pitroom are two electrically driven car hoists, two jib cranes, two hydraulic wheel jacks and a wheel grinder. On the west side of the pitroom is


7′ 6″
15′ 0″
9′ 4¼″
1′ 2″
1′ 4″
1″
4″
1¾″ Anch. Bolt 12″ Lg. 4′ 6″ O.C. at Plate
12″ x ⅝″ x 12″ Bearing Plate 4′ 6″ O.C.
2/¾″ Anch. Bolts
10½″
8″
2′ 3″
1′ 0¾″
4′ 1½″
1′ 0¾″
2′ 3″
8″
2′ 11″
8″
2′ 8″
4′ 8″
Weep Holes every 36′ 0″ in 12″ Walls
Slope Slightly Toward Weep Holes
1′ 0″
1′ 8″
1′ 6″

NEW SPRINGFIELD CARHOUSE—CROSS-SECTION OF INSPECTION TRACKS AND PITS

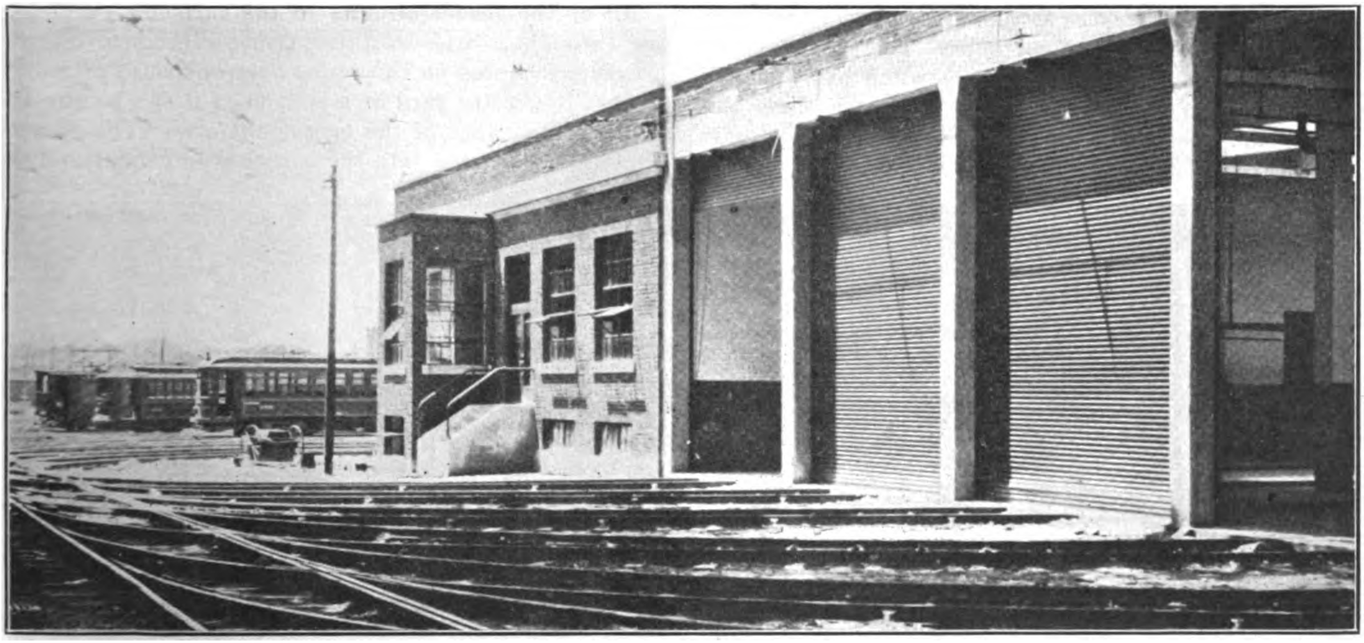
a small shop containing several motor-driven tools for running repairs. A small stockroom, oilroom and carhouse foreman's office joins the shop, together with a lavatory and lobby for the men. The storage yard for cars consists of thirty-one loop tracks, and an extra track has been provided alongside the building for the unloading of coal, oil and wheels directly into the basement without interfering with car operation. Outside the main lead is a track connecting directly with the Boston & Maine Railroad. Plans were drawn and the building erected under the supervision of H. R. Whitney, engineer maintenance of way and structures, and W. L. Harwood, engineer of power and equipment.

The entire building is constructed of reinforced concrete, with red brick curtain walls, concrete base and trimmings, and concrete medallions in the centers of the panels near the top, this material also being used in the construction of the eaves, which are surmounted by a brick parapet. The structure is designed so that a second story can be added at any time over the wash room. Space has been provided also for future stairway and elevator service. The washroom, pitroom and office sections are separated by fire walls carried through the building from north to south, a transverse fire wall being carried from east to west between the machine shop and lobby section and the portion of the office structure devoted to the transportation department. This construction makes it unnecessary for platform men to enter the shop section, and keeps persons not working in the pit and washrooms out of the premises, while providing ample quarters for all uniformed employees using the building and lobbies. Ribbed glass windows ⅛ in. thick are used in the walls of the washroom.

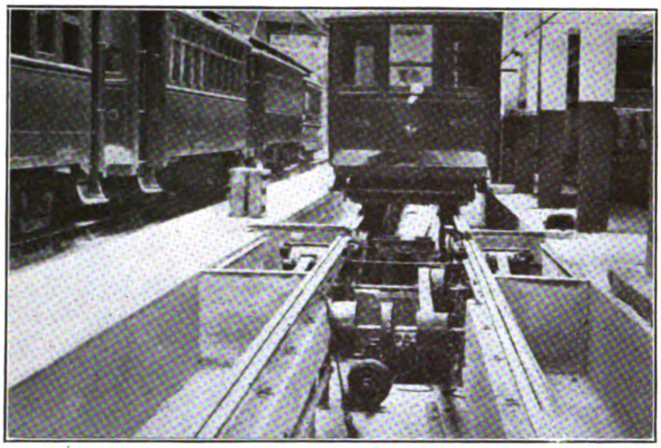
EQUIPMENT OF WASHROOM AND PITROOM

The wash and pitrooms are equipped with Grinnell ceiling sprinkler heads, supplied by water under city pressure. The wet pipe system is used, and four of the alarm gongs are shown in photograph on page 303. The modified type of aisle sprinkler arrangement is used in this installation; that is, there are two lines of sprinklers in alternate aisles and one line on each wall. The building is heated by live steam supplied by two 54-in. Ames boilers located in the basement of the office section.

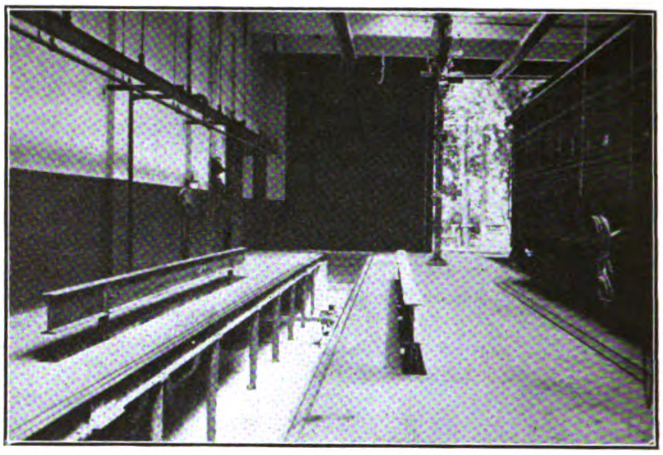
From North Main Street west the first two tracks are used exclusively for car washing and cleaning, two outlets being provided for vacuum service on both sides of the washroom. The vacuum cleaning equipment is of the Spencer 7.5-hp. turbine type, and a 2-in. line is



NEW SPRINGFIELD CARHOUSE—SOUTH END OF CARHOUSE SHOWING BAY WINDOW OF STARTER'S OFFICE



NEW SPRINGFIELD CARHOUSE—WHEEL GRINDER IN PIT



NEW SPRINGFIELD CARHOUSE—CAR HOIST IN PITROOM

provided on each side of the room. Compressed air is also supplied through a 1-in. line for general service, the source being an Allis-Chalmers motor-driven compressor in the machine shop basement. The vacuum cleaner service is also carried through the offices, assembly hall and lobbies. Throughout the building current is supplied to trolleys from a ¼-in. x 2½-in. steel bar instead of from copper wire, the bar being mounted on insulators in a trough under the crossbeams of the ceiling.

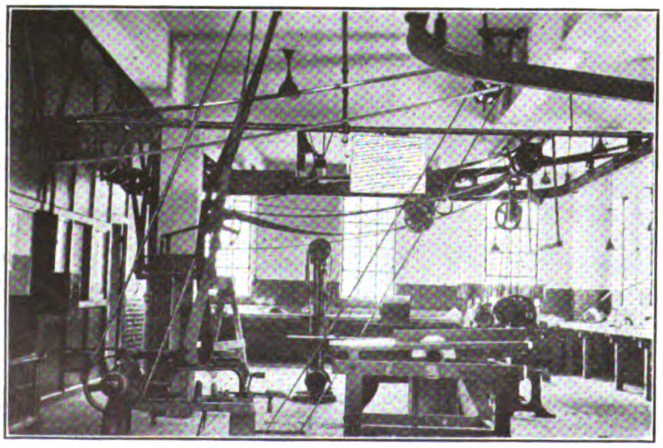
In the pitroom the two tracks nearest the washroom wall are set apart for general inspection, and are provided with both central and side pits, as shown in cross-section on page 301. The other four tracks are supported on 5-in. cast-iron columns. About halfway down the room a Griffin motor-driven wheel grinder is installed in the pit, with the usual provision for removing a section of rail when using the device. An accompanying view shows the grinder in process of installation. The equipment includes two hydraulic jacks for raising and lowering trucks prior to and after grinding, and the jacks and grinding equipment are separated from the rest of the pit layout by reinforced concrete bulkheads. The next two tracks, used in light repairs and wheel changes, are equipped with hydraulic jacks for making the latter, and the two tracks in the pitroom nearest the office section are each equipped with a Columbia motor-driven car hoist. The car-hoist controller, circuit breaker and main switch are mounted in a group on the adjacent wall. Between these two tracks are also mounted two 3-ton Box gib cranes equipped with Sprague hoists. These have a maximum lift of about 15 ft., and the booms are arranged to cover the track on each side, making transfer of equipment easy from pit to an overhead runway, equipped with 1-ton Sprague electric hoists, which connects the pitroom with the machine shop. The runway extends along the entire length of the room, which is also provided with two Barrett motor armature lifts, one manually and the other hydraulically operated. Carbon incandescent lamps of 60 watts rating are used in pit lighting.

The pits for general inspection are wired in conduit to recesses containing in general two outlets each. In one of these is a fixed lamp and in the other a receptacle for a portable lamp.

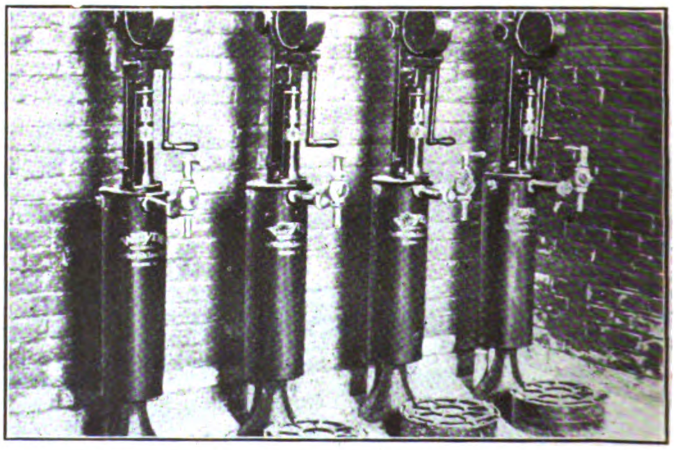
THE MACHINE SHOP IS WELL FURNISHED

The machine shop contains the following tools, group-driven from a 20-hp., 550-volt, direct-current motor mounted on the ceiling: One 18-in. Whitcomb engine lathe; one 12-in. American No. 1 jointer; one Norton model D double, bench-type, 12-in. grinder; one Hoefer 23-in. upright drill; one 14-in. No. 3 American circular saw; one 6-in. x 6-in. Economy No. 2 hacksaw; one Fay & Egan post borer. The equipment also includes a Buffalo No. 09D forge driven by a 110-volt Emerson ⅛-hp. motor, and two Universal electric drills.

All of the feeder circuits in the carhouse yard are fed through a bank of three General Electric circuit breakers mounted on the wall of the carhouse pitroom, so that the entire yard or a section of it can be cut off at the convenience of the operating force. The feeder circuits are brought into the carhouse in conduit. The



NEW SPRINGFIELD CARHOUSE—MACHINE SHOP



NEW SPRINGFIELD CARHOUSE—OIL PUMPS

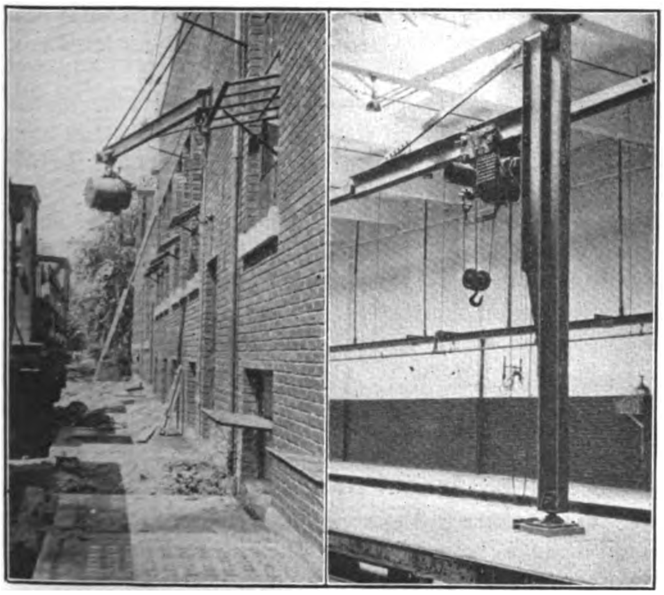
yard is to be lighted by twelve 1000-cp. Novalux pendant-type refractor units.

On the west wall of the building a 1-ton Sprague hoist with 10-ft. revolving boom is installed to facilitate handling wheels from cars to the receiving room in the basement. Wheels are lowered through a hatch to a storage room, from which a track leads at right angles to the pit tracks and under four of the latter, so that quick transfers can be made of wheels between cars and stock.

Oil is stored in tanks aggregating 1965 gal. capacity in a fireproof room in the basement, provision being made for keeping signal, kerosene, compressor and motor oil constantly on hand. A cradle is provided for holding barrels while discharging into containers. The latter are piped to a battery of four Wayne pumps located in an oilroom adjoining the machine shop, the pumps being of the crank-operated type and adjustable for uniform deliveries through a range of 1 qt. to 1 gal. Adjoining the oilroom is a room for the inspection and storage of headlights and markers. Ashes are removed from the boiler room by the 1-ton hoist mentioned, the ash, wheel and oil pits all being served by a side track providing for the shortest possible handling.

NEW SPRINGFIELD CARHOUSE—VIEW SHOWING ALARM BELLS AND ARCHITECTURAL DETAILS

In general, the carhouse is illuminated by 200-watt incandescent lamps equipped with Holophane shades, 100-watt lamps being used in office and shop sections. An eight station, Western Electric "Interphone" installation is provided for interior communication, in addition to the regular Bell telephone connections with the offices. Lighting and power service in the building is distributed from a switchboard of Westinghouse manufacture located in a basement compartment. There are three power and two lighting panels, as well as two panels for motor-generator control. A few of the motors are wound for 125-volt service and the motor-generator enables three-wire, multiple lighting distribution to be utilized. The motor-generator is a 50-kw. Westinghouse set. One of the power panels contains a main switch and Sangamo watt-hour meter with Westinghouse ammeter and circuit breaker. The auditorium stage is equipped with an electric service outlet, and it is planned to place a skeleton car equipment in this room for instruction purposes, with appropriate provision for energy supply from the basement.


NEW SPRINGFIELD CARHOUSE—JIB CRANES WITH ELECTRIC HOISTS

Women as Drivers

Contrary Opinions as to the Practicability of the Plan Expressed by British Managers

At a meeting of the Tramways & Light Railways Association, held in London on June 29, one of the subjects discussed was the use of women as motormen. There seems to be a little difference of opinion in Great Britain that women make a good substitute for men as conductors, but in the operation of the car itself, some contradictory testimony developed.

Among those tramways where the practice has been successful, that of the Greenock & Port of Glasgow Tramways was described in detail. Mr. Robinson, manager, said that conditions on that line were not particularly favorable. While there are no very steep hills, the cars weigh 12 tons each and hold fifty-four passengers, while the main streets are narrow and the vehicular congestion is considerable. Nevertheless, 62 per cent of the drivers and 80 per cent of the operating staff are now women. The women drivers do not seem to be afraid of rain and snow, but Mr. Robinson admitted that they were more apt to lose their "nerve" under trying conditions, as when they were called to operate cars on a greasy rail. They are paid the same wages and work practically the same hours as the men. In view of the fact that the work was entirely new, he considered the results satisfactory.

The general manager of the Paisley & District Tramways Company reported a contrary experience. Of thirty-nine women drivers with which the road commenced, only one remained. The grades, however, were severe, and to operate the brakes caused considerable side strain. Much of the traffic was that of carrying munition workers early in the morning. These early runs in winter were not popular with the women drivers. He thought the work was really beyond the capabilities of the women.

The Detroit United Railway has been compiling some statistics based on the number of transfers which it issues during an average month. During April, for instance, it found 9,984,748 transfers were used in the payment of fares and that these transfers, placed end to end, would make a strip 787.93 miles in length. If made into a rectangle and placed edge to edge, they would cover 15 acres.

Whole-Hearted Publicity

The Only Kind Which Can Win Results—How to Treat the Newspapers—Typical Examples Are Quoted

By IVY L. LEE

A NEWSPAPER reporter's first instruction from his managing editor was this:

"If a dog bites a man it is worth half an inch; if a man bites a dog it's worth half a column."

In other words, there is no real news in the usual.

An electric railway manager sometimes wonders why the newspapers do not devote columns of space to the excellence of his service, yet are always ready to treat at length an accident or irregularity in service. It is because the public wants to know about the accident. It constitutes news. This very fact that newspapers are on the lookout for the unexpected, the unusual, causes some men always to assume unconsciously a defensive attitude when a reporter calls. They have a feeling that—seldom warranted—the reporter is trying to develop something that will reflect unfavorably on the company or him. Such an attitude invariably gives the impression that there is a skeleton in the closet somewhere.

A hearty welcome to the reporter and perfect frankness about everything whether good or bad will breed confidence, which must exist between a railway manager and the press. To establish such a relation is the primary task in publicity work.

When Samuel Rae became president of the Pennsylvania Railroad his instructions regarding publicity were summed up in these words:

"Do not ever ask any newspaper not to print anything that is so. If it is bad let them print it, because in that way the matter will probably be brought to my attention so that we can have it corrected. The only thing we want to ask of newspapers is that when they do mention the Pennsylvania Railroad they publish the truth in small matters as well as great."

This policy is one that can well be recommended to every electric railway that has not already adopted it.

A COAL OPERATOR LEARNS A LESSON

At a time when there was a reported shortage in the anthracite coal output and a general increase in the price of coal seemed inevitable, a newspaper sent a representative to interview a prominent mine operator. Instead of frankly stating the facts the operator did all he could to conceal them. His invariable reply to the reporter's question was:

"I refuse to answer."

His attitude was that his business concerned himself alone, and that a newspaper had no more right to pry into the affairs of his company than he himself had to pry into the affairs of a newspaper. He could not or would not see that the newspaper is really the public, and it seeks only facts having a direct bearing upon the public.

"My business is my own affair and the newspapers have no right to question me about it," he told the reporter.

"But the public wants to know," the reporter answered.

"Tell the public to mind its own d——d business!"

The colloquy, just as it had taken place, was reported in the newspaper the following day. And in the succeeding days there were editorials and satirical squibs, all tending to make the operator appear more or less ridiculous. The satire and criticism aroused the operator, as his remarks over the telephone to the city editor attested.

Not many weeks later another reporter called on the operator to ask his views (though with no hope of success) on a certain development in the coal situation. Much to his surprise he was received cordially. What was more surprising the operator gave the reporter material for a comprehensive and authoritative story on the problems of the coal-mining industry.

It didn't take the coal operator long to understand that his attitude at the time of the first interview was the wrong one to take.

HOW NEWSPAPERS GET THEIR NEWS

Many big enterprises, while less outspoken perhaps, have shown the same attitude as the coal operator. Few of them see the error of their way as quickly as the coal operator saw his. They continue their mistaken policy for years, and when they finally see the light it is often too late to make amends.

No class of enterprise as a whole has been more aloof and more indifferent toward newspapers than public service corporations—electric railway companies particularly.

It has not been so many years since the idea was general among newspaper men that one of the worst assignments a reporter could have handed to him was one which entailed an attempt at interviewing an official of a transit company.

In the first place the reporter realized his chances of getting to the official were slim, and he felt that even if he did succeed in seeing him the prospect of getting a statement was not a roseate one.

There was, as a rule, something strictly formal about an interview with a high official of a transit company. The interview was very short, consisting usually of one question on the way in and one or two questions on the way out. In the end the reporter learned little more than he knew before, for at the very outset he saw the futility of asking for detailed information. This still holds true in too many cases.

The electric railway executive seldom was accessible to the reporter at all. He was usually "out." There was no one there in the absence of the right official who could discuss the subject the reporter had in mind. The reporter was gracefully shooed out of the office and the company was saved the trouble of appearing in print. But was it?

Just as there are more ways than one of killing a cat so there are more ways than one of getting news. One method, and the method the reporter always employs first, is to attempt to reach the proper official, the authoritative spokesman of the company. But if the fountain head fails him the reporter can look for "leaks," and in this way he frequently obtains what he considers better than nothing at all—"drippings" of news.

Car accidents will occur on even the best-managed transit systems. The reporter has several ways of getting information about these accidents. The police reports tell when and where the accidents occur, the numbers of the motormen and conductors and the names of the injured.

It is a popular thing for a passenger in a street car accident to receive injuries "necessitating his removal to a hospital." An enterprising reporter has no trouble in finding a slightly-injured passenger, one who has not been shaken up so badly as not to be able to talk. Malice often enters into the injured passenger's account of the accident.

Not only have many electric railway companies in the past shown little concern over the reports of accidents on their lines, but they have even refused to give an explanation of the circumstances attending these accidents. This attitude cannot help implant a grouch in the breast of a newspaper man. It cannot help but create a feeling of suspicion and distrust in the newspaper itself and develop an antagonistic editorial policy toward the company.

HALF-WAY POLICY ALMOST AS BAD AS NONE

A half-way policy toward newspapers is as bad almost as no policy at all. To reveal unessential facts while withholding the essential ones will invariably place a corporation as well as an individual in a bad position. As a result of such a policy three newspapers in one of our cities joined in a crusade against the local transit company a few years ago.

The company had been in the habit of notifying the newspapers of its projected improvements. But it never had a word to say about its defects, and it never would admit there was anything wrong with its management. Children were killed by its cars, but instead of setting forth the facts concerning the accidents the company would send to the newspapers descriptions of a proposed loop or of its plans to build a new carhouse.

As a result there was little said about the company's proposed improvements. But on the front pages of the newspapers from day to day appeared a list of the accidents of a week or a month. And the results of this "crusade" were seen in the sessions of the councilmanic body whenever traction projects were up for consideration.

What is true of a company's attitude in the matter of accidents is true also in the time of strikes. Frequently, at the first sign of impending trouble traction companies draw farther inside their shells. That is a time when a company should sally boldly forth and present itself to the public in the proper light.

THE WHOLE-HEARTED POLICY PAYS

In striking contrasts to the policy of many public service corporations is the policy of one big railway toward the newspapers. This railway doesn't wait for the newspapers to discover the facts of an accident themselves, but sends the facts to the newspapers as soon as it obtains them.

While labor orators have inveighed against traction companies, the officials of those companies have remained as silent as a sphinx wholly indifferent to public opinion—and this, too, at a time when sound facts placed before the public at the earliest opportunity would have upset the arguments of the strikers. This statement assumes that a company's position is based on sound principles.

Bolted doors in the offices of traction companies and the unwinding of red tape have in the past been concomitants of electric railway strikes. The same was true of railroads until they saw the advantage of coming out openly and asserting their position.

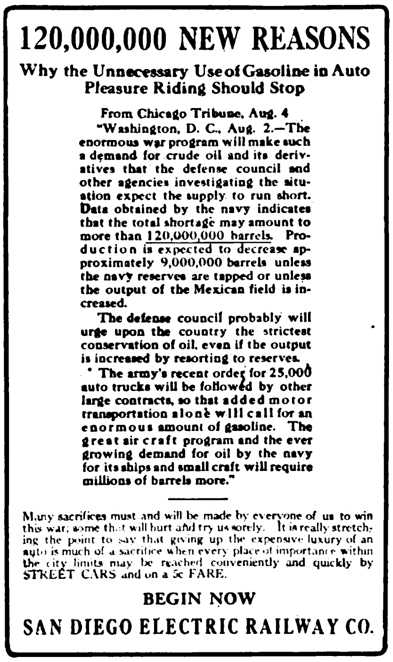
Last winter service on many railroads was tied up and newspapers were unable to ship their out-of-town editions. One railroad telephoned to the news department of the papers and explained the extent of the disarrangement of schedules and the cause.

An effort was made to get similar statements from another railroad, but in vain. In the absence of the head operating official there was no one qualified to give out information concerning the disarrangement of the service.

This railroad, like the coal-mine operator, thought it was running a private business. Sooner or later it will come to realize, like the coal operator did, that the public has a hand in that business too.

Use Electric Railway to Reduce Gasoline Consumption

The advertisement reproduced below is from the Aug. 14 issue of the *Evening Tribune* of San Diego, Cal. It illustrates the intimate relation which the electric railway sustains to the economic life of the nation, and an effective use of the opportunity to direct public attention thereto.



120,000,000 NEW REASONS

Why the Unnecessary Use of Gasoline in Auto Pleasure Riding Should Stop

From Chicago Tribune, Aug. 4

"Washington, D. C., Aug. 2.—The enormous war program will make such a demand for crude oil and its derivatives that the defense council and other agencies investigating the situation expect the supply to run short. Data obtained by the navy indicates that the total shortage may amount to more than 120,000,000 barrels. Production is expected to decrease approximately 9,000,000 barrels unless the navy reserves are tapped or unless the output of the Mexican field is increased.

The defense council probably will urge upon the country the strictest conservation of oil, even if the output is increased by resorting to reserves.

The army's recent order for 25,000 auto trucks will be followed by other large contracts, so that added motor transportation alone will call for an enormous amount of gasoline. The great air craft program and the ever growing demand for oil by the navy for its ships and small craft will require millions of barrels more."

Many sacrifices must and will be made by everyone of us to win this war; some that will hurt and try us sorely. It is really stretching the point to say that giving up the expensive luxury of an auto is much of a sacrifice when every place of importance within the city limits may be reached conveniently and quickly by STREET CARS and on a 5c FARE.

BEGIN NOW

SAN DIEGO ELECTRIC RAILWAY CO.

RECENT ELECTRIC RAILWAY ADVERTISEMENT FROM SAN DIEGO

North Shore Fare Hearing Closed

Commission Gives City Final Hearing for Presentation of Evidence—Refuses to Hold Up Case Longer

THE final hearing on the application of the New York & North Shore Traction Company, Roslyn, N. Y., for an increase in fare from 5 cents to 7 cents on its lines in Queens Borough, New York City, was held on Aug. 10. The progress of the hearings on this application up to the closing of the company's case on July 25 was described in the ELECTRIC RAILWAY JOURNAL of July 21 and July 28.

At the last mentioned hearing E. E. Baldwin, special counsel for the city, requested additional time in which to have John A. Beeler examine the company's property. Mr. Baldwin was not certain that he had further evidence to introduce, and the final arrangement was that the city might have any date up to and including Aug. 3 for a further hearing if it deemed such was necessary. On Aug. 3 Mr. Baldwin approached the commission again for the first time and asked for an extension, stating that his expert would require four or five weeks to make a thorough examination of the property. The commission intimated that the city was not justified in its request, after the understanding reached on Aug. 3, but it finally set another hearing for Aug. 10. At this time, it said, the city would be required to have its expert present the results of his examination, and if his testimony disclosed the need of further adjournment, it would be had.

TABLE I—APPROXIMATE RATE OF RETURN ON INVESTMENT PER DOLLAR OF GROSS REVENUE

(Average United States Conditions)

Investment	$2	$3	$4	$5	$6	$7	$8	$9	$10
Gross revenue	$1	$1	$1	$1	$1	$1	$1	$1	$1
Operating expenses, cents	59	59	59	59	59	59	59	59	59
Taxes, cents	6	6	6	6	6	6	6	6	6
Depreciation, cents	4	6	8	10	12	14	16	18	20
Balance,* cents	31	29	27	25	23	21	19	17	15
Per cent return on investment	15.5	9.7	6.8	5.0	3.8	3.0	2.4	1.9	1.5

*Available for interest, dividends and surplus.

Note—Operating ratio taken from 1912 U. S. Census report (58.6 average for 975 electric railways). Taxes taken at 6 per cent of gross revenue. Depreciation taken at 3 per cent on depreciable property only, assuming one-third of investment value for recoverable scrap. This basis was taken by Mr. Beeler because the New York & North Shore Traction Company assumed depreciation at practically this rate.

TABLE II—APPROXIMATE RATE OF RETURN ON INVESTMENT PER DOLLAR OF GROSS REVENUE

(Most Favorable Condition)

Investment	$2	$3	$4	$5	$6	$7	$8	$9	$10
Gross revenue	$1	$1	$1	$1	$1	$1	$1	$1	$1
Operating expenses, cents	50	50	50	50	50	50	50	50	50
Taxes, cents	6	6	6	6	6	6	6	6	6
Depreciation, cents	4	6	8	10	12	14	16	18	20
Balance, cents	40	38	36	34	32	30	28	26	24
Per cent return on investment	20.0	12.7	9.0	6.8	5.3	4.3	3.5	2.9	2.4

Note—See note above. Operating ratio taken at 50 per cent, representing a very favorable condition.

At the hearing on Aug. 10 Mr. Baldwin presented exhibits, prepared from the company's annual reports to the commission, to show that improvements could be made in the operation of the road. Mr. Beeler also presented a memorandum giving the results of his preliminary examination. He stated that the future of the road was extremely uncertain, and that it was questionable whether relief in the form of higher fares would be of benefit. In his opinion the line did not appear to have been necessary to a sufficient number of people to make it pay. It was well built, but better suited to city than to rural conditions.

In discussing the possibilities of improved operation, Mr. Beeler said that the schedules might be revised so as to give more reasonable speed and the motormen might be taught how to save power by coasting. As Mr. Beeler thought that a more detailed survey of the property covering at least four weeks would be justified, the city requested this extension of time. The commission, however, stated that its experts had been examining the property along the same lines followed by the city, and it refused to allow the city to delay matters any further.

Mr. Beeler said that the investment of $10.17 per $1 of gross revenue for the New York & North Shore Traction Company is nearly twice the general average. According to him, well-informed investors consider that on the average $1 of gross revenue should be obtained from each $4 of investment in order to provide for operation, maintenance, depreciation and interest. In this connection, in order to show what return should be expected from electric railway investment, Mr. Beeler introduced three tables. These are shown herewith, with the $11 and $12 investment columns omitted.

TABLE III—APPROXIMATE DISTRIBUTION OF GROSS REVENUE FOR VARIOUS CAPITAL INVESTMENTS

Investment	$2	$3	$4	$5	$6	$7	$8	$9	$10
Gross revenue	$1	$1	$1	$1	$1	$1	$1	$1	$1
Operating expenses, cents	59	59	59	59	59	59	59	59	59
Taxes, cents	6	6	6	6	6	6	6	6	6
Depreciation, cents	4	6	8	10	12	14	16	18	20
Return on investment, cents	12	18	24	30	36	42	48	54	60
Total charges, cents	81	89	97	105	113	121	129	137	145
Surplus, cents	19	11	3	..	..	..	..	..	..
Deficiency, cents	..	..	..	5	13	21	29	37	45

Note—See notes with Tables I and II. Return is figured at 6 per cent.

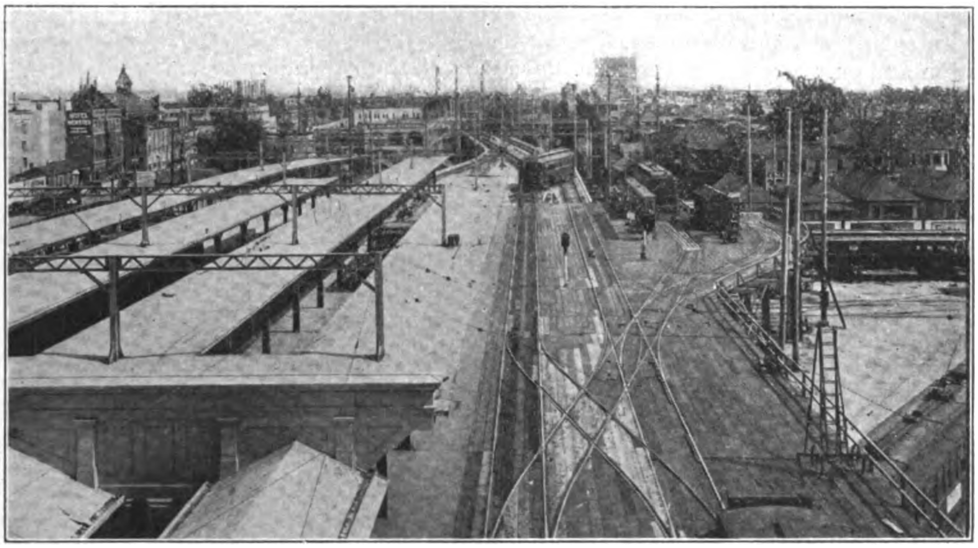
Mr. Beeler said that, according to Table III, the average road with an investment of $10 per $1 gross revenue would fall short of earning 6 per cent by 45 cents on every $1 of gross revenue. Since the New York & North Shore Traction Company's operating ratio was ten points higher than that in the table, the earnings would be 55 cents on $1 short of a 6 per cent return. In other words, in order to earn 6 per cent, the gross earnings must increase 55 per cent without any increase in operating expenses, taxes or depreciation. In the case of Table I, an investment of $10 would on the average give a 1.5 per cent return. With an operating ratio ten points higher, the return would be only 0.5 per cent.

An Incident in Public Relations

Speaking of the press one director of public relations recently told a representative of the ELECTRIC RAILWAY JOURNAL the following: "Reporters and editors are just as amenable to reason as other people. Since we have convinced the newspapers that we omit no means to avoid accidents, they invariably in case of a collision write that the automobile struck the car and not that the car collided with the automobile. It doesn't look important, maybe, but it helps to mold the minds of future jurymen in our favor. We have converted this phrasing into a saving of dollars and cents." This incident is not big in itself, but it is worth mention as illustrating the tangible benefits to be derived from intelligent management.

Pacific Electric Railway Terminal at Los Angeles

More Than 1300 Trains from Nineteen Lines Are Handled Daily at the Interurban Station, Which Is Provided with Three Stub and Two Through Tracks That Approach the Terminal on an Elevated Structure

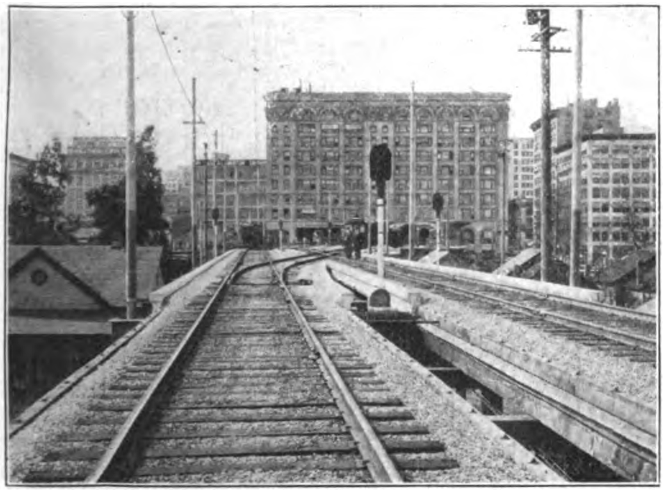


PACIFIC ELECTRIC TERMINAL—TRACKS AND PLATFORMS ELEVATED ABOVE STREET LEVEL

LOS ANGELES, proudly boasting that it is the fastest-growing city in the United States, may now take equal pride in an electric terminal which does full justice to its position as the greatest interurban center west of the Mississippi. Since Feb. 12, 1917, this terminal has been handling with ease more than 1300 train movements a day, many of the units being three-car and four-car trains.

The new terminal is the focus of nineteen lines whose time-card intervals range from ten minutes on the Pasadena Short Line to two hours on the San Bernardino Line. While these routes carry a large proportion of tourist traffic, those nearer Los Angeles enjoy a heavy commuting service. On some lines the commuters are distributed in the business district so that they do not ride into the terminal except on the outgoing trip. For their further convenience, the commuters on busy lines like that to Pasadena may enter outbound trains within the distributing zone on presentation of a round-trip ticket; otherwise a 5-cent fare must be paid for the ride to the terminal. By this plan a portion of regular traffic has no incentive to cause congestion at the terminal itself. Furthermore, the Pasadena trains, and trains of similar lines, are run through the terminal on loop tracks as hereinafter described.

Broadly speaking, the objects of the present terminal, which is an enlargement of the original space in the



PACIFIC ELECTRIC TERMINAL—VIEW SHOWING THREE-INDICATION LIGHT SIGNAL

PACIFIC ELECTRIC TERMINAL—TYPICAL SOLID-MANGANESE SPECIAL WORK

Pacific Electric Building, were threefold: To cut in half or eliminate entirely interurban train movements over Main Street; to increase the trackage capacity of the terminal; and to increase the speed and safety of passenger interchange by discharging passengers on one platform and receiving them on another platform at the opposite side of the car.

The last-named object is certainly accomplished in a splendid way, the platforms, ramps, subways and viaducts being laid out in the simplest possible manner. For example, all exits converge to one main exit which faces the street. Each discharge platform is also marked with a large direction arrow and "Exit" in mosaic so that strangers will not leave the wrong way. The up-ramps are 12 per cent and the down-ramps 20 per cent, mastic paving being used on the latter to secure a non-slip construction.

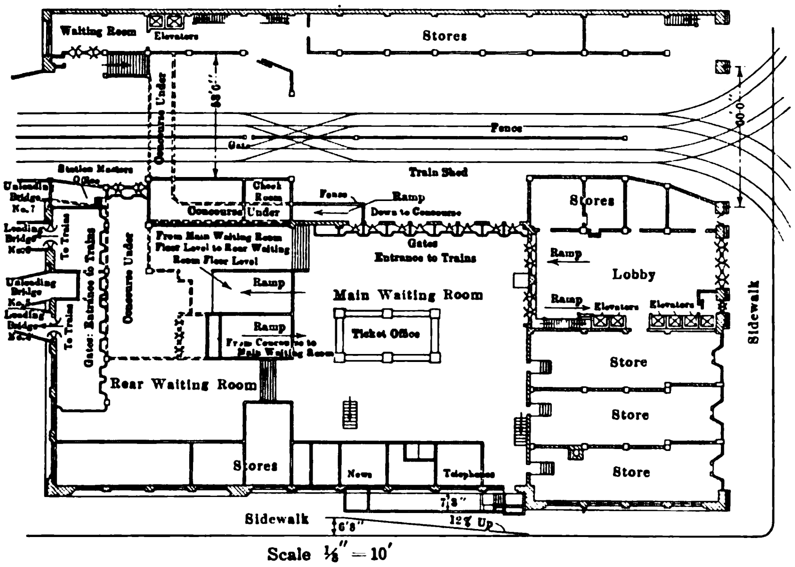
The reconstruction and enlargement of the terminal involved the erection of a steel elevated structure for a length of 1400 ft. from the Pacific Electric Building to San Pedro Street. The track is rock-ballasted on a reinforced concrete deck slab, and 75-lb. rail is used. The platforms, both loading and unloading, are 9 in. above the top of the rails to facilitate passenger movement. Over the platforms are concrete umbrella sheds. The overhead wire is No. 0000 double-grooved catenary trolley suspended from steel overhead bridges. Hangers are spaced at 10-ft. intervals. Special work furnished in part by the Buda and Wharton companies has been installed.

TRACK PLAN

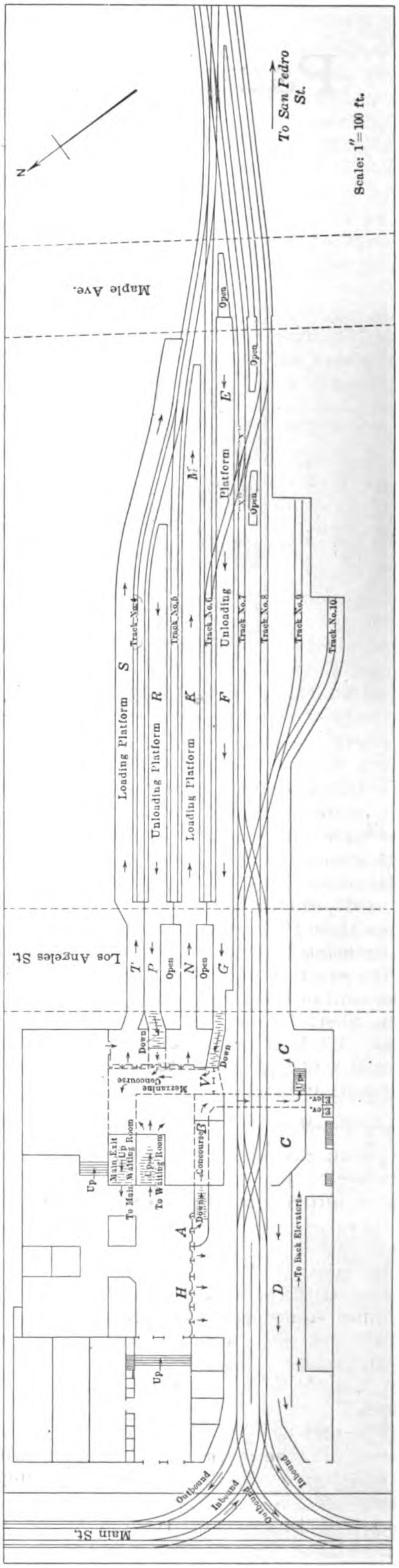
Accompanying drawings show respectively a plan of the passenger station itself and of the track layout as a whole. Before describing the latter, it is proper to state that formerly most cars came in and backed out of the terminal on the same track, lay-over cars being kept in a yard back of the building. Now the short-headway lines are routed through, while the stub tracks are used for other routes. The following typical movements will serve to describe the operation of the terminal as a whole.

Pasadena trains unload at *D*, the discharged passengers going to Main Street or using the mezzanine concourse at *C* to reach the main waiting room. Pasadena trains then proceed to load at *C* and continue along track No. 8 outbound to San Pedro Street. In this case, those passengers who are taken via the terminal waiting room reach the loading platform via the subway concourse marked *B*. Platform *C* is also reached directly from Main Street.

On the other hand, certain local trains which also unload at *D* go to stub tracks Nos. 9 and 10 for lay-over, following which they are switched over to track No. 7, take their load opposite gate *H*


Waiting Room
Elevators
Stores
Concourse Under
88'0"
Fence
Gate
60'0"
Train Shed
Station Masters Office
Unloading Bridge No. 7
Loading Bridge No. 6
Unloading Bridge No. 5
Loading Bridge No. 4
To Trains
Gates: Entrance to Trains
Concourse Under
Check Room
Concourse Under
Fence
Ramp Down to Concourse
From Main Waiting Room Floor Level to Rear Waiting Room Floor Level
Ramp
Ramp
From Concourse to Main Waiting Room
Gates Entrance to Trains
Main Waiting Room
Ticket Office
Stores
Ramp
Lobby
Ramp
Elevators
Elevators
Store
Store
Store
Rear Waiting Room
Stores
News
Telephones
7'3"
Sidewalk
6'8"
12% Up
Sidewalk
Main St.
Scale 1/8" = 10'

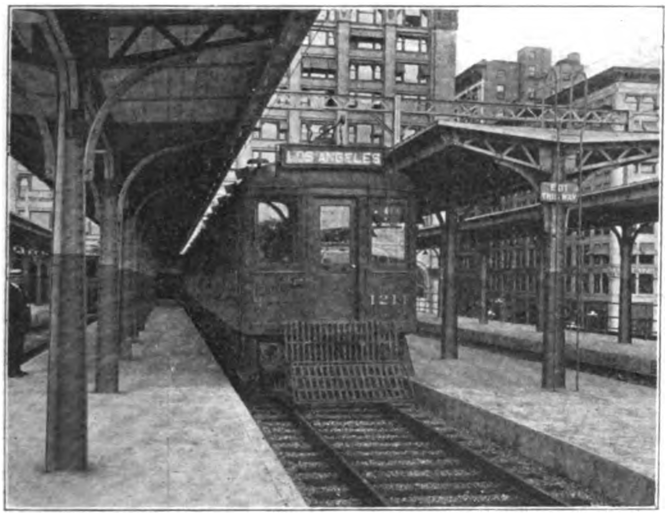
PACIFIC ELECTRIC TERMINAL—MAIN FLOOR PLAN OF TERMINAL


N
To San Pedro St.
Scale: 1" = 100 ft.
Maple Ave.
Open
Open
Platform E
Open
M
Platform
Track No. 4
Track No. 5
Track No. 6
Track No. 7
Track No. 8
Track No. 9
Track No. 10
Loading Platform S
Unloading Platform R
Loading Platform K
Unloading Platform F
Los Angeles St.
T
P
Open
N
Open
G
Down
Down
Mezzanine Concourse
V
Main Exit Up Waiting Room
To Main Waiting Room
Concourse B
Up
To Waiting Room
Down
A
H
Up
C
C
D
To Back Elevators
Outbound
Inbound
Outbound
Inbound
Main St.

PACIFIC ELECTRIC TERMINAL—GENERAL TRACK PLAN, SHOWING LOADING PLATFORMS AND PASSAGEWAYS and continue to Main Street. The stub tracks are also used for crippled cars, occasional specials, etc.

Again, other trains come in from the rear over Track No. 7, unloading at *E*, *F* or *G*, the discharged passengers using a ramp to reach the mezzanine concourse underneath the rear waiting room, whereupon they use a second ramp to get into the main waiting room. In the meantime the train proceeds to the loading platform at gate *H*.

While inbound trains which come from San Pedro Street over track No. 7 have designated berths, these may be changed by the towerman according to the exigencies of the moment. Thus, a train switched to track No. 6 may unload at berth *E* or *F* and load at berth *M* or *K*. Entrance to the latter platform is made over loading viaduct *N* over Los Angeles Street from the main gates of the upper waiting room.



PACIFIC ELECTRIC TERMINAL—LOADING AND UNLOADING PLATFORMS

Trains sent to track No. 5 unload at *R*, where the discharged passengers descend a ramp into the mezzanine concourse via bridge *P* over Los Angeles Street. Passengers boarding these trains use platform *K* or *M*, reached by viaduct *N* from the rear main waiting room. Trains on track No. 4 unload at *R* and load at *S*.

The average time saved per train through the new terminal rerouting is two minutes.

TRAIN CONTROL AND ANNUNCIATOR SYSTEMS

All train movements are controlled by a towerman through an electro-pneumatic interlocking plant of the Union Switch Company, operated at 110 volts 50 cycles. A twenty-three lever, vertical, roller-type machine is used. The twenty signals are of the three-indication color type, but each signal also has an extra set of lenses on the side adjacent to the track. This unique addition economizes track space as it enables the motorman to see the indication while alongside the signal. With standard indications only, he would have to keep 10 ft. or 15 ft. of idle track between his car and the signal.

The split-point switches have switch-and-lock movements, and the seven manganese cast switch-and-mate designs are used with direct-acting switch movements which are placed between the rails and directly connected to the tongues. To avoid trouble from dirt or water and to promote easy maintenance, the switch valves are mounted separately on the elevated structure near each switch movement. Another interesting feature in design is that all track and line relays are in a special case in the tower room. The back of this case is a terminal board which carries all line switch buses, circuit breakers and relay track grids with each part precisely stenciled to permit immediate location of the circuit in trouble.

Trains entering the terminal are announced to the towerman by means of an annunciator system operated by a towerman at each end. Entering trains receive signals as follows: Green, if signal ahead is at "Proceed" or "Caution"; Yellow, if signal ahead is at "Stop" or diverging route set; Yellow and red in combination, if section beyond the switches and within the first block is occupied. Close-up movements at the unloading platforms *E*, *F* and *G* are permitted, thus relieving the inbound main-line blocks and so allowing movement of trains into stubs 4, 5 and 6.

Departing trains announce their readiness to depart by the use of annunciators which are placed on alternate umbrella shed columns on the loading platforms. The appropriate button is pressed one minute prior to leaving time. This interval gives passengers who are just going through the gate time to board the train in addition to giving the towerman advance notice as to what track should be lined up. Push buttons marked "R" also are installed for recalling a train departure signal when the train is delayed for any reason. Annunciators for the gateman are identifiable as to the track number and berth so that he can make proper announcements. In addition, a whistle signal code is provided for the use of the towerman in emergencies.

In conclusion, reference should be made to the system of illumination. This comprises nitrogen lamps so deeply hooded that while a brilliant path of light is thrown on the platforms, the surroundings of the signal lights are in deep shadow, thereby preventing errors in reading indications.

The Algebra of Safety

This fetching drawing is from a car poster just issued by the Bay State Street Railway, Boston, Mass. The poster also states that there were 909 boarding and 2257 alighting accidents on the system during the year ending July 1, 1917, and requests the co-operation of the public in reducing the number of accidents by "waiting and watching."

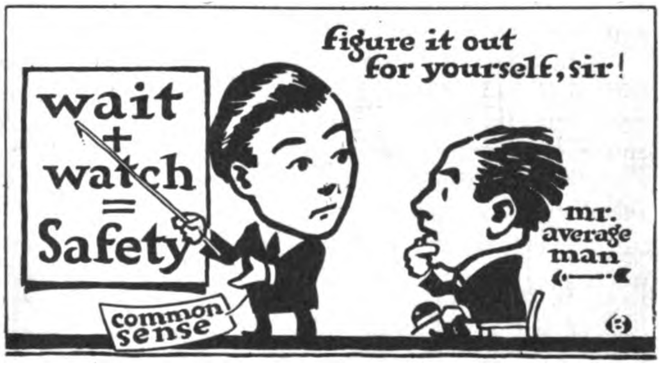


ILLUSTRATION FROM RECENT BAY STATE POSTER

Effect of Six-Cent Fares Upon the Volume of Traffic

The Experience of Railways Changing from Five-Cent to Six-Cent Fare Shows that the Net Increase in Revenue Approximates Only 10 Per Cent, Due to Reduction in Number of Passengers Carried

By THOMAS CONWAY, Jr., Ph.D.
Professor of Finance, University of Pennsylvania, Philadelphia, Pa.

I WAS requested some months ago by the special committee on ways and means to obtain additional revenue, representing some twenty-eight electric railways situated within the Second Public Service District of the State of New York, to make a study among other things of the effect of 6-cent fares upon the volume of travel in so far as it could be judged from experience. In order to furnish the basis for such a study I wrote to every company which had inaugurated a rate of fare higher than the customary 5-cent unit of which record could be found. Practically every company with which I communicated generously placed at my disposal the results of its experience.

The recognition of the necessity for higher fares for electric railways has been so recent that the fund of information concerning the effect of fares exceeding 5 cents per ride is comparatively limited, although sufficient to demonstrate clearly that under average conditions a fare of 6 cents or higher will result in an increase in operating revenues.

EXPERIENCE IN MASSACHUSETTS PRIOR TO 1915

The Massachusetts commission was one of the first to recognize the justice of higher fares, and accordingly a large proportion of the data relating to the results of fares of 6 cents or more is found in that State. The results of the experience with 6-cent fares up to August, 1915, was summarized by the Massachusetts Public Service Commission "In re Norfolk and Bristol Street Railway Company" (P. U. R. 1915-E, page 411), in which case a 6-cent fare was authorized. The commission says, on page 437:

"Data collected by the commission show that, where companies have changed from the 5-cent to the 6-cent unit, traffic has usually fallen off. The following table shows the number of revenue passengers carried by such companies in the year before and in the year after the change was made:

	Before	After
Blue Hill	1,680,543	1,525,154
Boston & Worcester	11,143,040	10,481,902
Brockton & Plymouth	2,255,320	1,856,723
Concord, Maynard & Hudson	1,146,088	969,621*
Connecticut Valley	3,714,765	3,357,857†
Lexington & Boston	2,766,618	2,688,114
Newton & Boston	1,402,385	1,315,947

*Five months at 5 cents; seven months at 6 cents.
†Three months at 5 cents; nine months at 6 cents.

"While there may have been other contributing causes in certain of these cases, this table supports the theory that a 6-cent fare decreases traffic."

Perhaps the above comparison is more easily understood if the percentage reduction in volume of travel is stated rather than the actual number of passengers carried, as given in the quotation from the commission's report. The percentage reduction in traffic for each company was as follows:

Blue Hill	9.3 per cent
Boston & Worcester	6.0 per cent
Brockton & Plymouth	17.7 per cent
Concord, Maynard & Hudson	15.4 per cent*
Connecticut Valley	9.6 per cent†
Lexington & Boston	2.9 per cent
Newton & Boston	6.2 per cent

*Five months at 5 cents; seven months at 6 cents.
†Three months at 5 cents; nine months at 6 cents.

SIX-CENT FARES DO NOT ALWAYS SOLVE THE FINANCIAL PROBLEM

Several of the above advances were granted a number of years ago. The Blue Hill Street Railway Company, for instance, instituted 6-cent fares in 1908. The vice-president of the company, in a proceeding instituted seven years later before the Massachusetts commission, summarized the advantage which the corporation had secured. He said:

"I think that 10 per cent or 12 per cent is the real value we are getting out of the 6-cent fare. The same applies to the Brockton & Plymouth."

This increase in revenue was not sufficient to enable the company to earn a fair return upon the investment, and in consequence a petition was filed in 1915 asking permission, among other things, to raise the fares to 8 cents. This was denied on the ground that it would give no real advantage to the corporation because the reduction in traffic would more than offset the higher rate of fare.

Another company included in the above record has found that while 6-cent fares improved earnings they did not entirely solve the financial problem. The Concord, Maynard & Hudson increased its fares to a 6-cent basis in 1908. The operating revenue showed a conservative increase, which in recent years, however, has been more than offset by increased cost of operation. The result was that the company applied in April, 1917, for permission again to revise its fares. The proposed revision, which was approved by the commission, did not change the 6-cent fare as the basic unit, but provided that this rate of fare should be the minimum which should be charged each passenger. The rate schedule was revised on a "copper-zone" basis of 2 cents a mile. The company pointed out that this system would be fairer to a number of localities served, and would be very likely to increase travel and hence revenue. Permission was granted for a six months' trial by an order issued in May, 1917.

It is interesting to observe the effect of the 6-cent fare in the case of the Norfolk & Bristol Street Railway Company. The increased fare became effective on Sept. 15, 1915, and has resulted in increased earnings of approximately 10 per cent. The monthly record of revenue passengers carried from Jan. 1, 1914, to May 31, 1917, is as follows:

NORFOLK & BRISTOL STREET RAILWAY

Monthly Record of Revenue Passengers Carried from Jan. 1, 1914, to June 30, 1917.

	1914	1915	1916	1917
January	144,476	139,554	135,368	148,880
February	126,920	125,886	125,459	136,092
March	144,347	140,641	136,261	149,641
April	148,982	138,148	136,000	145,406
May	171,690	158,901	143,900	150,254
June	163,703	145,757	138,932	151,304
July	170,506	168,035	153,316	
August	172,209	163,325	160,359	
September	165,843	160,605*	154,719	
October	154,486	145,453	141,610	
November	142,075	134,047	142,601	
December	142,687	134,286	152,332	

*Six-cent fare effective in this month.

EXPERIENCE IN PENNSYLVANIA WITH 6-CENT FARES

The Schuylkill Railway Company, operating in the Mahanoy Valley, Pennsylvania, on Dec. 29, 1913, advanced cash fares from 5 cents to 6 cents and, in addition, offered for sale thirty-five tickets for $2. The comparative record of revenue passengers carried for the two years preceding and the first year succeeding the change was as follows:

Year	5-Cent Fare	6-Cent Fare	Tickets	Thirty-five for $2
1912........	3,628,995	....	203,215	....
1913........	3,916,107	29,686	286,755	$106.00
1914........	....	3,367,956	....	9,780.00
1915........	....	3,620,769	....	12,026.00
1916........	....	4,377,665	....	13,990.00

The item of tickets appearing in the above tabulation for the years 1912 and 1913 represents limited monthly commutation tickets of sixty trips, sold to individuals between various points, prior to the increase from a 5-cent to a 6-cent fare.

A study of the above comparison shows that the decline in traffic as the result of 6-cent fares for the year 1914 over the total number of revenue passengers carried in the preceding year was 16.5 per cent; the total number of revenue passengers carried in 1915 was 9.6 per cent less than that carried in 1913, while the 1916 figures were 9.1 per cent in excess of the results in 1913. The above results must be qualified by keeping in mind the serious business depression which existed in the last six months of 1914 and early in 1915, and by the further fact that in 1915 business was increased to some extent by a short stretch of line put into service in that year.

The Trenton, Bristol & Philadelphia Street Railway, operating in eastern Pennsylvania, put into effect an advance in fares on Dec. 18, 1916. Prior to that date, the company had operated five fare zones in each of which a 5-cent fare was charged. Under the revision the line was divided into seven zones, in each of which a 5-cent fare was charged. The total numbers of fares collected by months in the calendar year 1916 and the first five months of 1917 compare as shown in the table opposite.

In the first five months of 1916 the company collected 696,909 5-cent fares. In the same period of time in 1917 the company collected 751,912 5-cent fares.

RECENT EXPERIENCE IN MASSACHUSETTS

The experience of the New Bedford & Onset Street Railway, operating in Massachusetts with 6-cent fares, effective Oct. 1, 1915, has been as follows:

	Receipts		Revenue Passengers	
	1915	1916	1915	1916
Month	5-Cent Basis	6-Cent Basis	5-Cent Basis	6-Cent Basis
January	$7,171.94	$7,899.87	156,055	149,778
February	6,514.44	7,212.96	142,258	136,254
March	7,507.21	7,680.63	164,384	145,360
April	7,927.33	8,706.78	171,430	162,328
May	9,774.67	9,709.70	209,027	181,116
June	10,512.65	10,824.34	222,268	197,808
July	15,505.42	15,986.13	321,566	285,381
August	16,908.72	18,245.28	351,785	327,907
September	12,041.62	13,086.36	255,877	239,182
October (1st)	255.40	10,118.90	5,676	189,005
	6-Cent Basis		6-Cent Basis	
October (2-31 inc.).	9,342.29	....	182,945	....
November	8,168.56	8,590.00	155,945	162,131
December	8,763.71	9,337.61	164,434	173,871

INFORMATION CONCERNING RESULTS STILL COMPARATIVELY MEAGER

Numerous other companies have put into effect 6-cent fares, but a diligent inquiry as to the results secured with the higher rate of fare has disclosed facts which make generalizations upon the basis of their experience impossible, or very unsafe. In many cases local industrial conditions have so profoundly affected the volume of travel as to make a comparison of traffic before and after the change of no value. In other cases companies reported that they are unable to measure the exact effect of 6-cent fares, because of the inclusion in operating results of certain fare zones in which 5 cents was charged, with the territory in which 6-cent fares prevailed.

Of course, the number of companies which have had 6-cent fares in operation has been so small until very recently that the fund of information thus far available is comparatively meager. The tremendous increase in operating costs within recent months promises a real test of the 6-cent fare. It has compelled many companies to take a step which perhaps has been tentatively considered for a long while, but which has been postponed because of the uncertainties involved.

CONCLUSIONS AS TO THE EFFECT OF A 6-CENT FARE

A review of the foregoing data shows clearly that 6-cent fares bring about an increase in operating revenues under practically every condition. There is, of course, a difference in the extent of this increase, dependent upon local conditions and also upon the general

TRENTON, BRISTOL & PHILADELPHIA STREET RAILWAY

	1916	1917	Per Cent Increase Over Corresponding Month of Previous Year
January	130,868	134,183	2.5
February	113,389	126,871	11.8
March	129,649	141,945	9.4
April	149,561	166,839	11.5
May	173,442	182,074	4.9
June	157,224	....	....
July	195,614	....	....
August	179,672	....	....
September	183,414	....	....
October	159,958	....	....
November	142,420	....	....
December	*146,664	....	....
	1,861,875		

*Six-cent fares effective in a part of this month.

industrial situation at and subsequent to the time the higher rate became effective. The real effect of 6-cent fares has, in many cases, been obscured because of the fact that they became effective at about the time of some such marked change in industrial conditions as, for example, that occurring just prior to the outbreak of the European war.

Apparently there is no record of a company whose earnings have been increased in proportion to the increase in the rate of fare—that is, by, say, 20 per cent. A 6-cent fare reduces travel, and if a generalization is possible on the evidence thus far available it seems to point to the conclusion that the reduction in travel is approximately 10 per cent; or, in other words, roughly speaking, a 6-cent fare brings about an increase in revenues of something more than 10 per cent. In some cases increases in operating revenues are less than this amount, due to local conditions. A line operating in a small city, where the average ride is short, apparently suffers a larger reduction in travel than a line operating in a large city, where the average ride is long. The reduction in travel concerns almost entirely the short-distance riders, a number of whom prefer to walk rather than pay the higher rate of fare. Where a line operates over steep grades, the proportion who walk is apparently smaller than where the line is comparatively level. Another marked tendency is that the heavy reduction in riding occurs within the first few months after the new rate becomes effective. When the public becomes accustomed to a higher rate, local prejudice gradually disappears and the number of passengers carried progressively becomes more nearly normal. This important fact shows the unfairness of any experimental application of the 6-cent fare, based upon a few months of time. At least one year is necessary to reach a normal basis. A few weeks or months of experimental use is an invitation to a spontaneous public conspiracy to boycott the lines in order to defeat the proposed advance.

As a matter of fact, the results secured by different systems operating under 6-cent fares differ so widely that it is probably true that the actual results cannot be predicted for a given line. Actual trial alone will demonstrate what results will be accomplished.

Publicity on Higher Fares

Eastern Pennsylvania Railways Uses Several Means of Explaining to the Public Why It Asks for a Six-Cent Fare

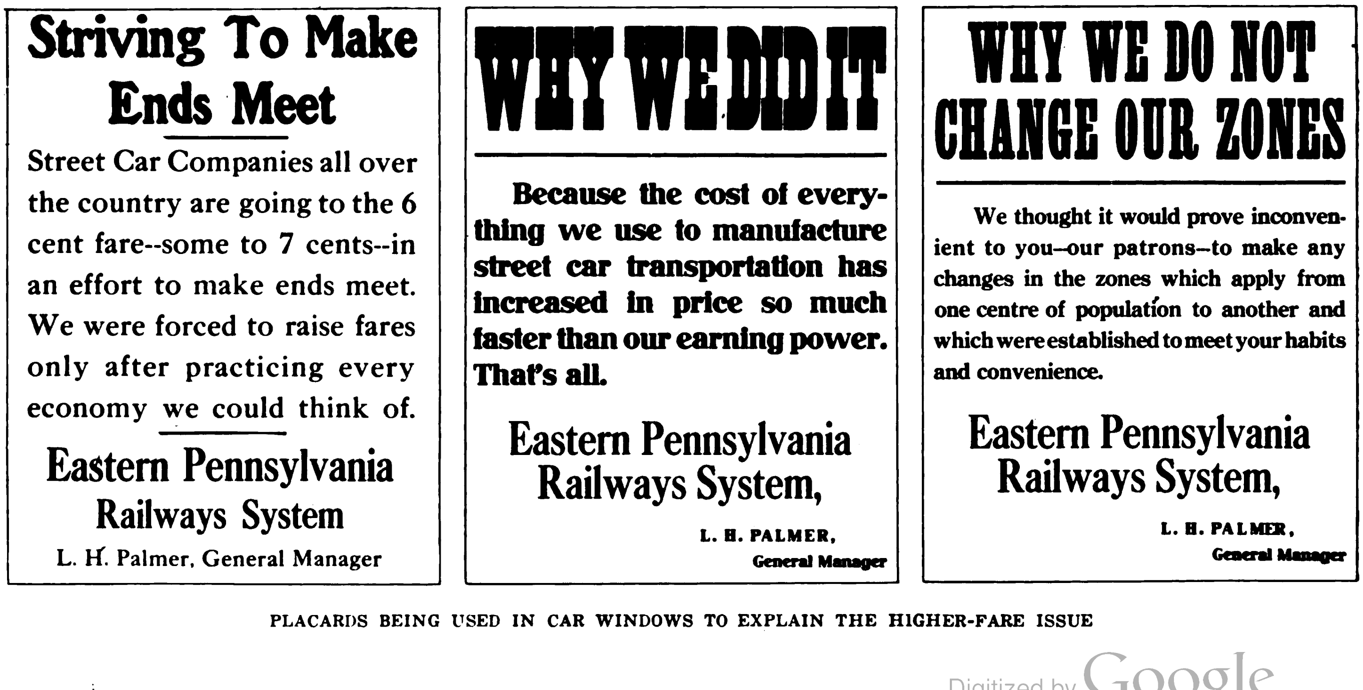
As noted in the ELECTRIC RAILWAY JOURNAL for Aug. 11, page 228, the Eastern Pennsylvania Railways, Pottsville, Pa., is conducting a campaign to give publicity to the need for higher fares. The company has before the Public Service Commission an application for authority to increase its rate from 5 cents to 6 cents, effective Aug. 30. It is conveying its messages to the public by means of pamphlets, advertisements in the local papers, placards in cars and through letters to employees. In each method it is made plain that higher prices are responsible for the company's petition for relief and also that the step has been taken with due consideration for its patrons.

Under date of Aug. 1 a letter was sent out to all employees inviting their help in forming public opinion. It urged the employees to acquaint themselves with the situation and to interest their friends whose support also could probably be enlisted. It was pointed out that the prosperity of any community depends largely upon the transportation facilities, and also that the proposed increase was for the expenses of the local railway service rather than to pay dividends. A part of the letter reads as follows:

"The simple fact is this: Without more income we cannot keep up with the needs of the existing service, nor get capital for developing more service. Our increase in fares is no effort at war-time extortion. It is the honest meeting of a plain business proposition in which you, we and the whole county are seriously concerned. We must have more revenue to avoid bankruptcy. Please study our problem and give your friends your views and ask for their co-operation."

A series of ten posters were prepared which are used as placards in the car windows. Each one is run for three days. Three of these are shown reproduced in the accompanying illustration.

The newspaper talks, signed by General Manager Palmer, appeal to the citizens to realize that only through some relief can good service be continued.



Striving To Make Ends Meet

Street Car Companies all over the country are going to the 6 cent fare--some to 7 cents--in an effort to make ends meet. We were forced to raise fares only after practicing every economy we could think of.

Eastern Pennsylvania
Railways System
L. H. Palmer, General Manager

WHY WE DID IT

Because the cost of everything we use to manufacture street car transportation has increased in price so much faster than our earning power. That's all.

Eastern Pennsylvania
Railways System,
L. H. PALMER,
General Manager

WHY WE DO NOT CHANGE OUR ZONES

We thought it would prove inconvenient to you--our patrons--to make any changes in the zones which apply from one centre of population to another and which were established to meet your habits and convenience.

Eastern Pennsylvania
Railways System,
L. H. PALMER,
General Manager

PLACARDS BEING USED IN CAR WINDOWS TO EXPLAIN THE HIGHER-FARE ISSUE

Oklahoma Manager on Problems of the Day

John W. Shartel, Vice-President and General Manager Oklahoma Railways, Says Private Automobile Is Costing 20 Per Cent of Gross City Receipts—The Worst Is Past, However, While Freight Business on the Interurban Lines Is Facing Big Development

IN a recent interview granted to a representative of the ELECTRIC RAILWAY JOURNAL, John W. Shartel vice-president and general manager Oklahoma Railway, discussed transportation and traffic from jitneys to freight.

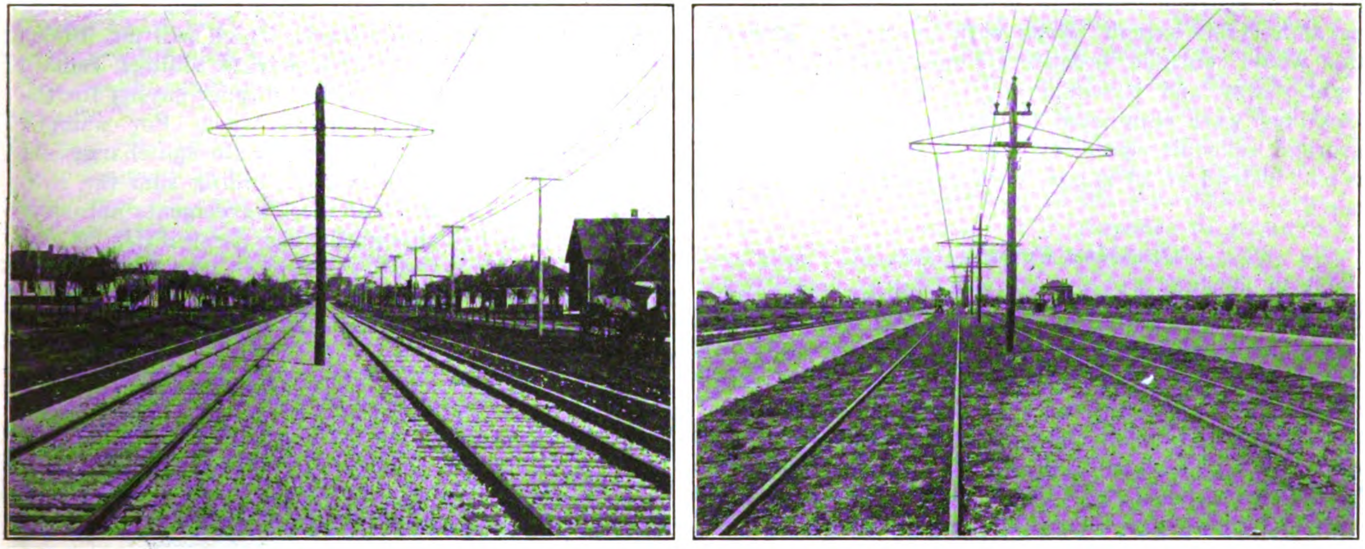
WHERE THE JITNEY NEVER HAD A CHANCE

Oklahoma City, it may be pointed out, is one of the few places where the jitney never had a chance. With the first California rumblings, the management kept its ear to the ground. Every development was carefully watched so that by the time the jitney earthquake reached Oklahoma it found progress effectually barred by an ordinance which has since served as a model for scores of other cities. It had many provisions, but the one that was most effective was a clause which forbade operation over streets already served by electric railways.

When asked for the inside history which led up to this ordinance, Mr. Shartel said that it was largely continuous publicity. Day in and day out the company told the public through the newspapers and otherwise what harm the jitneys were working elsewhere in terms of transportation, accidents, damage to roadways, morality, etc. This campaign, being carried on before the creation of any large element interested in jitneys proved extremely effective. Not more than half a dozen operators even tried to see what they could do—a fact which Mr. Shartel rather regrets, as a longer experience would have shown just how far jitneys could cut into street railway earnings.

A far more insidious form of competition, continued Mr. Shartel, was the private automobile. With its 150 miles of wide asphalt-paved streets, including numerous boulevards and pleasure drives, Oklahoma City was unexcelled for the autoist. In fact, there was one machine for every twenty inhabitants.

Because Oklahoma is growing at the rate of 8000 to 10,000 people a year, the effect of the private automobile is not reflected in the gross earnings, but it is plain enough in the per capita earnings, which have fallen from $10.50 to $8.50 a year. Roughly speaking, this is equivalent to 20 per cent of the company's city receipts.



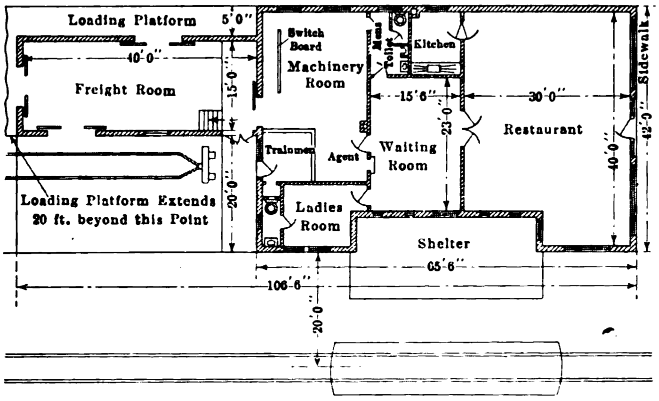
TWO VIEWS OF RIGHT-OF-WAY IN STREETS OF OKLAHOMA CITY

The private automobile has not only cut down the rate of increase, but has raised operating expenses some 3 to 4 per cent, due to the increased number of collisions and the adoption by the company of lower schedule speed to avoid such collisions. It also imposes an undesirable peak load in bad weather when owners of vehicles prefer to keep them in the garage. "So," continued Mr. Shartel, "the automobile even injures our standing with the regular riding public because of rainy-day crowding."

Unlike most electric railways, the Oklahoma City lines were planned with a careful eye to the future growth of the city. Thus the lines were so laid out that beyond 1½ miles from the center of the city parallel routes would be about ½ mile apart until an increasing population made it necessary to sandwich new lines between at ¼-mile intervals.

The automobile development has come just in time to prevent this extra expenditure of capital in most cases.

Mr. Shartel regards the automobile for regular city riding as essentially a luxury, and believes that with hard times it will have an effect on the gross earnings of not more than 10 per cent rather than 20 per cent. Of course, hard times will cut other riding, so that the accession from former automobilists, he thought, might be regarded as a sort of storage battery for the electric railway. The worst effects of the private city machine were past.



INTERURBAN STATION AT EDMOND, OKLA.

The interurban lines had not felt the automobile to an appreciable extent. Even with improved highways this would continue, because all lines were on private right-of-way and it would not be long before grade crossings were eliminated to such an extent that the average schedule speed of local trains would be 28 m.p.h. instead of 23 m.p.h., with express service at 45 m.p.h.

ONE-MAN POSSIBILITIES

Mr. Shartel has a keen eye on what other railways are doing with one-man cars, but is making haste slowly. Steam grade crossings are numerous, for one thing, as there are few routes in Oklahoma City without four crossings on a round trip. Furthermore, as the construction of the Oklahoma system was begun as late as 1902, the cars are comparatively new and the depreciation allowance would be very heavy.

The standard car type seats forty-four people and weighs 30,960 lb., and weight is not so great a factor in Oklahoma City because of low grades, an efficient generating system and the fact that only 24 out of 66 miles of city track are on unimpeded right-of-way. This permits a schedule speed of 9.75 m.p.h. (including layovers), with passenger stops at 380-ft. intervals on north and south streets and 460-ft. intervals on east and west streets. Passengers on right-of-way sections also enjoy the advantage of waiting for cars on the parked strip free from danger.

The field for one-man cars on a short-headway basis does not loom large at present for 80 per cent of the earnings now come from lines with headways of ten minutes or less.

Incidentally, the large proportion of right-of-way has proved a boon in keeping track maintenance away down, for ballasted open track is a lot cheaper to keep up than track in a paved street.

TERMINAL STATION GETS ALL THE MONEY AND REDUCES TRANSFERS

Mr. Shartel was justly enthusiastic about the terminal station through which all city lines are now routed. Business growth will necessitate the early construction of an additional train shed for interurban cars. Transfer abuses and disputes have been practically eliminated as more than 90 per cent of the transfers are issued to passengers who use this terminal. On coming into the terminal passengers pay their fare to a cashier, who gives them a fare check for presentation to the conductor. The latter issues transfers only on payment of fare by passengers who get on outside the terminal. Passengers who get on at the terminal receive transfers from the motorman on leaving the car.

It is difficult to say to what extent transfers have been reduced by the terminal system, but after the lines were rerouted via the terminal there was a drop of 18 per cent in transfers issued. The effect on cash intake cannot be estimated because the terminal was opened in 1911 just before a period of business depression. The concessions at the terminal go a long way toward defraying its fixed charges.

EXPANSION OF FREIGHT BUSINESS

At this time less than 5 per cent of the company's revenue comes from express and freight earnings, but this will be corrected when the present plans are matured. Full steam line connections are being provided and freight stations are being built together with long sidings and extra storage tracks which will not hinder through-line operation. The private sidings remain the property of the company, the shipper paying for the cost of this convenience in various ways. For example, he may be credited $1 for every $2 storage charge and 25 per cent of whatever through billing sum the railway receives. The terms of these agreements naturally vary with the business-producing possibilities of the customer.

Mr. Shartel is well acquainted with the storage warehouse idea as developed by the Piedmont Lines, but says that the downtown rentals in Oklahoma City are not high enough to call for storage of main stocks elsewhere.

FRONT VIEW OF STATION AT NORMAN, OKLA.

The freight development is going hand in hand with the provision of handsome red-brick station buildings which sometimes include a substation. The Norman station illustrated is a typical example. Other stations already in use are at Guthrie (two), North Oklahoma City and Britton. Where possible these stations are laid out for operation by one man. The convenience of the public has been carefully considered by such features as porches under which passengers may alight in bad weather without getting wet, and by track layouts which keep freight handling and freight odors away from the passengers' sight and smell. The Edmond station, now under way, illustrates these features clearly.

Reaching B. R. T. Patrons Through the Press

Through Willing Co-operation with Newspapers and Conservative Volunteering of Statements, Company Has Established Reputation for Frankness and Truthfulness—Use of Formal Statements and Advertisements Explained

TWO absolutely different ideas are found in modern publicity work. One is that the general public must have predigested food for its thought about corporations and must be fed forcibly if it will not eat of its own free will. The other is that the public should be allowed to choose its own diet, except when it obviously does not know how or is ill-advised. These distinct ideas find expression, on the one hand, in aggressive press-agent work by a corporation; and, on the other, in a willingness to supply legitimate information as it is sought, and in a conservative volunteering of statements.

The publicity work of the Brooklyn (N. Y.) Rapid Transit Company is based upon the second idea. The company does not consider that it needs a press agent. It does, however, believe that publicity pays in improving public relations. Hence, it pursues the general policy of giving out all solicited information when properly publishable, and of advancing information only to enlighten the public or to set it aright.

PRESIDENT WILLIAMS IS ACCESSIBLE

The principal spokesman for the company is its president, Timothy S. Williams, who is as accessible to the general public as it is possible for a busy man to be. Moreover, having had newspaper experience himself, Mr. Williams understands the urgency of reportorial work, and any properly accredited newspaper man can see him without difficulty when he is in his office. In fact, he gives to such reporters as he knows will not abuse his time equal consideration with members of his operating staff, if, indeed, the newspaper men do not receive a shade of preference.

Probably the best example of Mr. Williams' directness and frankness in dealing with newspapers is his procedure during the two strenuous years of rapid-transit combat, which closed the middle of 1913. He then astonished and delighted the representatives of the New York and Brooklyn papers by his willingness at all times to explain the attitude of his company on the essential questions involved in the controversy and by his disposition to take newspaper men into his confidence.

Sometimes, however, misrepresentations menaced his policy; competitive proposals threatened to detract the attention of patrons from his company's proposal; official hostility seemed to overlook important elements of public gain in the plan—at such times Mr. Williams did not wait for the public to call for information. Then by letters, speeches, advertisements and statements, he kept emphasizing the advantages of his company's program until in the end it was "sold" to the Brooklyn public, regardless of what other rapid-transit plans might be adopted for the remaining parts of the city.

A GENERAL OPEN-DOOR POLICY

Such a master publicity accomplishment as even the primary education of a people in regard to rapid transit is, of course, not of frequent occurrence. Yet the daily routine of the company includes the settlement of many publicity matters which are important but do not require the attention of Mr. Williams—*e.g.*, inquiries of a general nature or inquiries relating to subjects that concern the operating, engineering, legal and other departments. About 90 per cent of the information proceeding from the company is in response to requests of this kind. On such matters the open-door policy of the company is carried out by Harry A. Bullock, staff assistant to the president and secretary of the allied New York Municipal Railway Corporation.

When Mr. Williams became president in 1911 he instructed all departments to give out information asked for and to talk to any one sent in by Mr. Bullock. Hence, when a reporter calls or telephones with an inquiry, Mr. Bullock locates the official who is in first-hand possession of the facts and tells the reporter to see that official. Mr. Bullock does not accompany the reporter, for this might be considered by the latter as a restriction on the freedom of the interview. Nor does he check up the story to be published, for the reporters respect his trust as to the proper use of the data secured. If the reporter does not need or desire to see an operating official, Mr. Bullock furnishes the requested information. If for any reason a question cannot be answered, he frankly tells the reporter so. No discrimination is practised in the matter of news, except in so far as it may be essential when a reporter has demonstrated that he will not respect the company's confidence.

TIME IS VITAL ELEMENT

The company recognizes that the element of time is vital to a newspaper. It strives, therefore, to avoid undue delays in supplying information. If an inquiry can properly be answered over the telephone, there is no disposition to make the newspaper send a man to raise the question in person. It is believed that the willingness and the ability to answer newspaper questions over the telephone, with no time allowed to concoct a plausible though misleading story, has been to the reporter a not unrealized and unappreciated test of the company's sincerity in its open-door policy.

Although the company, as before stated, does not believe in press-agent work, it feels that it can properly at times be fore-handed in the furnishing of information. Tips on new developments, improvements and the like are given to the papers, and memoranda are prepared for the reporters in regard to inquiries that have been or are likely to be made. These, though containing nothing but a recital of the bare facts, are of material assistance to the reporters in the quick preparation of their stories.

A striking example of company co-operation in the matter of news gathering is the snow story. Two or three times a year New York City is struck by a blinding storm that puts a heavy burden on street traffic. At such times the company sends out to the newspapers hourly bulletins on the operation of its lines, with the promise of a "lead" for the story before press time. Not only does this procedure lighten the work of the reporters at a time when news gathering is difficult, but it also benefits the company in that the public sees how the company is fighting the storm.

WHY
WE NEED
THE NICKELS

(A Continued Story)

CHAPTER II.

Our schedule of Track and Paving Renewals on Surface Lines for 1914 is the largest for any one year since 1853—the beginning of rail transportation on streets in this Borough.

It covers over 44 miles of Track. It will cost $1,283,000.

Last year's schedule was the **largest** on record up to that time—covering **39 Miles of Track** and costing **$981,000.**

These figures do not include any expenditures for ordinary maintenance and repairs, which aggregate each year many hundreds of thousands of dollars additional.

The City—with almost unlimited powers for raising revenue—with obligations covering eight times as much street area in Brooklyn—has appropriated for this year's repaving in this borough, **$650,000.**

For repaving alone in this Borough our budget calls for **$565,000**; or within $85,000 of what the City has appropriated, although our obligation is only **one-eighth** as great.

It is expected, however, by the Bureau of Highways that, with balances left over from last year, and with additional appropriations which the Board of Estimate may be induced to make later, the total funds available for repaving in this Borough may be brought up to **$1,400,000.**

Even if all this expected additional City money be available, our system will be paying for the repaving of **three times** as much street area as the City, proportionately to the respective obligations.

We believe in a high standard of physical condition for our properties. To maintain that high standard requires **revenue—and honest, economical, efficient administration.**

These are encouraged by public goodwill and support.

In acquainting you with the facts stated above do we not persuade you that in respect to paving at least

OUR INTERESTS
ARE
YOUR INTERESTS?

BROOKLYN RAPID TRANSIT SYSTEM.
5

SPECIMEN NEWSPAPER ADVERTISEMENT USED IN "WHY WE NEED THE NICKEL" CAMPAIGN

ISSUING FORMAL STATEMENTS

Occasionally, as noted before in connection with the rapid-transit negotiations, the company issues formal statements in the name of Mr. Williams or over the company's signature. The company makes no effort to obtain the publication of statements for which it will not stand sponsor. Moreover, it endeavors not to overdo matters by attempting to drag in discussion not properly a matter of news or to force publicity by covering all sorts of subjects. Consequently, the statements that are put out receive better consideration from the newspapers.

When formal statements are volunteered or issued in response to general inquiries, all the morning or afternoon papers receive them. When the information is given out in response to specific inquiries, however, the papers concerned are protected in their news. To avoid a charge of discrimination, this point must naturally be handled with judgment and tact. The safest criterion for a general release seems to be this—Is the statement one which would normally be given out if no newspaper inquiry had been made?

USING DISPLAY SPACE

In the company's opinion, it is a mistake to consider that the ordinary news story or a signed statement is in itself a cure-all in public relations matters. They are both useful, but newspaper advertisements, car pamphlets, car cards and car posters also have a necessary and a constructive part to play in the general work. This article, however, is confined to relations with the press, and all except the first of these last-named devices will be reserved for later description.

The company believes in buying advertising space in the newspapers in special cases. When the matter under discussion requires the presentation of statistics or arguments which may appear somewhat dry and which to be appreciated must be presented in a lucid and striking way, display type is invaluable. And could this be handled any better than by a newspaper? Perhaps more brightly by a signboard—but not nearly so effectively, from the company's point of view, for people have no time to stop to read figures and arguments on signboards, but cannot help being struck with them when in their less hurried moments they open their daily papers.

At various times the company has carried on newspaper advertising campaigns for special purposes. In the rapid-transit campaign in 1913 it published extensive advertisements that helped to put the company's program across to the public. The next year it published a continuous story in advertisement form on "Why We Need the Nickels"—showing the various difficulties of electric railway operation. One of the chapters is reproduced herewith. The better public understanding engendered by this series did much, it is felt, to establish a wider co-operation of patrons with the company. Last year, too, advertisements at the time of the great metropolitan street railway strike showed the public the amicable relations between the Brooklyn Rapid Transit Company and its men, and the utter injustice of allowing discord to be fomented by outside agitators.

HANDLING NEWSPAPER MISSTATEMENTS

Underlying the various relations with the Brooklyn press is the theory that the newspapers realize their own responsibility to supply the public with correct information and to endeavor honestly to interpret such information in their editorial discussion. If any newspaper seems to fail in this particular, the company leaves the failure to become an issue ultimately between the paper and its readers, rather than attempt to make it an issue between the paper and the railway.

In other words, the company is a "good sport" about newspaper misstatements. It may some time later call attention to them in an inoffensive perfunctory manner, but it does not bother the editorial offices with querulous tales of unfair treatment. In the last six years there have been only three cases where the question of a correction has been immediately and emphatically taken up with a newspaper, and even then retraction was not demanded. In the case of mistaken criticism, the company does not run to the newspaper for a correction, because it realizes that there is probably enough truth in the story to warrant passing it.

PAPERS APPRECIATE COMPANY POLICY

The result of the company's open-door policy during the last six years is positively on the side of better relations with the newspapers and the public. The papers appreciate the non-harrassing attitude of the company when they print hostile stories as a mere matter of news, and the company's frankness has completely overcome any disposition to discredit information secured from it.

In a territory where civic agitation is very pronounced and where some public officials avail themselves of this to make political capital at the expense of utilities, the company has secured uniformly fair treatment in the news columns of the papers that would most likely be affected by such an agitation. This has been possible only because its publicity work is founded on sincerity and frankness—because it has proved that its news can be accepted at face value as true.

AMERICAN ASSOCIATION NEWS

Sub-Committee on Military Tariffs Submits Report

The sub-committee of the committee on national defense, comprising A. R. Piper, chairman; H. B. Potter, J. J. Doyle, V. S. Curtis and F. W. Shappert, has compiled a valuable summary of the subject covered by its title. This report has just been sent out to the membership of the association.

The purpose of the report is to furnish such information that electric railways can secure a legitimate share of the business of transporting troops and equipment. Appended to it are sample forms for filing tariffs. The reports of the sub-committee constitutes Bulletin No. 7 of the committee on national defense.

Committee on National Defense Issues Coal Supply Bulletin

The coal-production committee of the advisory commission of the Council of National Defense has asked the American Electric Railway Association to act as intermediary between itself and the electric railways of the country in all matters connected with the coal supply. L. S. Storrs, vice-chairman of the association committee on national defense, has been made a member of the coal-production committee.

A part of the work of the coal-production committee will be to furnish assistance in obtaining necessary fuel. The committee on national defense will, therefore, endeavor to keep a continuous record of the fuel supply of the electric railways. For this purpose two blank forms, Nos. 85 and 86, have been prepared and distributed. The first will be used in securing data as to the coal requirements of electric railways and the provisions made for meeting these. The second blank is for monthly fuel reports showing the amount in storage, the receipts on contract and otherwise, and information regarding shortages in contract deliveries.

President Wilson Fixes Coal Prices

The following scale of prices is prescribed for bituminous coal at the mine in the several producing districts. It is provisional only. It is subject to reconsideration when the whole method of administering the fuel supplies of the country shall have been satisfactorily organized and put into operation.

Subsequent measures will have as their object a fair and equitable control of the distribution of the supply and of the prices not only at the mines, but also in the hands of the middlemen and the retailers.

The prices provisionally fixed here are fixed by the President's authority under the recent act of Congress regarding administration of the food supply of the country, which also conferred upon the Executive control of the fuel supply. They are based upon the actual cost of production and are deemed to be not only fair and just, but liberal as well. Under them the industry should nowhere lack stimulation.

The prices prescribed, being on f.o.b. mine basis for tons of 2000 lb., follow:

	Run of Mine	Prepared Sizes	Slack or Screening
Pennsylvania	$2.00	$2.25	$1.75
Maryland	2.00	2.25	1.75
West Virginia	2.00	2.25	1.75
West Virginia (New River)	2.15	2.40	1.90
Virginia	2.00	2.25	1.75
Ohio (thick vein)	2.00	2.25	1.75
Ohio (thin vein)	2.35	2.60	2.10
Kentucky	1.95	2.20	1.70
Kentucky (Jellico)	2.40	2.65	2.15
Alabama (big seam)	1.90	2.15	1.65
Alabama (Pratt, Jaeger and Corona)	2.15	2.40	1.90
Alabama (Cahaba and Black Creek)	2.40	2.65	2.15
Tennessee (eastern)	2.30	2.55	2.05
Tennessee (Jellico)	2.40	2.65	2.15
Indiana	1.95	2.20	1.70
Illinois	1.95	2.20	1.70
Illinois (third vein)	2.40	2.65	2.15
Arkansas	2.65	2.90	2.40
Iowa	2.70	2.95	2.45
Kansas	2.55	2.80	2.30
Missouri	2.70	2.95	2.45
Oklahoma	3.05	3.30	2.80
Texas	2.65	2.90	2.40
Colorado	2.45	2.70	2.20
Montana	2.70	2.95	2.45
New Mexico	2.40	2.65	2.15
Wyoming	2.50	2.75	2.25
Utah	2.60	2.85	2.35
Washington	3.25	3.50	3.00

One Way to Start Publicity Work

One difficulty in getting electric railways to start publicity work is that it appears to many as a job of great magnitude. As a matter of fact it can be made as big or as little as one wants, and far better results are likely to be obtained if the beginning is made in a small way.

Certainly no better medium can be found for the first step in publicity than the small boxes in cars through which bulletins can be issued to the public. These bulletins, on those roads that are using them, treat of a varied range of subjects, causes of delays, changes in routes, new equipment, in fact anything with which the public has anything to do.

EQUIPMENT and MAINTENANCE

HAVE YOU A GOOD WAY
OF DOING A JOB?
—Pass It Along

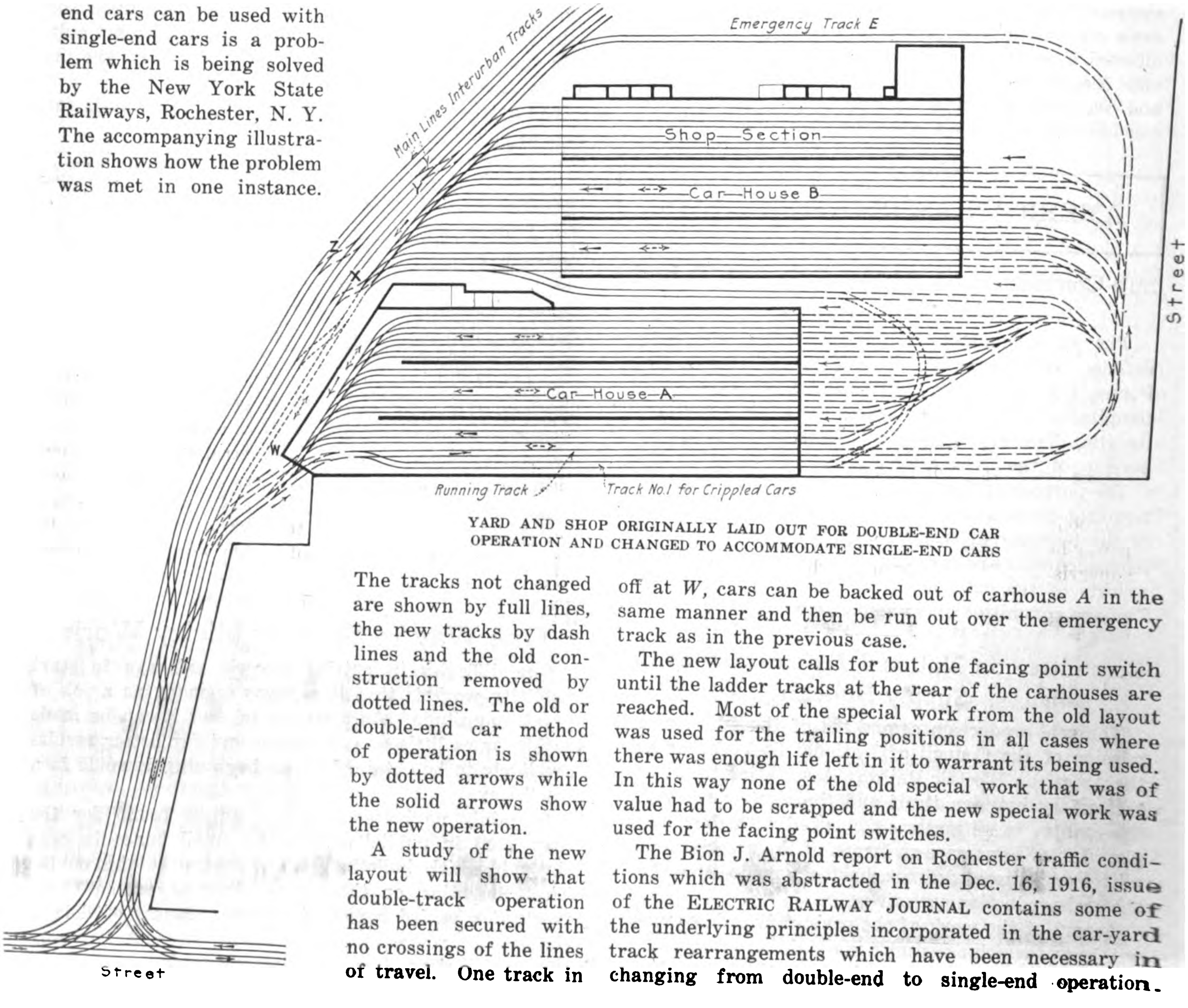
Read in This Issue :
An Analysis of Car Lengths, Showing the Preferred Sizes, on Page 322

Changing Car-Yard Layouts for Single-End Car Operation

BY D. P. FALCONER
Engineer Maintenance of Way, New York State Railways, Rochester, N. Y.

The writer has noted with interest the Detroit car-yard layouts, described in the ELECTRIC RAILWAY JOURNAL for March 24, 1917, on page 535, and it may be of interest to say that in solving our problem we arrived at a layout similar in a general way to those in Detroit.

To change its car-yard layouts so that those originally designed for double-end cars can be used with single-end cars is a problem which is being solved by the New York State Railways, Rochester, N. Y. The accompanying illustration shows how the problem was met in one instance.



YARD AND SHOP ORIGINALLY LAID OUT FOR DOUBLE-END CAR OPERATION AND CHANGED TO ACCOMMODATE SINGLE-END CARS

The tracks not changed are shown by full lines, the new tracks by dash lines and the old construction removed by dotted lines. The old or double-end car method of operation is shown by dotted arrows while the solid arrows show the new operation.

A study of the new layout will show that double-track operation has been secured with no crossings of the lines of travel. One track in carhouse *A* has been converted into a running track which leads to the ladder tracks at the rear. The cars thus enter the carhouses at the rear and leave by the front, where they use the old track layout, which has been changed only as to the location of the crossovers.

Track No. 1 in the carhouse *A* provides a convenient means for taking crippled cars off the running track without blocking the track while the cars are coming in during the rush hours. Track *E* is for emergency operation. With a car off at crossover *X*, cars can be backed out of carhouse *B* and then run out over this emergency track and crossovers *Y* and *Z*. If a car is off at *W*, cars can be backed out of carhouse *A* in the same manner and then be run out over the emergency track as in the previous case.

The new layout calls for but one facing point switch until the ladder tracks at the rear of the carhouses are reached. Most of the special work from the old layout was used for the trailing positions in all cases where there was enough life left in it to warrant its being used. In this way none of the old special work that was of value had to be scrapped and the new special work was used for the facing point switches.

The Bion J. Arnold report on Rochester traffic conditions which was abstracted in the Dec. 16, 1916, issue of the ELECTRIC RAILWAY JOURNAL contains some of the underlying principles incorporated in the car-yard track rearrangements which have been necessary in changing from double-end to single-end operation.

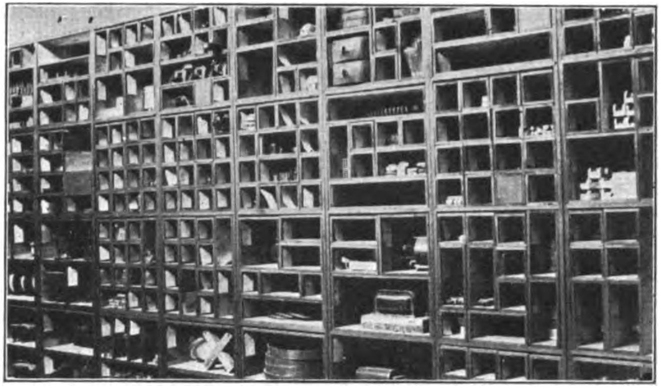
Centralizing and Systematizing the Stores Department

Concentration of All Tools and Supplies at One Central Location and Thorough System of Tool Inspection and Repair Greatly Reduce Losses

One of the steps in the systematization of the work of the engineering department which Edward A. West, chief engineer, and W. A. Doty, auditor, installed on the Denver Tramway Company's property, was the concentration of all supplies in one centrally-located store department, located in the power-plant building. Formerly there was a storeroom for each division of the property, a power-plant storeroom, a carpenter-shop storeroom, a linemen's storeroom, etc., but now all are concentrated in the one location excepting the stores for the mechanical department, which are still retained at the shop.

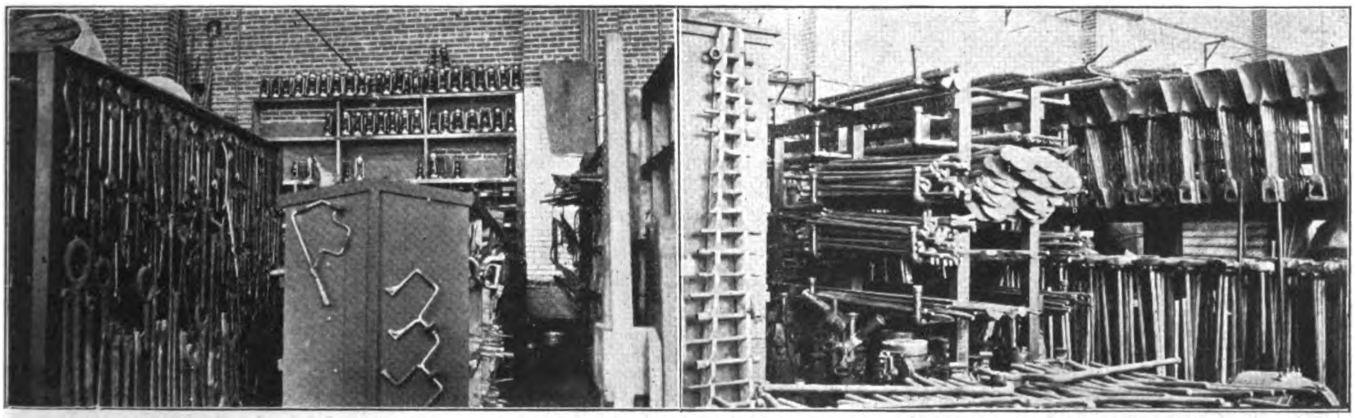
The Taylor balance-of-stores system is followed in the operation of the stores department. This includes a special bin equipment for storing the smaller supplies, which is very flexible and completely interchangeable. The bins are made up in sections 8 ft. high by 24 in. wide and 18 in. deep. These sections are subdivided as shown in an accompanying illustration. Each bin and each section of a bin is a complete receptacle in itself, which may be removed from one section and placed in another. This of course involves the use of a great deal of lumber, but the great flexibility and saving in storage space thus provided warrants the investment. Considerable old lumber was used in constructing these bins, and they were built by the company carpenters right at the storeroom. The storeroom of the Denver Tramway is laid out with groups of twenty of these sections placed ten sections side by side and two rows back to back. The groups and sections are numbered and indexed for cataloging and so that desired material can be found readily. A balance-of-stores tag is placed in each bin and whatever is taken out is deducted from the balance on the tag each time. This gives a record of the bin balance which may be readily checked against the balance-of-stores books, where the deductions as per requisitions are entered. Special bins are provided for "stores assigned" to a particular job as a means of preparing in advance for that work.

One of the features of this central storeroom is the toolroom, which is located adjacent to the former in the power-house building. This toolroom is under the supervision of a tool foreman who is also a blacksmith.


ARRANGEMENT OF BINS IN DENVER TRAMWAY STOREROOM

Upon the completion of any large job all tools are turned in to the central storeroom. The tools turned in at any time are carefully inspected by the toolroom foreman and put in first-class condition before they are racked. A blacksmith's forge and all necessary equipment for repairing tools are located in one end of the toolroom and no tool is placed in the rack unless it is properly tempered, sharpened and made as good as new. The auditing system of the company provides several standing work-order numbers to which ordinary maintenance of tools is charged. This expense is spread out over all the work and forms one item of the overhead charge blanketed over all jobs. Any special maintenance to a big tool or machine is charged against the particular job on which it was damaged. Thus when any tools are assigned to a gang to begin a job the men are always fitted with first-class equipment, the excuse of having poor tools to work with can never be offered for poor work. If at any time a tool breaks or is otherwise damaged in the work, it is immediately turned in and replaced without question, no matter how severely damaged it may be. The toolroom foreman uses his best judgment as to whether the tool turned in can be repaired at less expense, than the cost of a new tool to replace it.

Good evidence of the value of this centralization of stores and tool supplies and of a systematic tool-maintenance plan was furnished when the several division and department storerooms were abolished and all the supplies and tools sent to the central storeroom. Great numbers of tools which had been discarded as useless were reclaimed and readily put into first-class working condition, with the result that where the company formerly had only enough tools to do work in progress it


TOOLS REPAIRED AND RACKED IN THE DENVER TRAMWAY TOOLROOM

now has, without additional purchases, large surplus quantities of almost every variety.

The toolroom foreman, who has absolute charge of the repair and issuing of tools, gave a first-hand expression of the advantage of the system. He said, "Formerly we had no system. Everybody wanted tools repaired at the same time and consequently there was delay on the job for lack of tools and because of poor tools, and as a result there was constant friction. Now I take the tools when they come in and put them in first-class condition and then hang them in the racks, and I always have enough good tools to hand out whenever they are needed. There is no delay and everybody is happy."

ROUTINE HANDLING OF STORES REQUISITIONS

When a properly authorized job reaches the planning bureau of the engineering department, the workings of which were described in the ELECTRIC RAILWAY JOURNAL for July 28, 1917, one copy goes immediately to the material-order clerk, who writes out requisitions for all material called for. These requisitions cover the work-order number and classification-account number, quantity wanted, complete description, etc., and the latest date on which all material must be ready for the job. A copy of this serves as an instruction sheet for the material stores foreman, and the materials are provided and placed in bins assigned to that particular job in advance of the need for them. No requisitions on the storeroom for material are filled unless this material is listed on an authorized work-order estimate. In cases of emergency, the storeroom is authorized, upon advice from the material clerk in the planning bureau, to issue material on demand, but a requisition for such material is given the storeroom attendant by the person receiving it. The storeroom clerk then makes a note of the numbers of all requisitions upon the copy of the work order for that job as soon as he is notified, and these are then referred to the chief engineer for his information and approval.

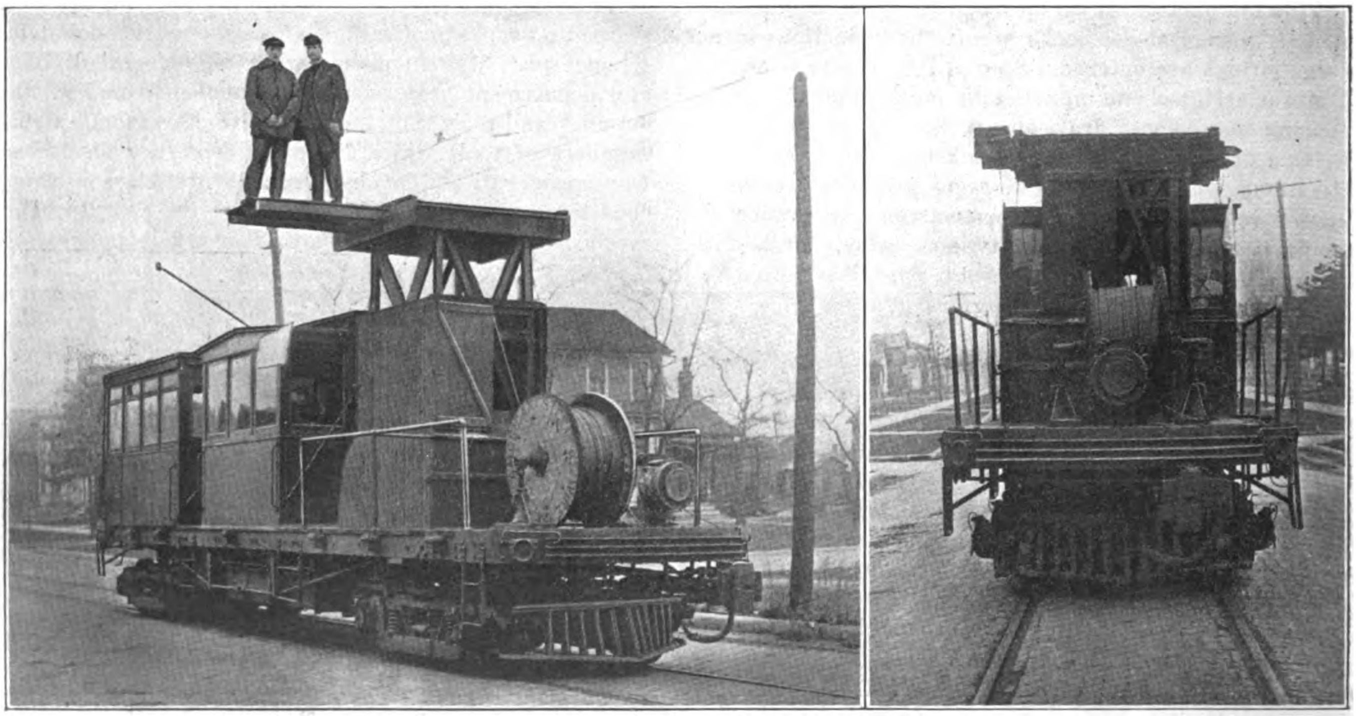
Motor Flat Car Equipped as Line Car Has Wide Utility

Has Toolhouse Built at One End so as Not to Obstruct Motorman's View from Central Operating Cab

BY W. F. CARR
Engineer Maintenance of Way Chicago, Ottawa & Peoria Railway, Ottawa, Ill.

As all transmission, feeder, telephone, signal and trolley lines on the 106 miles of the Chicago, Ottawa & Peoria Railway are maintained by a foreman and three linemen, it is necessary that these men be provided with efficient equipment. To this end a line car was constructed that can be used in any situation that may arise. A flat-bed pulling car with a cab in the center was converted into a line car, which can be used for hauling a carload of poles and for switching duty as well as for ordinary line work. A toolhouse or cab built on one end of the car has a work bench on one side and rows of small bins on the other. The work bench is equipped with a vise, a carborundum grinder, a set of dies and other needed tools. A supply of ears, hangers, insulators, bolts and other small material is kept in the bins. These bins are replenished from the storeroom once a week. In the conversion of this pulling car into a line car the construction of the toolhouse was so planned that the motorman could have a clear view from the central operating cab. The windows were placed on all sides, so that not only was plenty of light admitted to the work bench and bins, but the motorman's view was unobstructed by the toolhouse construction.

On the opposite end of the car from the toolhouse a tower was built for the overhead work. This tower was made narrow so that the motorman could see ahead on either side of it without difficulty. To further insure unobstructed view, doors were placed in the tower house, and these doors, being hooked open when the car is operated, allow the motorman to see through the tower as well as along the side of it.



FLAT PULLING CAR CONVERTED INTO LINE CAR

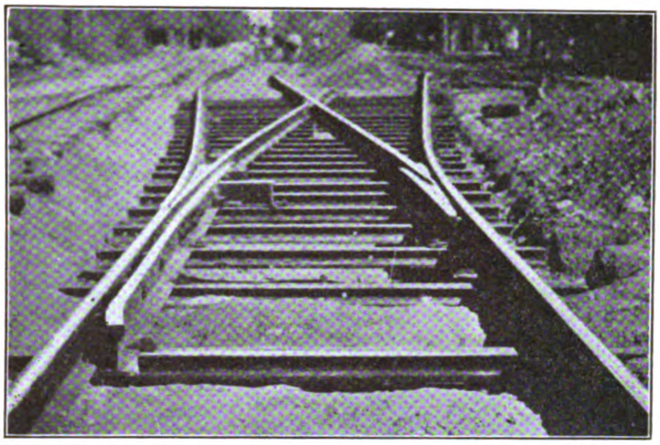
The tower is 4 ft. 4 in. wide, 5 ft. 10 in. long and the tower house that incloses it is 8 ft. 6 in. high. The frame of the tower house is constructed of four 3/8-in. x 3-in. x 3-in. angle irons, strutted with 1/8-in. x 2-in. x 2-in. angles. The tower itself is constructed of 3-in. x 3-in. oak standards and is raised and lowered inside the frame of the stationary tower house. Across the top of the frame of the tower are two 1¼-in. steel shafts, on each of which are hung two steel pulleys for hoisting cables. The hoisting cables are attached to each bottom corner of the tower, and are wound upon a steel drum made from an old car axle. The tower is raised and lowered by a 550-volt, 4-hp. air compressor motor through double-reduction gearing giving a ratio of 25 to 1. Folding lateral extensions to the platform are placed on 4-in. x 4-in. oak bracket pieces with 2¼-in. x 2¼-in. x 5/16 in. T-irons set in for runners. These collapsible or folding extensions are constructed so that they may be slid out 6 ft. 8 in. from the center line of the tower. They are 3 ft. wide, and run over rollers. They are provided with chains to prevent their being pulled out farther than the safe distance and are held in place wherever set by dogs which automatically fall into U-bolts placed in sides of the tower.

The raising and lowering of the tower is controlled by a switch operated by the motorman from inside his cab. The tower can be held at any height desired by means of a friction brake, which is placed on the winding drum and is operated by a foot lever. The tower itself is sheathed with drop siding which protects the motor and gears from the weather.

A Useful Improvement for Reverse-Current Relays

On a Southern railway the reverse-current relays on the circuit breakers of rotary converters were giving trouble owing to the burning of the fiber pieces holding the tripping contacts. The circuit breakers were tripped by shunt-trip coils, an auxiliary contact being placed on the breaker to open the control circuit after the circuit breaker had opened. In many instances a slight kick in the voltage would cause the contacts on the relay to close, but they would open before the shunt-trip coil worked. This would draw an arc, due to the inductive effect of the coil, and it would hang on until the fiber burned up. The trouble was remedied by using low-voltage release trip coils operated by gravity. The circuit is not opened on this type of relay, but a coil of low resistance is short-circuited by the relay contacts, the coil being in series with a high resistance.

The Denver Tramway is making use of a 50-ft. Westinghouse air compressor, mounted on skids for supplying air for track tamping. The compressor is motor driven from the trolley supply current and is of sufficient capacity to take care of four tampers at a time. The company has been using two tampers and has been able to accomplish as much work with the two men as twelve men could do with manual tamping. In order to offset any objections on the part of the laborers, men operating air tampers are paid 25 cents an hour, while 22½ cents an hour is the rate for the ordinary manual tamping work. The operator in charge of the machine is paid 30 cents an hour.



OLD RAIL CUT UP INTO TIES FOR SPECIAL WORK FOUNDATION

Special Paving Construction Around Track Special Work

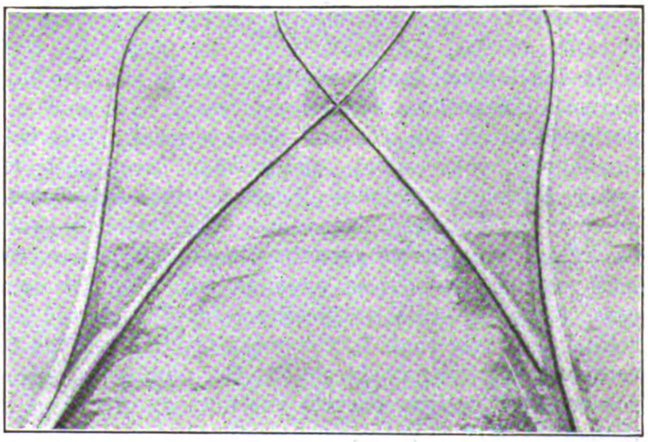
BY A. L. KALLOCH

Secretary Austin (Tex.) Street Railway

In street paving work done by the Austin Street Railway during the last few years, we have noticed that the brick and wood blocks placed in and around the special work have a tendency to work loose. This allows water to get in and the pavement soon deteriorates and becomes very unsightly. Paving at such points, of course, receives very hard usage on account of the vibration of the rolling stock and because of the hammering of wagon and truck wheels as they pass over the track work.

During the last year our company has paved 3½ miles of track in which all switches and frogs were incased in a 1:2 mixture of concrete with proper reinforcing. These blocks of concrete are made from 5 to 6 ft. long and brought up to within ¼ in. of the top of the rail in all four angles of the frogs and in the acute angle back of the switch and the mate. This avoids any attempt to fit paving blocks into these angles and provides a rigid reinforcement for the special work and a perfectly solid, smooth paving surface.

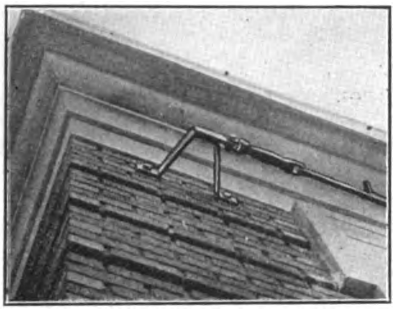
After this concrete is poured, it is allowed to set for a few days and is then painted with a thick coat of hot asphaltum which is covered with dry sand. We find that this covering will wear for months. This construction makes a practically permanent waterproof construction. The ties used under our special work are



CONCRETE PAVEMENT AND REINFORCING AROUND SPECIAL WORK made of old rails spaced 18 in. apart, fastened to the rail with ½-in. x 2-in. clamps bolted with ¾-in. bolts. The two pictures shown on page 321 give an idea of the foundation and paving construction.

Feeder Taps Anchored to Carhouse

A method of dead-ending a feeder in a neat, simple and rugged way is shown herewith. Feeder taps to the carhouse contact bars are taken off this horizontal cable which runs along the end of the building to the point where it is fastened to a bracket bolted to the brickwork. By means of a strain insulator on this bracket the cable is firmly anchored and at the same time kept at the proper distance from the side of the building. This is a detail of the equipment of the carhouse of the Springfield (Mass.) Street Railway, a general description of which appears elsewhere in this issue.



METHOD OF ANCHORING FEEDER TO SIDE OF CARHOUSE

Preferred Lengths for City Cars

A Classification of City Car Orders for Last Year Shows that 33 Ft. for Single-Truck Cars and 45 Ft. for Double-Truck Cars Are the Most Popular Lengths

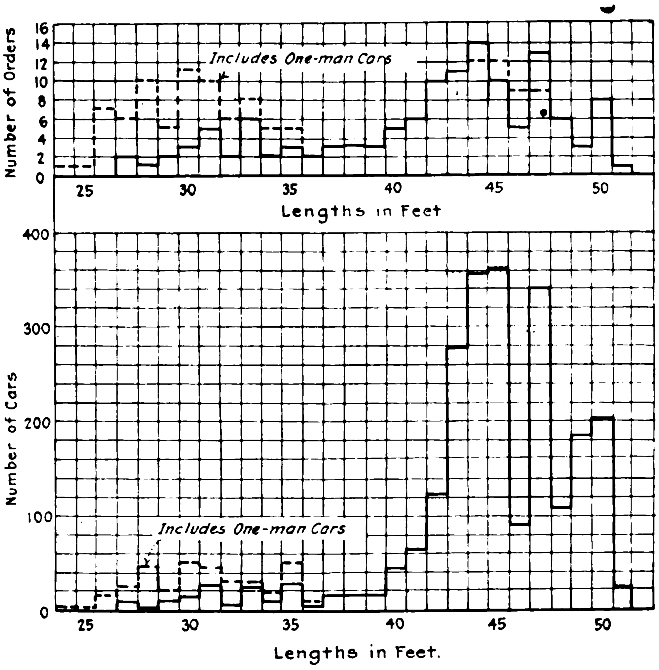
In the accompanying diagram there have been classified, according to over-all length of car, all of the orders for city cars whose details were published in the ELECTRIC RAILWAY JOURNAL during the year 1916. This includes approximately three-quarters of the cars purchased throughout the country during the period. By this means there is clearly displayed the fact that cars of over-all lengths between 34 ft. and 41 ft. are so much in the minority as to permit these dimensions to be called unpopular, and if one accepts the hypothesis that general tendencies displayed by the industry as a whole are indicative of best practice, the adoption of lengths between these limits should be avoided in the purchase of new equipment.

SMALL CARS FOR ONE-MAN AND TWO-MAN OPERATION

At the left-hand side of the diagram the two lines shown differentiate between standard cars and cars designed specifically for one-man operation. The solid line covers only orders for two-man cars, while the upper, dotted line includes all cars whether intended for one-man or two-man operation. The latter indicates the rather remarkable growth in popularity during the last year of the plan of one-man operation for small cars, since the relative positions of the dotted and solid lines show that, in the most popular lengths for the smaller cars, namely, 33 ft., the number of orders for one-man designs exceeds the number of orders intended for service with two operators.

With regard to the record of orders designed only for two-man operation, it may be said that this demonstrates very definitely the length limitations of the single truck, and supports as well the principle that, other things being equal, the largest car body within reason is the best size to adopt. From the graph it may be seen that the greatest number of orders for cars of relatively small size were placed at the length of 33 ft. This is the generally-accepted maximum length permitted with rigid single-truck designs, owing to the effect of short wheelbase and excessive overhang, and the popularity of the maximum length of body is shown by the fact that the majority of those who decided to adopt single-truck designs selected the maximum length possible under those conditions. The appearance of a number of orders at the 35-ft. length indicates the influence of the non-parallel-axle truck with which a 2-ft. greater length of body is permitted because of the greater wheelbase possible when the axles are not rigid.

The dotted line, that including orders for one-man cars, shows that the most popular lengths for such designs are 28 ft. and 30 ft. However, as might be expected with a type still in process of development, orders for one-man cars range all the way from lengths of 35 ft., the maximum length for single-truck cars equipped with non-radial axle trucks, down to 24 ft.—a dimension that is materially below the shortest length found on single-truck cars intended for two-man operation.



LENGTHS OF CITY CARS SHOWN GRAPHICALLY

Owing to the fact that it is difficult to determine definitely from published records whether or not small cars are actually going to be used with single operators, it is possible that some of the orders that have been credited to the two-man plan of operation should have been included with the one-man car orders. This is supported by the fact that in the year 1915, for which no diagram has been made up because of lack of complete information, practically no cars shorter than 30 ft. seem to have been purchased. Consequently it is quite possible that the one-man car is responsible for practically all of the orders placed in 1916 for lengths less than this figure.

RECORD FOR STANDARD CARS

The right-hand side of the diagram, which shows the record of orders for cars of the more customary lengths, is characterized by three very definite peaks coming respectively at lengths of 44 ft., 47 ft. and 50 ft. For the existence of the latter peak there may be put forward an explanation of the several orders for Peatwit cars, in which somewhat more than normal length is common, partly because of the rapid facilities for passenger interchange and fare collection that are provided with that design's combination of front entrance and center exit, and partly because of the influence still exerted by the dimensions of the first car of this type to be built, this having been placed in service in Cleveland. In this city unusually long cars have been found to work in a satisfactory manner, owing to the extensive use of the skip stop.

For the peak occurring at the 47-ft. length there appears to be no particular explanation except that of chance, although for the year 1915 a similar but not so marked a peak also appeared at this length.

However, the preponderance of 44-ft. designs appearing in the 1916 diagram, together with the slightly reduced number of cars having a length of 45 ft., is not duplicated in the records for the previous year, when exactly the reverse was the case. Consequently, it seems not unreasonable to average out the 44-ft. and 47-ft. peaks on the grounds that they are due to exceptional conditions. This will exactly fill out the adjoining depressions appearing in the graph at the 45-ft. and 46-ft. lengths, and the irregularity of the diagram disappears. The effect is shown by the dotted lines at the right-hand side of the diagram whereby the peaks are smoothed out into a comparatively regular variation with high point between the 44-ft. and 45-ft. lengths.

Thus preference appears definitely to be accorded to these two lengths and popularity for longer cars falling away quite rapidly until the length of 50 ft. is reached, rising at this point because of the influence exerted by the Peatwit design and by the skip stop. The difference of 11 per cent between the 45-ft. length and the 50-ft. length, although small, has an appreciable effect on unit-carrying capacity, and, no doubt, results in an economy when provisions are made to eliminate the operating losses tending to accompany the larger load.

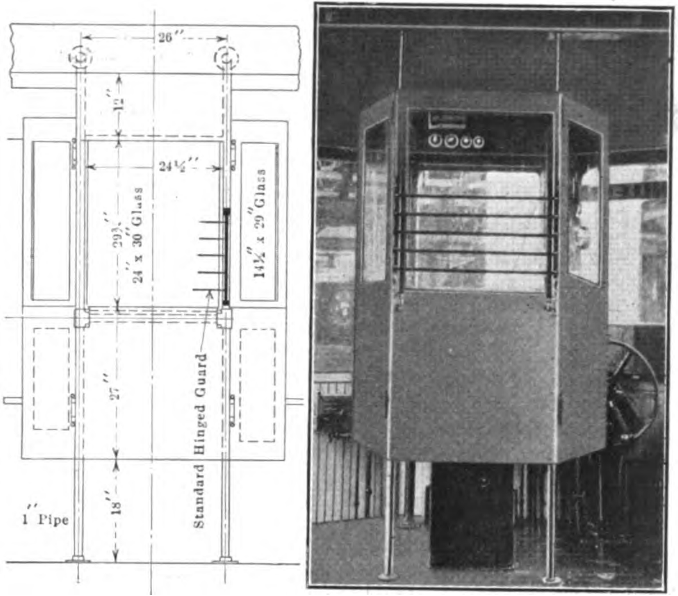
BASIS FOR DETERMINING PREFERENCE

In the foregoing discussion the number of orders placed for cars of each length has been used as a basis in preference to the actual number of cars. This has been done to avoid the dominating effect of the large orders placed by the railways operating in big cities, and thus to give due weight to the practice of the smaller properties that order only a few cars at a time. However, to show the result of classifying cars by the actual number ordered, a diagram has been prepared upon this basis and is shown below that based upon orders only. In both diagrams the length of any car has been shown to the nearest even foot. Thus the 40-ft. length as given includes all cars of lengths between 39 ft. 6 in. and 40 ft. 6 in.

Motorman's Cab with Sheet Iron and Glass Panels

BY R. N. HEMMING
Superintendent of Motive Power Union Traction Company of Indiana, Anderson, Ind.

After experimenting for some time we have developed a motorman's cab for our interurban cars which is satisfactory to the motormen. It has been applied to one car and is being tested in service. As shown in the accompanying picture and drawing, the cab is supported by two 1-in. pipe stanchions from the car platform. The sides are hinged doors arranged to swing in both directions so that the motorman has an easy means of entrance and exit. This arrangement also provides that flexibility which is desirable in case trunks or other merchandise should strike the door when being loaded into the baggage compartment.



DETAILS AND GENERAL APPEARANCE OF MOTORMAN'S CAB

The lower panels of the compartment are of No. 16 gage sheet iron and the upper ones of glass, the glass panel back of the motorman being protected by a standard hinged window guard. The cost of the cab was: material, $14.79; labor, $10.56; total, $25.35.

High Cost of Line Construction

Harold A. Ley, in testifying before the Massachusetts Public Service Commission, recently said that in 1907 he paid $1.50 per ten-hour day for common labor, with no allowance for holidays and rainy days. Linemen then received $2.75 for nine hours' work on the job. In 1914, common labor was paid about $2 for nine hours, and linemen were paid $3.50 for nine hours' time, traveling one way on their own time, and being paid by the Ley company for holidays and all rainy weather. Common labor is now paid on holidays and in bad weather. At present, linemen are being paid $4.50 for nine hours, and common labor demands about 30 cents per hour. Nothing like the amount of work turned out per man each day ten years ago is to be obtained from the men to-day. The cost of digging implements, blasting tools, spikes, ropes, come-alongs, rubber gloves, pliers, etc., amounts to 3½ per cent of the payroll.

News of Electric Railways

Traffic and Transportation

Financial and Corporate Personal Mention Construction News

Preparing for Kansas City Arbitration

Review of Matters Overhanging from the Recent Strike—Full Text of Proposal of Business Men Accepted by the Employees and Signed by the Company

Service on the lines of the Kansas City (Mo.) Railways has continued under peace conditions, and almost at the former level of efficiency, since operation was resumed on Aug. 17 following the strike of nine days.

Labor leaders say that 2500 of the 3400 employees of the Kansas City Railways have joined the local Amalgamated union, the number including trainmen, shopmen, trackmen, and employees at the power plant.

COMPANY DID NOT RECOGNIZE UNION

While the railway did not recognize the local union in the settlement, and takes the position now that it will deal only with committees of its employees, it is understood that the committees of employees to be appointed to treat with the company as to wages will be selected by the local union. The union is now naming these committees. Labor leaders declare that the business men's committee which arranged the settlement of the strike intended that the company should treat with committees formally elected by the union. This point as to whether or not the company is to deal with the union is at present a mooted one. Strike leaders insist that the promise of the company, signed by Clyde Taylor, was a contract; that it was also signed by officers of the union as such, each side having duplicate copies. The company, however, describes the document as an agreement which certain employees signed as indicating the acceptance of the agreement by the strikers whom they represented, and not as officers of the union.

It is said that members of the union are bringing pressure to bear on loyal employees to join the organization. The company has made it plain to all employees that they may or may not join the union, and on Aug. 21 it published display advertisements making this point clear. The advertisement was addressed to the employees, but was also intended to indicate to the public the developments following the strike and the appearance of the union.

The receivership proceedings instituted by the Council committee are still pending, waiting, it is said, the dismissal of the injunction proceedings brought by the company.

PUBLIC SENTIMENT WITH COMPANY

Public sentiment with reference to the labor situation has changed since the strike began. At first the impression prevailed that most of the men were getting only 22 cents an hour. As the controversy progressed, however, it became clear to the public that the principal concern of the men was recognition of the union. The railway helped materially to enlighten the public by display advertisements outlining the exact demands of the strikers, and also indicating the attitude of the company, with reference to the so-called "closed" and "open" shop. While sentiment continues, in a broad way, favorable to better pay for the employees, there is less indiscriminate exclamation of sympathy for the former strikers.

HOW THE CITY IS CONCERNED

An interesting phase of the present situation is the effect on the city's interest in the company under the partnership agreement. Under the franchise, the company is guaranteed 6 per cent on the capital. Net returns above 6 per cent are to be applied to extensions and additions until the sum of $6,300,000 is so expended, this to be added to capital value. When $6,300,000 has been so applied, the net revenues (after operation, management and maintenance, public charges, liabilities, and the 6 per cent have been paid) are to be divided, one-third to the company, two-thirds to the city. The city may then use its two-thirds to reduce fares, or for public improvements, or for applying to the purchase of the property. In the last three years $2,000,000 of the $6,300,000 mentioned has been applied to extensions and additions and added to capital. It was estimated when the franchise was adopted that the entire $6,300,000 surplus income would be earned and expended in nine years from July 7, 1914. The franchise requires the company to expend specific amounts each year on extensions and additions in Missouri. These amounts have been available heretofore from net earnings and have been added to capital, but there is provision that if the net earnings decline or increase, the requirement as to annual expenditures shall be correspondingly altered.

TERMS OF SETTLEMENT

As announced in the ELECTRIC RAILWAY JOURNAL for Aug. 18, page 282, the strike of the employees of the Kansas City (Mo.) Railways was settled on the basis of a proposal made by a committee representing the business men of the city. The Amalgamated Association is not recognized, but the questions of wages and working conditions which were in dispute will go to arbitration in accordance with the terms of the settlement agreement. The proposal of the business men, accepted by the employees and signed by the company, was as follows:

"The company agrees to meet and treat with duly accredited committees of its employees in the matter of any grievance, including grievances concerning wages and working conditions which may arise from time to time between the company and its employees.

"Each separate class of employees shall select a committee to adjust any grievance that may arise in their department. If such committee fails to adjust such grievance with the company they may place such grievance in the hands of the general committee, which shall be composed of employees.

"If the company and the committee of employees cannot agree in regard to any controversy over wages and working conditions that may arise the matter shall be arbitrated as follows:

"The company shall select one arbitrator; the committee of employees shall select one arbitrator, and the two thus chosen shall meet as soon as possible and select a third arbitrator.

"The board thus chosen shall investigate and hear evidence in all matters in contention and shall render an award, and said award rendered by a majority of said board shall be binding on the company and on the employees.

"It is agreed that all employees that quit work on or subsequent to Aug. 7, 1917, shall return to work immediately in their respective positions held immediately prior to Aug. 7, 1917.

"It is agreed that all employees that were dismissed from the company's service since and including Aug. 1, 1917, shall be reinstated immediately to the positions held by them at the time of dismissal from the service of the company.

"In the employment of its employees and servants the company shall not discriminate either in favor of or against any person because of his or her affiliation with any labor organization, and the company recognizes the right of employees to be members of any organization as such employee sees fit.

"The company will grant leave of absence without pay to employees who are appointed as officers or committees of the employees while they are doing work in the interest of the employees."

Wooden Cars a Menace?

New York Commission Seeks Removal of Wooden Rolling Stock from Center Street Loop Subway

The Public Service Commission for the First District of New York held a hearing on Aug. 20 on motion of Commissioner Charles S. Hervey, at which consideration was given to the earliest date on which it will be possible to remove wooden cars from operation in the Center Street loop subway, and obtain a substitution of steel cars. Commissioner Hervey believes that the use of wooden cars constitutes a potential source of danger to passengers, which should be removed. The Center Street loop subway is operated by the New York Consolidated Railroad Company, a subsidiary of the Brooklyn Rapid Transit Company. Two years ago, following a serious accident which occurred in the first subway operated by the Interborough Rapid Transit Company, the commission directed the removal of all wooden cars from that subway and the purchase of all-steel equipment by the company. This order has been carried out. The hearing began on Aug. 20, and also covered a number of other questions relating to the operation of the road.

THOROUGH INVESTIGATION PROPOSED

Commissioner Travis H. Whitney, following an outline by ex-Judge William L. Ransom, chief counsel to the commission, of the exact information desired by it, informed the representative of the company present that the commission proposed to make a thorough investigation. He said that he proposed to call to the witness stand the men who had made the contracts or in whom the authority rested for making the contracts for new cars and other operating materials.

In his opening, Judge Ransom said:

"The pressure of the need for additional transit facilities and for relief from unbearable transit conditions at the Brooklyn Bridge compelled the commission to seek arrangements for as early operation in the Center Street loop as possible and for the utilization of that line to the greatest extent. The commission was therefore compelled to relax certain prerequisite arrangements. Not unmindful of the vital consequences to the public of measures for surrounding the operation with precautions commensurate with the possible dangers in the tunnels, the commission has labored incessantly to introduce into the tunnel and the operation therein of such equipment, construction and devices as will give the greatest measure of precaution and accommodation to the traveling public.

"In co-operation and in informal conference between the commission and the officers of the New York Municipal Railway Corporation and the New York Consolidated Railroad Company, plans have been adopted and carried into execution for certain changes and improvements for greater safety of operation in the Center Street loop. However, important features upon which the commission must insist if operation is to continue permanently, have not yet been definitely acceded to by the company upon such a program as the commission must require to make the operation safe and adequate.

"In view of this situation the commission has called this hearing in order that concrete proposals may be presented to the company, its attitude ascertained and a definite program inaugurated either by agreement or through the powers and duties vested in the commission in these respects."

Judge Ransom stated that the following six questions are those upon which information is desired by the commission:

1. Why have not steel cars been substituted for wooden cars in the loop operation?
2. Why are cars stored in the loop?
3. Why has not an independent emergency lighting system been installed?
4. What is the necessity for emergency exits and ventilating fans?
5. What precautions have been taken for guarding the third-rail?
6. What precautions have been taken against danger and what additional precautions can be taken?

The case will be continued on Sept. 6.

Wage Increase in Columbus, Ohio

The trainmen of the Columbus Railway, Power & Light Company, Columbus, Ohio, will receive a voluntary increase in wages, effective on Aug. 29. This is the third increase in eighteen months. In making the announcement the company stated that the advance is to offset the rising costs of the various necessities of life. The wage scales, as made effective by the last three increases, are as follows:

Length of Service	April 28, 1916, Cents	March 30, 1917, Cents	Aug. 29, 1917, Cents
First three months	21	22	24
Next nine months	23¾	24½	26
Second year	25½	26	27
Third year	26	27	28
Fourth year	26½	27½	28½
Fifth year	27	28	29
Sixth year	28	28½	29½
Seventh year	28	29	30
Eighth year	28½	29½	30½
Ninth year	28½	29½	30½
After ninth year	29	30	31

The present increase is at the rate of 1 cent an hour for all classes of men in service longer than one year. The increase in rates for the first three months of service is 2 cents an hour, and for the next nine months 1½ cents an hour. In the March scale a minimum rate of $12 a week was made effective for extra men who make the regular reports. This minimum rate is increased to $13.50 a week in the Aug. 29 scale.

In 1907 the Columbus rates of pay to platform men were 19 cents minimum, 20½ cents maximum. Increases were granted during 1910, 1911, 1913, and in February, 1914, at which time the minimum was made 20½ cents, and the maximum 27 cents an hour. The minimum rate for extra men was first introduced in March of this year.

Terms of Springfield (Mo.) Settlement

Review of Conditions Under Which Strike of Nine Months Was Adjusted

The full terms of the recent settlement of the strike of the employees of the Springfield (Mo.) Traction Company, which had been in progress since October, 1916, are now available. This strike was occasioned by the discharge of an employee for the violation of rules, this being admitted by him.

Under the settlement contract, which is to run for three years, the company agreed to take back approximately forty-five members of the union who went out on strike. All members of the union who were under indictment were not taken back. The company retained, or had the right to retain, as many of the men who were then operating cars as they desired. The company is to have the right to employ union or non-union men as it sees fit. In other words, it may operate on an open-shop basis.

The company voluntarily raised the wages of the men. The old scale was 17½ cents an hour for the first year, 19 cents an hour for the second year, 21 cents an hour for the third year and 22½ cents an hour for the fourth year. The new scale is 19 cents an hour for the first year, 21 cents an hour for the second year, 22 cents an hour for the third year and 23 cents an hour for the fourth year and thereafter.

In addition, it was provided that when the daily income exceeds $26 average per car, the hourly rate of the men shall increase one-half of 1 cent for every $2.50 that the income per car exceeds the stipulated amount. Similarly, it was provided that the same increase is to be in effect when the income for one-man cars exceeds $16. The wage schedule for the operation of one-man cars is to be 2 cents an hour higher than the schedule for two-men cars.

The suits instituted by the Springfield Traction Company against the city, the Central Trades & Labor Assembly and the Springfield *Laborer* to recover damages alleged to have been sustained by the company during the recent strike have all been dismissed by the courts at the request of the company. This action was taken so as not to inject into the situation as it exists at present any factors likely to prove detrimental to any of the parties to the terms of the strike settlement.

Philadelphia Lease Hearing Sept. 7

Council Committee Fixed on That Date as Time for First Public Hearing on New Rapid Transit Leases

The first public hearing on the proposal for the operation of the city-built high-speed lines in Philadelphia by the Philadelphia Rapid Transit Company will be held on Sept. 7. The draft of the lease was formally presented to Councils on Aug. 17, and the general terms were reviewed in the issue of the ELECTRIC RAILWAY JOURNAL for Aug. 18, page 273.

Following the introduction of the measure, A. Merritt Taylor, former director of city transit, announced on Aug. 19 that he would issue a statement supplementing his brief summary of objections made public on the night of Aug. 17. In his formal statement, which covered more than three columns of the Philadelphia *Public Ledger* of Aug. 20, Mr. Taylor said that his partial analysis of the new lease disclosed the fact that the Philadelphia Rapid Transit Company would gain thereunder virtually all such advantages it heretofore sought to secure from the city through him and which it agreed to waive under the terms of the lease to which he induced the officials of the company to agree last December. He said that he stood unalterably committed to the terms and conditions specified in the Taylor lease or their equivalent, and urged the citizens and the company "to stick to that fair and square arrangement, regardless of the fact that it has been temporarily rejected by the City Council at the behest of Mayor Smith." He said further that the promise which he made to the citizens of Philadelphia in his campaign on the previous ordinance would be carried out and that he would stick by them and fight for them to the finish.

In reply W. S. Twining, the present director of city transit, said that the city and the department of city transit desired full and fair discussion of the lease for the benefit of the public. He did not think that such discussion consisted in violent accusations and unsupported personal opinions in vituperative language, but in presenting in writing all objections to the draft, together with the supporting facts, before the representatives of the city at the public hearings.

PROBLEM CONCERNS ALL THE PEOPLE

Announcement of the date for the first hearing on the lease was made by Mr. Gaffney after a conference with Select Councilman Seger, chairman of the street railway committee. Mr. Gaffney's statement follows:

"On Saturday I conferred with Mr. Seger, chairman of the street railways committee. We agreed that the first public hearing upon the proposed transit lease, submitted by the Mayor to Councils, would be held in the finance committee room, on Sept. 7, at 2 p. m.

"In announcing the date for this first hearing I deem it both timely and meet to call public attention again to the fact that the proper solution of the transit problem is the concern of every man, woman and child in the city of Philadelphia. It is the business as well as the civic duty of every one to become intimately familiar with the terms of the proposed lease. To arrive at a fair and honest conclusion, the proposed lease should be read and examined. The printed and verbal arguments of its proponents and opponents should be studied, and in this connection it is well also to determine whether the particular advocate or objector has a personal or private, rather than a public, interest to serve, whether under the guise of a public friend or benefactor, he is, in fact, using the citizens of Philadelphia 'to pull his chestnuts out of the fire.'

"And lastly, the public hearings should be attended, so that the citizen may get at first hand the arguments pro and con. To these public hearings organizations and citizens are invited. Public advocates and opponents, representatives of organizations and individual citizens, will receive every opportunity to express their views. No threats, political or otherwise, will deter the full performance of this great public duty of going to the bottom of the proposed lease and having all its terms clearly and definitely set forth."

Portland (Ore.) Men Present Demands

Employees at Odds as to What They Shall Ask—Union Organized Recently—Increase Announced Lately

Employees of the Portland Railway, Light & Power Company, Portland, Ore., recently organized a union affiliated with the Amalgamated Association of Street & Electric Railway Employees of America. Immediately after the organization was completed the union presented demands to the company for shorter hours and higher pay. Union officials assert the platform men will strike if the demands are refused. Up to Aug. 17 the company had not answered the demands of the men.

After an all-night session of the newly organized employees, taking in all shifts, the terms of the draft of a working agreement to be proposed to the company's executives were decided upon and an appointment was made with O. B. Coldwell, general superintendent of the company, at which the demands were presented. F. I. Fuller, vice-president of the company, in making a statement to the press said that the demands of the employees could not be fully considered until the return of Franklin T. Griffith, president of the company, who was out of town on a short business trip.

Information has been refused at the union headquarters as to the precise nature of the demands for increased pay and improved working conditions. Unofficially it is said that the men were by no means unanimous in agreeing that the new schedule of pay should be from 38 cents minimum to 45 cents maximum per hour, although the radical element was outvoted in its attempts to fix the range of hourly pay from 45 to 50 cents.

The recently announced pay increases aggregating 3 cents an hour brought the scale up to 28 cents minimum and 34 cents maximum. To raise the pay of the men to a basis of 45 cents minimum and 50 cents maximum, hourly, would mean an advance of from 50 to 60 per cent, omitting any consideration of the recent increase of about 10 per cent.

Paving Relief Sought in Spokane

President of Washington Water Power Company Seeks Cancellation of Franchise Tax and Pavement Payments

The Washington Water Power Company, Spokane, Wash., through President D. L. Huntington, has petitioned the City Council for cancellation of ordinance provisions for franchise taxes and maintenance of pavement between its tracks. Mr. Huntington declares that the company, with a bona fide investment of more than $4,000,000, is making no interest on its investment and is operating at actual loss.

Mr. Huntington's statement follows in part:

"Efficient street car service cannot be maintained unless the operating company is permitted to earn its operating expenses, and at least some small per cent upon the investment. When, because of hard times a tenant of a building is unable to pay the rent contracted for, he goes to his landlord and requests a temporary reduction in rent. It is customary for the landlord to recognize the equity of the appeal. The landlord is equally interested with the tenant in the latter being able to continue his business and maintain a condition of solvency.

"It is in the same spirit that we make an appeal to you for relief from certain ordinance burdens. Our franchise ordinances provide that when a street on which a street car track is located is paved, this company shall pay for the pavement between the outer rails and for 2 ft. on the outside of each outer rail. The ordinance also provides that we shall maintain this pavement at our own expense. This is a relic of horse-car days. Trucks, automobiles and other vehicles quite generally travel upon the pavement put down by this company. They wear it out, while the street cars do not.

"We ask to be relieved from maintenance charges as to any existing pavement. The matter of original pavement is not now before us, but if it comes up we shall be obliged also to ask to be relieved from that expense."

Strike Fizzle in Atlanta

The Amalgamated Association of Street & Electric Railway Employees of America, Atlanta Local, called a strike of the employees of the Georgia Railway & Power Company for noon on Friday, Aug. 17, by the use of the following circular distributed by union motormen and conductors:

"To the Motormen and Conductors—The strike has been called for the hour of 12 o'clock (noon) to-day, at which hour take your car to the barn or to the end of the line before leaving the services of the company. Observe the company's rules with reference to making returns of money, etc., in your possession at said hour. The company will not grant the men any request."

This notice was signed by W. S. Hayney, W. L. Hollis, J. D. Astian, R. L. Livesey and H. O. Teat, representing the Amalgamated Association.

Preston S. Arkwright, president of the Georgia Railway & Power Company, admitted that a strike had been called but so far as he could ascertain no men had walked out. The failure of the effort to induce the men to go out is attested by the fact that everything was quiet on the morning of Aug. 18 and that all cars maintained their regular schedules.

Doing Their Bit

Young Women Cottagers Help to Rebuild Trolley Line for Service to Aviation Base

A number of young women cottagers at Cape May, N. J., are working on the reconstruction of the old Cape May, Delaware Bay & Sewell's Point Railroad, an electric line which went into the hands of a receiver some time ago and was sold. The cottagers are anxious to have the road put into operation again. When it was found that male help was scarce 100 members of the Naval Reserve Corps took up the work of reconstruction and many girls also turned out to "do their bit." The girls have been shoveling gravel for the roadbed, while the heaviest work of driving spikes and laying new rails is being done by the sailors. It is proposed to operate the road for a time with electricity furnished by the Public Service Corporation. Repairs are also being made to the power house and the rolling stock. The electric railway runs to the point where the United States government will establish an aviation base for the training of flyers.

50 Per Cent Service in San Francisco

On Aug. 18 daylight service on the lines of the United Railroads, San Francisco, Cal., was more than 50 per cent of normal. This service was furnished by the 700 men who remained faithful to the company and by new men engaged in San Francisco to take the places of the strikers. On nearly all the important lines operation was close to normal, efforts being bent particularly toward furnishing service where the demands for accommodation normally are the greatest. Jesse W. Lilienthal, president of the company, has reiterated that it is impossible for the company to meet the demands of the men, who are asking for an eight-hour day and $3.50 a day, with time and a half for overtime. Wages have been increased voluntarily three times in four years, the last increase dating from July 1. In a statement which he made on Aug. 18 Mr. Lilienthal said:

"It is true that the men can force the company into bankruptcy, but that will do them no good. I think the public should realize that no dividends have been paid on stock of the United Railroads for years; that there are pending foreclosure proceedings on defaulted bonds, and another threatened on the unpaid 4 per cent bonds, upon which no interest has been paid. A majority of the bonds on which default has been made are held in California.

"With the growing competition of the Municipal Railroad and the competition of the jitney bus, our income has diminished. When I voluntarily gave our men a raise on July 1, realizing the increased cost of living, I figured out the last dollar I could spare."

On Aug. 21, the tenth day of the strike, more than 42 per cent of the old men were still in the service of the company performing their regular duties.

New Franchise in East Cleveland

A new street railway ordinance was approved by the City Council of East Cleveland, Ohio, on Aug. 20, to take the place of the one recently voted down by the electors. This was done at the demand of the people who have been using the Hayden Avenue line. Immediately after the first ordinance was defeated the Cleveland Railway withdrew its regular schedule on the line and installed two shuttle cars. The police department stopped the operation of these cars for several days because only one track was used, whereas the city ordinances call for double-track operation.

The new ordinance provides for fares at the rate of six tickets for a quarter, with a charge of 1 cent for transfers or cash fare of 5 cents and free transfers, where the ride is between points in East Cleveland and Cleveland, and 3 cents within East Cleveland. It eliminates the provision requiring approval of the ordinance by popular vote, but contains a clause providing that the paving between the tracks on Euclid Avenue shall be completed ten days before the grant takes effect. A minimum service of one car every six minutes between 6 a. m. and 8 p. m., one every eight minutes between 8 p. m. and midnight, and a car every hour between midnight and 5 a. m. is provided. The company has threatened not to accept the new ordinance.

English War Bonus Decision

The committee on production has announced its decision in respect to the application for a war bonus of 10*s.* a week, made by the Amalgamated Association of Tramways Workers of Great Britain on behalf of male and female employees on the tramways in various towns in Lancashire and Cheshire. The committee's finding is as follows:

(1) That all employees concerned (male and female) of the age of eighteen and over shall receive an increase of 2*s.* 6*d.* a week on the war wage now being paid.

(2) That all employees concerned (male and female) under the age of eighteen shall receive an increase of 1*s.* 3*d.* a week on the war wage advances now being paid.

These amounts are to be regarded as war wages and recognized as due to and dependent on the abnormal conditions now prevailing in consequence of the war. The advances will become payable as from the beginning of the first full payday following the date of the award.

The tramway authorities affected by the award are: The Corporations of Accrington, Ashton, Birkenhead, Bolton, Bury, Colne, Manchester, Oldham, Darwen, Blackburn, Burnley, Preston, Rochdale, Salford, Stockport, Wigan, Wallasey and Warrington; the Oldham, Ashton-&-Hyde Electric Tramway, Ltd., the Stalybridge, Hyde, Mossley-&-Dukinfield Tramways-&-Electricity Board; and the South Lancashire Tramways.

It is known that the award under the decision is considered inadequate and has not met with general approval. As a result, in Manchester, the employees have decided not to work overtime and not to "overload" the cars. Overtime consists chiefly in the running of extra cars on Saturdays and Sundays. This work is performed by volunteers from among the tramway employees, who receive overtime rates. None of these employees volunteered on the Saturday after the decision was rendered. As a result the cars did not run. The employees have asked the Manchester Corporation to grant a further increase in wages of 7*s.* 6*d.* a week. Salford tramway workers are also protesting. They have refused to agree to work overtime or to carry more than a certain number of standing passengers. Practically the same decision has been reached by the members of the Bury branch of the Tramwaymen's Union.

First Car on Church Street Line in San Francisco.—The first car was operated over the Church Street extension of the Municipal Railway of San Francisco by Mayor Rolph on Aug. 11.

Company Sells Coal Mine.—The Renton Coal mine, owned and operated for many years by the Puget Sound Traction, Light & Power Company, Seattle, Wash., has been sold to the Pacific Coast Coal Company. Efforts have been made since the recent strike of the trainmen to unionize the 300 employees of the coal plant.

Employees' Club for Fort Worth.—For purposes of uplift among employees of the Northern Texas Traction Company, which operates the electric railways in Fort Worth, the Fort Worth-Dallas interurban and the Oak Cliff lines in Dallas, the Traction Club of Fort Worth has been formed and incorporated under the laws of Texas.

Road Tied Up by Accident at Power Station.—On Aug. 15 it was reported that the Lake Shore Electric Railway, Cleveland, Ohio, had been tied up since the day before between Toledo and Bellevue and Sandusky and Fostoria by an accident at the power house of the Ohio State Power Company, which furnishes power for these two sections.

B. R. T. Extension Into Manhattan.—The Public Service Commission for the First District of New York has announced that the operation of Fourth Avenue subway trains from Brooklyn through Canal Street and up Broadway to Fourteenth Street, will begin on Sept. 4. This is an extension of Brooklyn Rapid Transit operation into Manhattan.

Unions Demand Union Car Crews for Picnic Rides.—A motion has been passed by the Toledo (Ohio) Federation of Labor to the effect that all cars carrying Toledo unions to Toledo Beach must be manned by union car crews. Otherwise the unions threaten to hold no more picnics at the beach, which is owned by the Toledo Railways & Light Company.

Engineering Council Appoints Committees.—The Engineering Council, which is the successor of the joint conference committee of the United Engineering Societies, namely, the A.S.C.E., A.S.M.E., A.I.E.E. and A.I.M.E., has appointed standing committees on public affairs, on rules, on finance, on war inventions and on organization of engineers to assist the government

Company Says It Cannot Remove Poles and Wires.—The Trenton & Mercer County Traction Company has notified the city commission of Trenton, N. J., that it cannot remove its wires and poles on a number of thoroughfares by Oct. 15. The case may be carried to the State courts. The company asserts it received permission from the old Common Council twenty years ago to erect the poles.

Petition Against Municipal Operation.—The Council of Lincoln, Ill., has been presented with a petition asking that immediate and favorable action be taken on the lease agreement, obtained by the Lincoln Commercial Club, by which the Lincoln Water & Light Company offers to operate the street railway line now owned by the city. As noted in the ELECTRIC RAILWAY JOURNAL of July 7, the citizens at a recent election authorized a bond issue to purchase the plant of the Lincoln Railway & Heating Company, which had been idle for a number of months.

Strike on Ohio Line.—On Aug. 16 twenty motormen and conductors of the Dayton, Covington & Piqua Traction Company, Dayton, Ohio, quit work because their demand for an increase in wages had not been met. Five employees refused to join in the strike and one car was kept in operation regularly. The men are said to be receiving 25 cents an hour for a ten-hour day. Judge Dennis Dwyer, the president of the company, offered the men an increase something less than they demanded. This proposal the men refused. G. J. Bernard of the Brotherhood of Railway Trainmen, is in charge of the strike.

Suit Over Bridge Costs in Seattle.—Suit has been instituted by the city of Seattle, Wash., to force the Puget Sound Traction, Light & Power Company to pay $60,917 as its share of the cost of constructing the new Fremont Avenue Bridge across Lake Washington Canal. Judgment is asked for this sum and interest at 6 per cent from June 15, the date the bridge was opened to traffic. The city also asks that the company be compelled to pay $333 a month as its share of the maintenance and operation of the bridge, together with 1 cent per kilowatt-hour for current consumed by cars crossing the bridge.

Removal of Bridge Ordered.—The city of Seattle, Wash., has until Oct. 19 to remove the Stone Avenue bridge, closed to traffic when the Fremont Bridge was opened to traffic on June 15. A controversy arose over the removal of the bridge when the Puget Sound Traction, Light & Power Company filed a claim for damages against the city, on the grounds that the city, in 1910, granted the company a franchise on the bridge that does not expire until Dec. 31, 1934. The company appropriated $31,000 toward the construction of the bridge. Work on removing the bridge was halted, awaiting an order from the War Department. It is expected that the traction company's claim will be settled in court.

Stay Sought in Car Order Case.—The Federal Court at Brooklyn, on Aug. 21, heard the application of the Brooklyn (N. Y.) Rapid Transit Company for an injunction to prevent the Public Service Commission for the First District from carrying out its recent order, made on motion of Commissioner Travis H. Whitney, directing the company to purchase or procure 250 new cars for use on its surface lines. The company attempted to obtain a writ of certiorari from the New York Supreme Court to restrain the commission, but this motion was denied. The company was then directed by the commission to take steps to carry out the commission's order, but has now appealed to the Federal courts in the attempt to obtain a stay.

Legislation Drafted in the Open.—The Public Service Commission for the First District of New York will continue on Sept. 17 hearings begun during the week ended Aug. 18 under the novel plan for "drafting legislation in the open." It is the purpose of the commission to obtain a thorough hearing of amendments desired to the statutes under which it works, both as to such amendments desired by it and for such as are proposed by corporations and individuals. At the first hearing proposals were made that all water companies, either municipal or private, within the State should be placed under the jurisdiction of one or the other of the two commissions. A bill was also proposed by which reparation of over-payments by consumers of gas and electric current would be possible.

Commission Orders Company to Continue Service.—On Aug. 4 the Alton & Jacksonville Railway, Alton, Ill., issued a notice that it would discontinue service north of Godfrey to Jerseyville. The Public Utilities Commission thereupon ordered the company to continue this service in accordance with its charter. The railway then gave out a notice on Aug. 6 that it would discontinue all freight service at once. On Aug. 8 the Attorney General's office secured an order from the Madison County Circuit Court, prohibiting the disposal of the property or discontinuance of service. The railway asserts that the rails and wire on the line in question were sold before the prohibiting order was issued. The line from Godfrey to Jerseyville comprises the major portion of the company's 21.3-mile line.

Eleven Injured in Accident to Colonial Express.—Eleven passengers on the Colonial Express, operated by the New York, New Haven & Hartford and Pennsylvania Railroads, were injured on Aug. 21 when an electric locomotive ran into the train after the steam locomotive had been detached in the Sunnyside yards, near Long Island City, so that the coaches could be brought into the Pennsylvania Station through the East River tunnels. It was the first accident on the New York Connecting Railroad since the bridge across Hell Gate was put into operation in April, so that trains running between Washington and Boston might be brought into the Pennsylvania Station on Manhattan Island. The train was delayed about two hours by the accident. New coaches had to be substituted for those damaged in the crash.

City Refuses to Pay for Damage from Water Mains.—Because of leaks in water mains on various dates since March 26, 1908, the Puget Sound Traction, Light & Power Company, Seattle, Wash., has presented to the city a bill for $148. The city auditing committee, however, has refused to pay it. Corporation Counsel Caldwell, in passing on the legality of the city's refusal, states: "Where a public service corporation receives a franchise from the city for the use of the public streets or any part thereof, such corporation accepts it subject to and saving the city harmless from any damages that may come to its plant as a result of accidents that may occur in said streets. The only case in which the corporation would be entitled to damages are where it could be clearly shown that the city had not used diligence in repairing the cause of the damage to the company's property."

Financial and Corporate

Annual Report

Brazilian Traction, Light & Power Company, Ltd.

The income statement of the Brazilian Traction, Light & Power Company, Ltd., Toronto, Ont., in Canadian currency for the years ended Dec. 31, 1915 and 1916, follows:

	1916	1915
Gross revenue from securities owned and under contracts with subsidiaries	$5,764,764	$5,339,193
Interest received on advances to subsidiaries	254,709	273,683
Total	$6,019,473	$5,612,876
General and legal expenses, administration charges and interest	344,831	218,074
Balance	$5,674,642	$5,394,802
Preferred dividends	600,000	600,000
Balance	$5,074,642	$4,794,802
Common dividends	4,251,488	4,249,380
Surplus	$823,154	$545,422

The reduction in the net revenue available for dividends, attributable to the decline in exchange from the rates prevailing for several years before the war, was approximately $3,000,000 for 1915 and $3,300,000 for 1916. Since April, 1917, the exchange value of the milreis, in which the subsidiary revenues are paid, has advanced. If the higher rate of exchange is maintained during the present year, the net revenue of the company, it is said, should show a very substantial increase.

In 1917, besides the usual dividend on the preference shares, the company paid on March 1 a 1 per cent dividend on ordinary shares. In April, however, the directors decided not to pay further ordinary dividends during the remainder of the current year unless there should be such an improvement in exchange as would justify the resumption of dividends. Pending such resumption the board purposes to apply the surplus revenue in liquidating the floating indebtedness of the companies which it controls and in providing for the necessary capital expenditures of the several properties.

In 1916 the gross earnings of the Rio de Janeiro Tramway, Light & Power Company, Ltd., showed a gain of 10.2 per cent. There were substantial increases in both gross and net earnings in all departments except in the net of the gas company. The receipts from the tramway lines slightly exceeded those in 1913, which previously were the highest in the history of the company. A total of 198,677,975 passengers was carried in 1916 as compared to 191,556,302 in 1915, while the car-miles run were 24,667,154 and 24,409,259 in the two years respectively. No track extensions were made, but 3.4 miles of existing track of the company were renewed.

The gross earnings of the Sao Paulo Tramway, Light & Power Company, Ltd., for 1916 increased 12.88 per cent. The tramway earnings were slightly below those of 1913, the record year thus far. In the last year 55,154,564 passengers were carried and 10,153,657 car-miles run as compared to 51,574,145 passengers and 9,425,231 car-miles in 1915. The extensions made to the track in the city of Sao Paulo comprised about 1 mile of cross overs, special work and sidings to provide the needed facilities for accommodating increased freight traffic.

Change in Year in Pennsylvania

The public service corporations operating in the State of Pennsylvania have been asked by the Public Service Commission to change their fiscal years, where necessary, to make them correspond with the calendar year. This is in line with the order made by the Interstate Commerce Commission of interstate carriers, following which nearly all of the steam railroads have changed their fiscal years as requested.

I. C. C. Issues Accounting Answers

Another Series of Questions and Tentative Answers Under the Uniform System of Accounts Prescribed for Electric Railways

Another series of tentative answers to questions raised in connection with the uniform system of accounts prescribed by the Interstate Commerce Commission for electric railways has just been released by the commission. As these answers have not received the formal approval of the commission, however, it should be understood that the decisions do not represent its final conclusions, and that they are subject to such revision as may be thought proper before final promulgation in the accounting bulletins of the commission. The questions raised, and the answers made to them, follow:

Q. To what account should be charged the salary and expenses of a general superintendent while supervising the construction of new cars?

A. To road and equipment account to which the cost of the cars is chargeable.

Q. To what account should be charged the wages of carhouse employees engaged in filling sand boxes on cars?

A. To operating expense account No. 11, "Cleaning and Sanding Track." If, however, the work of filling the sand boxes is merely incidental to their other work, the entire amount of their wages may be included in account No. 70, "Carhouse Employees."

Q. To what account should be charged the expenses of employees attending railway association conventions and company section meetings?

A. Such expenses should be charged to the same account as the salaries of the employees.

Q. To what account should be charged an annual fee assessed by a state bureau for the inspection of a power plant?

A. To operating expense account No. 56, "Miscellaneous Power Plant Supplies and Expenses."

Q. (a) To what account should be charged the wages of employees washing and dismantling cars previous to painting?

(b) To what account should be charged the wages of a watchman at a carhouse in which cars are stored?

A. (a) To operating expense account No. 30, "Passenger and Combination Cars"; No. 31, "Freight, Express and Mail Cars"; or No. 32, "Service Equipment," as may be appropriate.

(b) To operating expense account No. 70, "Carhouse Employees."

Q. The answer to Case 323, Bulletin No. 14, provides that the refund of an overcharge due to an error of a company's agent in misrouting should be charged to account No. 107, "Freight Revenue." Should a foreign line's proportion of such an overcharge, assumed by the company whose agent was at fault, be charged to account No. 107?

A. The ruling given in Case 323, Bulletin No. 14, applies only to the accounting company's own freight charges. That portion of the overcharge applicable to the transportation beyond the line of the company whose agent made the error should be charged to operating expense account No. 78, "Other Transportation Expenses."

Q. Property was held by a company as security for a loan. The debtor company becoming insolvent, the creditor company agreed to take the property and cancel the obligation. To what account should be charged the amount of uncollectible interest which has accrued on the obligation and the expenses incident to the transfer of the property?

A. The accrued interest unpaid and the expenses incident to the transfer of the property together with the amount of the loan which was considered redeemed by the transfer of the property should be charged to account No. 401, "Road and Equipment," or No. 404, "Miscellaneous Physical Property," as may be appropriate.

Q. To what accounts should be charged the cost of installation, maintenance and renewal of arc or incandescent lights at various points along a company's right-of-way and at terminal loops?

A. The cost of installation should be charged to road and equipment account No. 513, "Tunnels and Subways," No.

516, "Crossings, Fences and Signs," or No. 524, "Stations, Miscellaneous Buildings and Structures," depending upon the location of the lights.

The cost of repairing wiring in connection with such lights should be charged to operating expense accounts No. 13, "Tunnels and Subways," No. 16, "Crossings, Fences and Signs," or No. 24, "Buildings, Fixtures and Grounds," as may be appropriate.

The cost of renewing lamps at points along the right-of-way and at terminal loops (not at stations) should be charged to account No. 78, "Other Transporation Expenses." The renewal of lamps at stations should be charged to account No. 69, "Station Expenses." (See Case No. 69, Bulletin No. 14.)

Q. To what account should be charged the cost of initial paving of a public street abutting a company's depot and yards?

A. The cost of such initial paving should be charged to road and equipment account No. 503, "Other Land Used in Electric Railway Operations," unless the company's tracks are located on such abutting street, in which case the cost of initial paving should be included in account No. 511, "Paving."

Q. (a) To what account should be charged the cost of fitting up commercial freight cars for work service and the cost of subsequently refitting same for commercial service?

(b) To what account should be charged the cost of repairing electric locomotives and electric equipment of same while engaged in performing work service chargeable to operating expenses?

A. (a) To account No. 32, "Service Equipment."

(b) To account No. 34, "Locomotives."

Q. (a) To what account should be charged the cost of register cord, trolley rope, bell cord, carbon brushes, and air motors used in repairs?

(b) To what account should be charged the cost of fuses and carbon brushes used in repairing power motors?

A. (a) Operating expense account No. 30, "Passenger and Combination Cars," No. 31, "Freight, Express and Mail Cars," or No. 32, "Service Equipment," as may be appropriate.

(b) Operating expense account No. 33, "Electric Equipment of Cars," or No. 34, "Locomotives," as may be appropriate.

Q. To what account should be charged a payment to a telephone company for damage done to its cable by a track employee while repairing an electric track switch?

A. Operating expense account No. 92, "Injuries and Damages."

Q. To what account should be charged the cost of hand trucks and auto platform trucks for handling freight?

A. The original cost of such trucks should be charged to road and equipment account No. 538, "Miscellaneous Equipment."

Q. To what account should be charged the cost of advertising for office help for the auditing, claims, material and supplies, purchasing, roadway, rolling stock and buildings, transportation and treasury departments.

A. Operating expense account No. 85, "General Office Supplies and Expenses."

Q. To what account should be charged demurrage charges paid on a car of crossing gates which are to be used in the reconstruction of a railroad?

A. This expense should be accounted for together with the freight charges as part of the cost of the new gates.

Q. To what account should be credited a refund in connection with a lubrication contract?

A. The amount of refund should be credited to the primary account or accounts which were charged with the cost of the lubrication.

Q. In making settlement for an injury this company agreed to pay an employee $3,000 at the rate of $50 a month. Should the total amount to be paid him be charged to operating expenses in the current year or should operating expenses be charged only as the payments are made?

A. The entire amount should be charged to operating expenses in the current year and a corresponding liability set up unless a reserve has been created by monthly accruals, in which case the monthly payments should be charged against the reserve as they are made.

Q. (a) In adjusting material accounts to the basis of inventory, what account or accounts shall be credited or debited?

(b) May the adjustment of material accounts to the basis of inventories be deferred to a period subsequent to the year in which the inventories are taken?

A. (a) Determined differences in accounting for important classes of material are ordinarily assignable to discrepancies in charges to particular accounts since the last inventory and shall be adjusted accordingly. Other differences shall be apportioned among the primary expense accounts on the basis of the material charged to them since the last inventory.

(b) No. Such adjustment shall be made in the accounts of the year in which the inventories are taken.

Q. To what account should be charged the cost of painting car-shop signs on poles in order to advise the public where to board and leave cars?

A. The initial cost of painting such signs should be charged to road and equipment account No. 516, "Crossings, Fences and Signs," and the cost of repainting them should be charged to operating expense account No. 16, "Crossings, Fences and Signs."

Q. To what account should be charged the cost of poles and fixtures where the poles support the distribution system, the transmission system and a telephone system?

A. Assuming the poles and fixtures are necessary primarily for the distribution system, the cost of the poles and all fixtures thereon (including crossarms, pins and braces for high-tension line) should be included in road and equipment account No. 519, "Poles and Fixtures." The cost of transmission and telephone lines should be included in accounts No. 544, "Transmission System," and No. 518, "Telephone and Telegraph Lines," respectively.

Q. To what account should be charged the cost of instruments for use of a brass band comprised of company employees? The purpose of the organization is to promote company welfare work.

A. The cost of these instruments should be charged to operating expense account No. 89, "Miscellaneous General Expenses."

Q. Should a dividend declared on Dec. 20, payable on Jan. 30 to stockholders of record on Jan. 10, be shown as a liability as of Dec. 31?

A. The amount of the dividend should be entered as a liability on the date it is declared.

4 or 4½ Per Cent on Boston Elevated

With the dividend checks sent to the stockholders of the Boston (Mass.) Elevated Railway on Aug. 15 went the following letter from Matthew C. Brush, president of the company:

"Your directors declared a quarterly dividend of 1½ per cent, payable on Aug. 15, 1917, to stockholders of record of Aug. 2, 1917.

"This is at the rate of 6 per cent per annum, which we believe is the minimum rate to which stockholders are entitled, it really being about 5 1/3 per cent on the money actually paid into the corporation by its stockholders. In the past the dividend paid on Aug. 15 has been the first for the fiscal year, but by act of the Legislature the year of the company has been changed so that in the future it is to end with Dec. 31 in place of June 30, and this dividend is therefore the third for the new fiscal year.

"The dividends paid—1½ per cent on Feb. 15, one-half of 1 per cent on May 15 and the present dividend of 1½ per cent—make the total for the three dividends 3½ per cent, or $3.50 per share. The final quarterly dividend for the year will be due on Nov. 15, when the policy which has been pursued by the company for several years will be followed by making the last dividend for the year, if any, at whatever rate the earnings of the company warrant.

"'Our estimate of the probable results for the fiscal year (no fixed amount being allowed for depreciation) indicates that the net income may be sufficient for the payment of a fourth dividend of from one-half of 1 per cent to 1 per cent, which would make the total dividend paid during the year 4 per cent or 4½ per cent."

Reading Merger Approved

Pennsylvania Commission Sanctions Reorganization of Reading Transit & Light Company and Metropolitan Electric Company

As a result of mergers approved by the Pennsylvania Public Service Commission, the Reading Transit & Light Company has come into the ownership of properties that supply electricity for power and lighting in Reading, Lebanon and adjacent territory, and also becomes the owner of virtually the entire electric railway system of Reading and its suburbs, heretofore operated under leaseholds.

One of the most important features of the change is that hereafter the Reading Transit & Light Company will operate as an electric railway instead of a leasing company, and will have powers to purchase and hold properties and make extensions to its lines, which heretofore could be done only in an indirect way.

By the mergers just approved the Metropolitan-Edison Company will acquire the properties of the Metropolitan Electric Company, the Edison Electric Illuminating Company at Lebanon and the Lebanon Valley Electric Light Company, subject only to a prior lien of $2,726,000 first mortgage bonds of the Metropolitan Electric Company. This new company will have a controlling interest in the Pennsylvania Utilities Company, Easton, which furnishes electric light, power and gas in that city, Phillipsburg, N. J., and adjacent territory. The Metropolitan-Edison Company in turn will be controlled by the Reading Transit & Light Company, through ownership of its common stock. In addition to the Reading railway lines acquired through purchase of the United Traction Company, the Reading Transit & Light Company will continue to lease and operate the Lebanon street railway system, and the links in the chain of other street railways extending from Reading through Norristown to Philadelphia, serving a population of about 350,000.

Albany (N. Y.) Southern Railroad.—The Albany Southern Railroad has filed a petition with the Public Service Commission of the Second District of New York for authority to make a general mortgage of $600,000 to secure an equal amount of 5 per cent ten-year bonds and a collateral trust indenture to secure $500,000 of three-year 6 per cent notes and to issue now $272,000 of the bonds and $227,000 of the notes.

Bristol (Tenn.) Traction Company, Inc.—The property of the Bristol Traction Company will be sold at public auction on Sept. 15 at Bristol.

Caldwell (Idaho) Traction Company.—The Caldwell Traction Company has leased the Wilder Branch of the Oregon Short Line Railway for a long term. The line is 11.3 miles long, and is now being operated by steam, but the Caldwell Traction Company will electrify it as soon as possible. The company will also extend its present line connecting Caldwell with Hudson and McNeil, about 3 miles.

Columbus (Ga.) Electric Company.—Stone & Webster, Boston, Mass., are offering for subscription at 98.16 and interest, yielding 7 per cent, $1,500,000 of two-year 6 per cent gold coupon notes of the Columbus Electric Company dated July 2, 1917, and due July 1, 1919. Interest is payable on Jan. 1 and July 1 at the office of the Commonwealth Trust Company, Boston, trustee of the issue. The notes are in the denominations of $1,000, $500 and $100. The proceeds from the sale of these notes, together with the proceeds from the sale of $500,000 of first mortgage 5 per cent bonds of the Columbus Power Company, will be applied to the retirement of $2,000,000 of 6 per cent coupon notes due on July 1, 1917.

Gary & Interurban Railroad, Gary, Ind.—The several divisions of the Gary & Interurban Railroad will be sold at public auction at Crown Point, Ind., on Sept. 18 and will again be offered at La Porte, Ind., on Sept. 19. The bids received on the latter date will be accepted if higher than those received on Sept. 18. The upset prices of the several divisions are stated by the master as follows: Gary Connecting Railway, $50,000; Goshen, South Bend & Chicago, $60,000; Valparaiso & Northern, $40,000; Gary & Interurban, $200,000.

Georgia Railway & Power Company, Atlanta, Ga.—The Georgia Railway & Power Company has asked permission of the Georgia Railroad Commission to issue $2,500,000 of bonds to install the sixth unit in the Tallulah Falls power station, the construction of a new reservoir on the Tallulah River above Rabun Lake to be known as the Burton reservoir, and the construction of a new power station 2 miles below the Tallulah Falls plant near the junction of the Tallulah and Chattooga Rivers at the point where they form the Tuglo River.

Lehigh Valley Transit Company, Allentown, Pa.—George H. Frazier has resigned from the board of directors of the Lehigh Valley Transit Company. His place has been filled by the election of Paul B. Sawyer of the Electric Bond & Share Company. This gives representation on the board of the Lehigh Valley Transit Company to the Electric Bond & Share Company, which is to direct the operation and development of the new Lehigh Power Securities Company, of which the Lehigh Valley Transit Company is now a subsidiary through majority stock ownership. The voting trustees for the stock of the Lehigh Power Securities Corporation are I. W. Bonbright of Bonbright & Company, Inc.; George H Frazier of Brown Brothers & Company; S. Z. Mitchell, president of the Electric Bond & Share Company; L. E. Pierson of the Irving National Bank, New York; S. D. Warriner, president of the Lehigh Coal & Navigation Company; G. M. Dahl of the Chase National Bank; Alexander J. Hemphill of the Guaranty Trust Company, New York; Thomas Newhall of Edward B. Smith & Company; Daniel E. Pomeroy of the Bankers Trust Company, New York, and William West of Henry & West.

New Orleans Railway & Light Company, New Orleans, La.—United States District Judge Rufus E. Foster has denied the injunction prayed for by Simon Borg & Company, New York, against the New Orleans Railway & Light Company to stop the company from consolidating the different lines under its control, but he has retained the right of equity in the case until the exchange of stock is satisfactorily made. Simon Borg & Company own 650 shares of common stock of the New Orleans City Railroad and eight shares of the preferred stock of the company. On May 22, 1916, the stockholders of the New Orleans Railway & Light Company decided to consolidate all of the companies under their control, under the provisions of Act 100 of 1898. After this Simon Borg & Company applied for an injunction and receiver for the New Orleans Railway & Light Company, declaring that the company had violated Act 100 of 1898 and asked further that the consolidation be declared null and void. Judge Foster issued a temporary restraining order at the time, but did not appoint a receiver as asked. Judge Foster said in his opinion that two questions entered into the case, namely, whether the consolidation was illegal under the law, and whether an exchange so inequitable as to warrant interference by a court of equity would be needed. Since one of the main points contested by Simon Borg & Company was against the New Orleans Railway & Light Company turning over to them shares of stock in a like amount of value to their holdings in the New Orleans City Railroad Judge Foster held that he should still retain the right to pass on this exchange. The plaintiffs claimed that they would suffer materially from a monetary standpoint if the exchange of the securities of one company for those of the other were carried through on the basis proposed originally.

Newport News & Hampton Railway, Gas & Electric Company, Hampton, Va.—The Newport News & Hampton Railway, Gas & Electric Company has filed an application with the Virginia State Corporation Commission to increase the authorized capital stock from $2,375,000 to $4,000,000. Of the present $2,375,000 of stock, $1,250,000 is 6 per cent cumulative preferred and $1,125,000 common. All of the common shares have been issued and there are outstanding $1,000,000 of the preferred.

Puget Sound Traction, Light & Power Company, Seattle, Wash.—Lee, Higginson & Company, New York, N. Y., are offering for subscription $2,000,000 of Puget Sound Traction, Light & Power Company 6 per cent mortgage gold bonds, due Feb. 1, 1919, at 98⅝ and interest, yielding 7 per cent. The bonds are a first mortgage on more than 24 per cent of the company's 108,500-hp. installed hydroelectric power capacity. They are also a mortgage, subject to prior liens, upon all other property, including transmission lines, 34,400 hp. in steam power plants operating or near completion, and 496 miles, as single track, of street and interurban railway. The present issue provides funds for 34,500 newly installed hydroelectric horsepower of the total 142,900-hp. steam and hydroelectric power capacity. Following the outstanding $10,057,000 of bonds of this issue, there are preferred and common stock having a market value, based on present quotations, of more than $13,000,000.

Seattle (Wash.) Municipal Railway.—During the month of July the revenue of Division A of the Seattle Municipal Railway was $6,397, as compared with $1,730 for July, 1916. The increase during July of this year was due largely to the strike on the lines of the Puget Sound Traction, Light & Power Company, which lasted eighteen days. Division A parallels the northbound lines of the Puget Sound Traction, Light & Power Company for a considerable distance and serves a portion of the same territory. During the strike the revenues of the municipal line increased more than $300 a day. The operating expenses of Division A during the month were $3,999, as compared with $1,869 for same month last year. During the month the revenue from Division C was $1,961, as compared with $2,876 for July, 1916. The operating expenses of Division C for July, 1917, were $2,833, as compared with $2,736 last year. During July $1,450 was expended for construction work on Division A; $2.80 was spent for construction on Division C.

Electric Railway Monthly Earnings

Period	Operating Revenue	Operating Expenses	Operating Income	Fixed Charges	Net Earnings
BATON ROUGE (LA.) ELECTRIC COMPANY					
1m., June, '17	$18,373	*$9,962	$8,411	$3,524	$4,887
1 " " '16	17,551	*8,303	9,248	3,492	5,756
12 " " '17	222,151	*107,817	114,334	42,307	72,027
12 " " '16	203,811	*105,018	98,793	34,933	63,860
BROCKTON & PLYMOUTH STREET RAILWAY, PLYMOUTH, MASS.					
1m., June, '17	$11,103	*$11,448	†$345	$1,247	†$1,592
1 " " '16	10,733	*9,388	1,345	1,104	241
12 " " '17	125,562	*119,022	6,540	13,796	†7,256
12 " " '16	118,880	*101,051	17,829	13,319	4,509
CAPE BRETON ELECTRIC COMPANY, SYDNEY, N. S.					
1m., June, '17	$37,078	*$26,424	$10,654	$6,552	$4,102
1 " " '16	30,946	*19,045	11,901	6,552	5,349
12 " " '17	425,543	*253,057	172,486	78,741	93,745
12 " " '16	381,701	*223,402	158,299	78,611	79,688
COLUMBUS (GA.) ELECTRIC COMPANY					
1m., June, '17	$83,126	*$31,987	$51,139	$28,977	$22,162
1 " " '16	67,952	*27,808	40,144	28,649	11,495
12 " " '17	988,222	*373,889	614,333	342,303	272,030
12 " " '16	782,754	*332,320	450,434	344,143	106,291
DALLAS (TEX.) ELECTRIC COMPANY					
1m., June, '17	$164,780	*$105,124	$59,656	$39,979	$19,677
1 " " '16	146,620	*98,196	48,424	36,470	‡13,954
12 " " '17	2,120,448	*1,278,662	841,786	475,704	‡372,225
12 " " '16	1,901,135	*1,177,150	723,985	424,032	‡313,153
EASTERN TEXAS ELECTRIC COMPANY, BEAUMONT, TEX.					
1m., June, '17	$80,026	*$44,656	$35,370	$11,678	‡$25,425
1 " " '16	68,127	*37,077	31,050	8,863	22,186
12 " " '17	895,313	*484,742	410,571	118,805	‡296,730
12 " " '16	790,638	*413,726	376,912	106,072	270,839
EL PASO (TEX.) ELECTRIC COMPANY					
1m., June, '17	$101,371	*$66,845	$34,526	$4,653	$29,873
1 " " '16	83,157	*43,454	39,703	4,760	34,943
12 " " '17	1,216,516	*774,451	442,065	60,447	381,618
12 " " '16	1,046,570	*537,643	508,927	53,478	455,449
JACKSONVILLE (FLA.) TRACTION COMPANY					
1m., June, '17	$55,516	*$36,415	$19,101	$15,715	$3,386
1 " " '16	50,081	*33,704	16,377	15,420	957
12 " " '17	656,429	*441,399	215,030	186,756	28,274
12 " " '16	615,181	*420,015	195,166	179,273	15,893
PADUCAH TRACTION & LIGHT COMPANY, PADUCAH, KY.					
1m., June, '17	$23,652	*$17,236	$6,416	$7,472	†$1,056
1 " " '16	24,201	*22,917	1,284	7,132	†5,848
12 " " '17	309,892	*225,693	84,199	87,119	†2,920
12 " " '16	301,486	*191,154	110,332	88,440	21,892
PENSACOLA (FLA.) ELECTRIC COMPANY					
1m., June, '17	$30,147	*$15,893	$14,254	$7,729	$6,525
1 " " '16	24,320	*13,407	10,913	7,712	3,201
12 " " '17	297,414	*172,588	124,826	93,007	31,819
12 " " '16	277,248	*153,976	123,272	88,722	34,550
TAMPA (FLA.) ELECTRIC COMPANY					
1m., June, '17	$78,234	*$46,025	$32,209	$4,370	$27,839
1 " " '16	73,379	*42,418	30,961	4,396	26,565
12 " " '17	997,737	*542,852	454,885	52,255	402,630
12 " " '16	975,227	*519,656	455,571	52,255	403,316

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*Includes taxes. †Deficit. ‡Includes non-operating income.

Traffic and Transportation

Long Island Increase Denied

Commission Not Convinced that Proposal Would Increase Revenue—Believes Local Traffic Justifies Present Service

The Public Service Commission for the First District of New York has dismissed the application of the Long Island Railroad for permission to increase its fare from 5 cents to 10 cents between Flatbush Avenue and Railroad Avenue stations, and between Flatbush Avenue and East New York stations, all in Brooklyn. For some years the company has maintained a rate of 5 cents on local trains operating between Flatbush Avenue and Railroad Avenue. It has also maintained a rate of 5 cents on both local and express trains between the Flatbush Avenue station and the East New York station, provided the tickets were bought in the form of a twenty-trip book. The company proposed to increase the fare to 10 cents in each case. Commissioner Whitney in his opinion held that the company had failed to prove that the proposed increase would provide additional compensation.

Although the company contended that the 5-cent fare rate is unreasonably low under existing conditions and does not give adequate revenue in view of the high cost of service, it had in mind also to discourage local traffic in order better to care for the long-distance traffic and commuters' needs. Evidence which was used as a basis for the commission's decision showed that passenger traffic had increased greatly in recent years and that a very large increase in traffic at the Railroad Avenue station followed the reduction of the fare from 10 cents to 5 cents, which was made a few years ago. In view of the probable future increase in the density of traffic, the commission stated that the company may have to consider the desirability of departing from the present effort to operate trains on the Atlantic Avenue division upon the system of a trunk line railroad and adopt the plan of operation of a rapid transit line on an interval basis, with trains running at such frequency as the track capacity and terminal facilities of the line will permit.

Autos Must Yield Right of Way

This Decision Was Reached by California Supreme Court in Suit for Damages from Collision with Electric Railway Car

A case which establishes an important precedent in the matter of rights of way at points where highways cross electric railways at grade was recently decided in California. The case is known as Arnold, et al. vs. San Francisco-Oakland Terminal Railways and was first tried in the Superior Court of Contra Costa County at Martinez, Cal. The jury rendered a decision against the traction company for damages amounting to $30,000. The company appealed to the Supreme Court of California, which reversed the findings of the lower court.

The case involved the question of the negligence of the company and the contributory negligence of an automobile driver, together with a discussion of the last-clear-chance doctrine as applied to such collisions. The automobile, proceeding in a westerly direction along a public lane, collided at the intersection of the lane and a public highway with an electric railway car proceeding in a northerly direction along its tracks laid in the highway. The automobile driver was killed in the collision.

The court found that, although evidence was sufficient to sustain a finding that the negligence of the defendant was an operative cause of the collision, the plaintiffs were not entitled to recover because the lack of ordinary care or skill on the part of the automobile driver was a directly contributing cause of the accident. The court held that from the evidence it was apparent that the automobile driver saw the car coming and that he had sufficient time and space to turn to the south or to the north, or to stop and avoid danger if he had possessed ordinary skill and had used ordinary care. The fact that the collision resulted convicted him of the lack of either one or the other.

HOW THE COURT ARGUED

The opinion of the court bearing upon the respective obligations of the motorman and of the automobile driver in the discussion of the last-clear-chance principle seems to be of great significance, however. It was pointed out by the court that an electric railway car must be operated upon the rails and hence has the better right to that space, to which others must yield when necessary; that it was the duty of the automobile driver upon approaching the crossing to give way to the car which was about to pass at the same time, if, to avoid a collision, it was necessary, since the automobile driver could do so and the car could not; that the motorman was not required to presume that the automobile driver would not perform this duty, but had the right to presume that he would stop or turn aside; that so long as it appeared that the automobile driver with reasonable care could stop his automobile or turn it to one side or the other and there were no obvious indications that he might not do so the motorman had the right to assume that the automobile driver would do so and upon that assumption could proceed.

The decision seems to place squarely upon the drivers of automobiles the obligation to turn out of the way or stop and thus provide to an electric railway car the right of way where any danger of collision is imminent.

Lehigh Traction Fare Hearings

The application of the Lehigh Traction Company, Hazleton, Pa., for authority to raise its rates, is being considered by the Pennsylvania Public Service Commission in Wilkes-Barre. A hearing on the case was held on Aug. 10 and resumed on Aug. 17. The company has asked for a general increase in its zone rate to 6 cents. This is one of the first cases coming before the commission of that State, and many details involved are necessarily being worked out.

From the company's statement submitted by General Manager Houck it was shown that a total deficit exists of $12,594. It is stated that the cost of materials has increased from 10 to 500 per cent, and the price paid for power bought from the Wilkes-Barre & Hazleton Railway has been raised from 1.38 cents to 1.72 cents per kilowatt-hour since last year. Traffic has not increased materially since 1893, as the population of the district has remained virtually unchanged. It is said that the road has never paid dividends.

Seattle Rate Increase Suspended

Public Service Commission Takes This Action Following Complaint by City—Jurisdiction of Commission Questioned

The Public Service Commission of Washington has ordered that the effective date of the application for higher rates by the Puget Sound Traction, Light & Power Company, Seattle, be suspended twenty days from Aug. 12. On July 11 the company filed with the commission a supplement to the statement of fares filed under date of June 6, 1911, which, in effect, after thirty days would cancel all fares less than 5 cents within the city of Seattle except the fares of school children. The city made a complaint to the commission, charging that the rates named in the supplement were unfair, unjust and unreasonable. Its protest was noted in the ELECTRIC RAILWAY JOURNAL for Aug. 18, page 289.

The city, in its action, questioned the right of the commission to approve the company's petition on the ground that the proposed increases are not in accordance with the terms of its franchise. Commissioners Lewis and Spinning, as a majority of the members, issued the suspending order. Chairman E. F. Blaine, who was absent, is expected to vote against the commission's assuming jurisdiction in the dispute. Commissioner Lewis signed the order under an expression of doubt as to the commission's jurisdiction over issuance and withdrawal of commutation tickets, but he held that suspension of the proposed tariff was necessary to prevent disturbance of conditions until the city's formal protest can be heard. Final decision in this case is expected to determine whether a franchise requirement can be taken under State jurisdiction in a matter affecting rate regulation.

San Francisco Suburban Rate Hearing

Two Roads Petition to Raise Rates—City of Oakland May Oppose Action

The Railroad Commission of California has set Sept. 5 as the date on which it will hear the applications of the Southern Pacific Company and the San Francisco-Oakland Terminal Railways, Oakland, Cal., for permission to increase suburban fares. The Southern Pacific has two applications before the commission, one for the Creek Route, or Broadway ferry service, and the other for the ferry and train service in Alameda County. The Creek Route fare is 5 cents and the company wants to establish a basis of 10 cents. The rates asked are for both individual one-way and commutation fares.

The application of the Key Route, an outline of which was published in the ELECTRIC RAILWAY JOURNAL for June 16, page 1116, alleges, as does the Southern Pacific's application, that the present fares are "unduly low, non-compensatory and confiscatory." Both companies have informed the Railroad Commission that they are losing large sums of money yearly and that with the increased cost of labor and materials they have every prospect of greater deficits The Key Route states that its deficit for sixteen months' operation is nearly $500,000, and that of the Southern Pacific for 1916 is said to have been more than $557,000.

Mayor John L. Davie of Oakland has brought before the City Council a resolution authorizing the city attorney to use every effort to defeat the application of the Southern Pacific Company. He pointed out that the East Bay cities would be seriously injured by the proposed rate increase and claimed that the rates are now sufficiently high to afford the company adequate profit. The company has failed to live up to franchise agreements, he claims. and has not paid for its ferry rights and wharf privileges. He also instituted an investigation of the possibility of operating a municipal ferry system on the present 10-cent fare basis.

Atlantic City Jitneys Get Concession.—The Atlantic City Jitney Association has received permission from the City Commission to operate jitneys on Atlantic Avenue, Atlantic City's busiest thoroughfare, between Rhode Island and Albany Avenues. The jitneys were ruled from operating on this street some time ago by city ordinance.

Company Publication Discontinued.—The Bloomington & Normal Railway & Light Company, Bloomington, Ill., has announced that, as a part of its general program of economy that must be enforced in order to meet the unusual conditions brought about by the war, *The B. & N. Light*, the company's monthly publication, would be temporarily suspended.

Pacific Electric Wants Auto Bus Line.—The Pacific Electric Railway, Los Angeles, Cal., has filed with the State Railroad Commission an application for permission to operate a motor bus line between San Bernardino and Highland and intermediate points. It is proposed to charge 25 cents between the two above-mentioned points and proportionate rates for smaller distances.

Salt Lake City Fare Case Postponed.—The hearing on the application of the Utah Light & Traction Company, Salt Lake City, for permission to increase fares on its interurban lines, to discontinue the sale of fifty tickets for $2 and to charge 1 cent for transfers has been postponed by the Public Utilities Commission until Aug. 28. The new fare schedule as petitioned by the company was to become effective on Aug. 29.

Doherty Men May Cancel Annual Meeting.—Conditions resulting from the war may make it impracticable to hold the annual gathering of Doherty traction men at Toledo, Ohio, this year. R. F. Carbutt, in charge of the Doherty railway companies, is going ahead with the preparations for the convention, however, which, according to present plans, is expected to meet on Oct. 3.

Trenton Adops Car-Riding Rule.—The city authorities of Trenton, N. J., have adopted a resolution prohibiting electric railways from permitting persons to ride on the fenders, bumpers or inside running boards of cars under a penalty of $100 fine for each offense. A fine of $10 has been fixed for the offending individuals. This action is said to be intended to compel the companies to operate more cars during rush hours.

Six-Cent Fares Wanted in Scranton.—The Scranton (Pa.) Railway has asked the Public Service Commission of Pennsylvania for permission to increase its fares in all 5-cent zones to 6 cents, effective Sept. 7. Several trade unions have already protested and the traffic bureau of the Board of Trade is now planning to oppose the movement before the commission on the ground that the net earnings of the company are sufficient to meet the increased expenditures upon which the company bases its application for the right to raise its fare.

Express Service on Schenectady Railway.—General Manager James P. Barnes of the Schenectady (N. Y.) Railway has announced that that company will establish an express package service on its interurban lines between Schenectady and Troy, Schenectady and Albany and between points along the Saratoga division. Frank Walsh has been appointed general express agent to organize the new department. Mr. Walsh for several years was superintendent of the Electrical Express Company, which will be taken over in the Schenectady district by the railway company.

To Expedite 6-Cent Fare Collection.—In order to eliminate delays while making change in collecting the additional cent on roads where the 6-cent fare has been granted, it has been suggested that the fare be paid with 11 cents to avoid the necessity of 4 cents in change. The Bay State Street Railway, Boston, Mass., has published the following notice in this connection: "In the interest of Faster Service. Please have exact fare ready. If you do not have the exact fare, but have a cent and a dime, please give the 11 cents to the conductor and receive a nickel in change."

Headlight Evil Before Louisville Automobile Club.—With a view to working out a means of controlling the use of glaring headlights on automobiles in Louisville, Ky., the Louisville Automobile Club will take out warrants against violators of the anti-glare ordinance. These will then be prosecuted with expert witnesses. This plan has been agreed on between the officials of the club and the police authorities of the city. It is one of several suggestions which have been put forth to provide more adequate traffic regulation in Louisville and referred to previously in the ELECTRIC RAILWAY JOURNAL.

Front-End Unloading Encouraged.—Electric railways in Dallas, Tex., have inaugurated a campaign for front-end unloading of passengers. This action is taken in co-operation with the police department as a safety measure and to assist in the enforcement of traffic rules. The City Commission had drafted an ordinance requiring front-end unloading from cars, but it was decided to make the matter largely voluntary on the part of passengers and educate them to the practice. Posters for this purpose will be placed in all cars and the rule will be enforced by conductors except in crowded cars when its enforcement would delay traffic. It is thought that passengers leaving the car by the front entrance would oftentimes avoid fatal accidents by waiting until a car coming in the opposite direction has passed before crossing the track.

Jitney Men's Claims Precipitate Survey.—An investigation into the facilities and service of the Harrisburg (Pa.) Railways will be made by the Public Service Commission of Pennsylvania as a result of the complaint of that company against sixty-seven jitneys operated in that city. The jitney men are being allowed time to amend their petitions for certificates of public convenience, setting forth definite routes over which they propose to operate. In past hearings the jitney men have contended that the cars of the company are unduly crowded and the facilities are inadequate. It is in regard to these claims that the commission proposes to conduct its investigation. The survey will include a classification of routes, tabulation of traffic, extension of lines and the condition and character of facilities and tracks.

Court Upholds Seattle Jitney Men.—The objections of about fifty defendants in the suit brought by the Puget Sound Traction, Light & Power Company, Seattle, Wash., against Earl W. Arnold and ninety-seven other jitney drivers, were recently sustained in the United States District Court by Judge Jeremiah Neterer, who held that they could not be compelled to answer interrogatories on the ground that their answers might incriminate them. A temporary injunction had been issued forbidding the jitney men from operating in competition with the railway company. Answers to the interrogatories were sought for the hearing of the case on its merits, and the application of the company to make the temporary injunction permanent. Objections were made by fifty of the defendants on the grounds that the bill of complaint waives the filing of answers under oath, also that the replies sought concerned matters set out in the complaint which had been denied by each of the defendants.

United Railways Bonus System Ready.—The bonus system for the benefit of men in the transportation department of the United Railways, St. Louis, Mo., which was referred to in this paper for July 28, page 165, will be put into effect on Sept. 1. Elaborate preparations have been made and preliminary tests tried so that everything would be in readiness by that date. Superintendent Cameron has been making daily talks to the men at the different carhouses, explaining the details of the system. The plan is being used successfully in Milwaukee, and the United Railways hopes by means of it to reduce its annual expense for damage claims which for last year amounted approximately to $720,000. It is intended to make the men "more careful, more efficient, more courteous and more watchful of passengers' welfare," besides increasing their income over the present wage scale. The details of the bonus system are set forth in the August issue of *United Railways Bulletin*, published by the company.

Newspapers Can Help the Railways.—An advertisement in the Aug. 12 edition of the Elmira (N. Y.) *Telegram*, similar to that reproduced on page 228 of the Aug. 11 issue of the ELECTRIC RAILWAY JOURNAL, sets forth the reasons why the need for electric railways in present times approaches indispensability. It explains why their service is so closely allied with modern business and social life and that steam roads are gradually shifting local traffic upon the electric interurban. "Penny wise and pound foolish" is said to characterize those who would deny a 1-cent increase in fares to railways that are suffering financially from conditions brought about by the war. The *Telegram* has opposed the jitney as being an unwarranted competitor and recently said editorially that those "who helped the jitney and rode in it helped very materially to bring about the financial conditions of the electric railway which compels it now to go before the Public Service Commission and ask permission to raise its fares."

Pennsylvania Grade-Crossing Accidents Summarized.—The increase in the number of accidents during the year ended June 30 at grade crossings in Pennsylvania is shown in the annual report issued recently by the Bureau of Standards of the Public Service Commission of that State. The increase was greater at the protected crossings of the steam railroads than at the unprotected crossings as compared with the accidents of the previous year. The report shows that automobiles lead the list of vehicles that were struck. During the year 236 automobiles, 171 wagons and 130 pedestrians were struck at the crossings, and as a result of the collision 201 persons were killed and 395 were injured. Of the fatalities, eighty-five were occupants of automobiles, thirty-six of wagons and eighty were pedestrians. Of those injured 216 were occupants of automobiles, 129 of wagons, while only fifty pedestrians were injured. On electric railways of the State, 188 persons were killed, as against 174 in the year previous and 3219 were injured as against 2858 for the year before.

Personal Mention

William A. Magee, a member of the Public Service Commission of Pennsylvania, has resigned.

V. G. Corkins has been appointed superintendent of the North Coast Power Company at Chehalis, Wash.

Louis T. Klander has been appointed construction engineer of the Philadelphia (Pa.) Rapid Transit Company to succeed W. C. Kerr.

Charles J. Witherwax, general passenger agent of the Schenectady (N. Y.) Railway, has been appointed acting claim agent as successor to C. J. McAleer, resigned.

Howard H. George is now captain of engineers, Officers' Reserve Corps, instead of major, as reported last week. Mr. George was formerly a member of the engineering staff of the Public Service Railway, Newark, N. J.

D. E. Crouse, chief engineer of the Auburn & Syracuse Electric Railroad, Auburn, N. Y., has resigned to accept a similar position with the Rochester, Syracuse & Eastern Railroad, with headquarters at Newark, N. Y.

George G. Morse, engineer maintenance of way for the El Paso (Tex.) Electric Railway, has been transferred to Houston by the Stone & Webster Management Association to be superintendent of the Galveston-Houston Electric Railway.

James R. Cochrane, formerly master mechanic of the Shore Line Electric Railway, Saybrook, Conn., has been appointed master mechanic of the Richmond Light & Railroad Company, New Brighton, N. Y., succeeding M. J. Brennan.

Frank Walsh has been appointed general express agent of the Schenectady (N. Y.) Railway to manage a new express service department being established by that company. Mr. Walsh was formerly superintendent of the Electrical Express Company.

W. C. Kerr, heretofore construction engineer for the Philadelphia (Pa.) Rapid Transit Company, has become connected with the engineering staff of the Republic Railway & Light Company at New York City. Mr. Kerr's work will have especially to do with car construction.

G. Z. Ledford has been promoted to foreman at the Cass Avenue carhouse of the United Railways, St. Louis, Mo., to succeed Joachim Kretlow. Mr. Ledford was a conductor on the Cass Avenue line. He was born in Ralls County, Mo., in 1881 and has been in the service of the United Railways for eleven years.

Charles J. McAleer, claim agent of the Schenectady (N. Y.) Railway, has resigned to accept an appointment as aide and secretary to Dr. Arthur W. Elting of the Schenectady-Albany-Troy Base Hospital unit, and will accompany it to France in September. Mr. McAleer has been with the company as claim agent for about ten years.

T. F. Grover, who for the last ten years has been general manager of the Terre Haute division of the Terre Haute, Indianapolis & Eastern Traction Company, has resigned to accept the appointment of vice-president and general manager of the Chicago, South Bend & Northern Indiana Railway and the Indiana & Michigan Railway.

Fred R. Peck has joined the staff of the Bay State Street Railway, with headquarters at Boston, Mass., as an assistant in the statistics department. Mr. Peck is a graduate of Union College, Schenectady, N. Y., and prior to going to Boston was employed for several years in the transportation department of the Indianapolis Traction & Terminal Company, Indianapolis, Ind.

C. F. W. Wetterer has been appointed by the Stone & Webster Management Association to succeed the late J. C. Woodsome as manager of the Tampa (Fla.) Electric Company. Mr. Wetterer is a graduate of the Massachusetts Institute of Technology, class of 1906, and has been connected with Stone & Webster since his graduation. During the last year he has been employed in the southwestern department.

Joachim Kretlow, who has been foreman of the Cass Avenue carhouse of the United Railways, St. Louis, Mo., for a quarter of a century, was recently retired on a pension. Mr. Kretlow was born in Germany in 1847. He went to St. Louis in 1872 and has been in the service of the United Railways and its predecessors continuously for forty-one years. He began as driver of one of the old horse cars on the Mound City line.

George K. Weeks, formerly president of the San Francisco-Oakland Terminal Railways, Oakland, Cal., was recently elected a vice-president of the National City Company, New York. Mr. Weeks is located at San Francisco and will be in direct charge of the business west of the Rocky Mountains. He was elected president of the San Francisco-Oakland Terminal Railways in September, 1914, to succeed W. A. Bissell and resigned two years later to become president of the National City Company of California.

C. Colburn, general superintendent of the Norfolk and Berkley divisions of the Virginia Railway & Power Company, Richmond, has tendered his resignation, effective Sept. 1. Mr. Colburn has had an unusual career with that company and is held in high esteem by the officials and employees. He became connected with the company as motorman in 1902 and in 1907 was made dispatcher of the Atlantic Terminal division, running to the Jamestown Exposition. As a result of his work in that capacity he was appointed superintendent of the Berkley division the following year, and was transferred to Norfolk on Jan. 1, 1914, as assistant superintendent of the Norfolk and Berkley divisions. He was promoted to general superintendent in August, 1915. E. A. Bishop, superintendent of the Portsmouth division, will be put in temporary charge of Mr. Colburn's work.

John H. Cain, superintendent of employment and instruction for the Rochester Lines of the New York State Railways, has been appointed superintendent of transportation of the Shore Line Electric Railway, Norwich, Conn. Mr. Cain began railway work in 1895 with the West Shore Railroad. He soon left the steam railroad field and entered the train service of the Rochester (N. Y.) Railway. After several promotions he was made chief inspector and instructor of motormen, and in 1905 he became connected with the Rochester & Eastern Rapid Railway. The following year Mr. Cain entered the employ of the Hudson Valley Railway as chief despatcher and later was appointed assistant to the general manager, reorganizing the operating department and assisting in the general rehabilitation of the property. He next became superintendent of the Glens Falls division in charge of operation and shops. In 1908 he became superintendent for the Buffalo, Lockport & Rochester Railway, which was at that time nearing completion. Mr. Cain organized the operating department of that company and in 1910 was appointed general superintendent. In 1913, soon after a change in the ownership and management of the company, he went to Edmonton, Alta., to prepare a valuation report on one of the roads in that city. He was next employed by the Ontario Railway & Municipal Board to assist Charles R. Barnes in a traffic survey of the Toronto electric railway system, and returned to the New York State Railways in 1916 to do inventory work in the electrical engineering department. He was later appointed assistant superintendent of transportation of the Rochester Lines of that company and was made superintendent of employment and instruction last April.

Obituary

Frank W. Dana, at one time interested in electric railway operation in Lewiston, Me., died recently at his home in Brookline, Mass., at the age of sixty-four. Mr. Dana received his early education in Lewiston, where he afterward practised law. He studied at Bowdoin College and was admitted to the bar at twenty-eight. He later obtained the controlling interest in the Lewiston horse-car line, now one of the properties controlled by the Cumberland County Power & Light Company, and largely through his influence transportation facilities in that locality were extended. While he was president of the road it was electrified. Mr. Dana spent the later years of his business life in Boston.

Construction News

Construction News Notes are classified under each heading alphabetically by States.

An asterisk (*) indicates a project not previously reported.

RECENT INCORPORATIONS

City & Leeds Railway, Kansas City, Mo.—Incorporated to construct a 3-mile line from Thirty-first Street to the city limits, via Leeds. The Clinton Construction Company, Kansas City, has the contract. Among the incorporators are C. H. Witthar and Howard Ross. Willard E. Winner, president. [June 2, '17.]

***Fogelsville & Trexlerton Electric Company, Topton, Pa.**—Incorporated to construct an electric railway. Capital stock, $5,000. The company will also supply light, heat and power to Upper Macungie Township, Lehigh County. Incorporators: W. J. Martin, Topton, and D. S. Martin and S. Rothermel, Reading.

FRANCHISES

Augusta, Ga.—The Augusta-Aiken Railway & Electric Corporation has received a franchise from the City Council for the construction of a line through Druid Park Avenue to connect its Summerville and Monte Sano lines.

Flint, Mich.—The Detroit United Railway has received a franchise from the City Council to construct an extension on Industrial Avenue to Steward Avenue and on Detroit Street from Anne Street to Dayton Street.

Walkerville, Mich.—An election will be held in the near future in Walkerville to grant the Sandwich, Windsor & Amherstburg Street Railway an extension of its franchise.

St. Louis, Mo.—The St. Louis & East St. Louis Railway has applied to Mayor Kiel and the Municipal Bridge Commission for a license to operate passenger and express cars over the free bridge at St. Louis. The company stated that it had ordered its equipment and is laying its tracks in East St. Louis to connect with the bridge, and would be ready for operation within thirty days. [Aug. 4, '17.]

Dayton, Ohio.—The Peoples Railway has received a franchise from the City Council to construct a line from its present terminus at Fairview to the corporation line.

Dewar, Okla.—At an election recently held in Dewar the electors voted to grant the Henryetta-Dewar-Kusa Traction Company a franchise to construct an electric railway in Dewar. [Aug. 11, '17.]

Denton, Tex.—The County Commissioners' Court of Denton County has granted a franchise to the Dallas Northwestern Traction Company for the construction of a line in Denton County. E. P. Turner, Dallas, president. [July 21, '17.]

Houston, Tex.—The Houston Electric Company has received a franchise from the City Council to construct its proposed extension to Camp Logan.

Port Arthur, Tex.—It is reported that the Port Arthur Traction Company will ask the City Council for a franchise to construct a line on Beaumont Avenue from Proctor Street to Tenth Street and thence to DeQueen Boulevard.

Waco, Tex.—It is reported that franchises will probably be granted by the City Council to the Texas Electric Railway for three street car lines to Camp MacArthur.

Salt Lake City, Utah.—The Salt Lake, Garfield & Western Railway has asked the Public Utilities Commission of Utah for permission to extend its lines from Saltair to Garfield, about 3 miles.

TRACK AND ROADWAY

Pacific Electric Railway, Los Angeles, Cal.—In compliance with an ordinance recently passed by the City Council of Rialto, the Pacific Electric Railway is installing automatic signals at the street crossings within the city limits.

Southern Pacific Railroad, Sacramento, Cal.—The Railroad Commission of California has authorized the Southern Pacific Railroad to transfer to the Pacific Gas & Electric Company an electric railway operating 1½ miles along the Riverside Road in Sacramento, from Y Street, south.

Municipal Railways of San Francisco, San Francisco, Cal.—The Board of Supervisors having decided that outer tracks shall be laid on upper Market Street, City Engineer O'Shaughnessy has stated that actual construction work would begin and soon as possible. Bids for the new tracks will be advertised for by the Board of Public Works at once. Specifications for track special work still to be constructed, including fifteen crossovers and other parts costing approximately $40,000, have been prepared, and bids will be received by the Board of Public Works on Aug. 29.

Macon Railway & Light Company, Macon, Ga.—Work has been begun by the Macon Railway & Light Company on the construction of an extension on Cherry Street to the Macon terminal station.

Caldwell (Idaho) Traction Company.—This company will construct an extension from Caldwell to Huston and McNeil, about 3 miles.

Cumberland County Power & Light Company, Portland, Me.—New construction and repair work being done by the Cumberland County Power & Light Company in Portland will involve an expenditure of more than $60,000 and will include relaying tracks and placing overhead wires underground, conduits now being built for that purpose.

United Railways & Electric Company, Baltimore, Md.—Automatic electric signals are being installed by the United Railways & Electric Company upon its suburban line to Sparrows Point and Bay Shore Park.

Berkshire Street Railway, Pittsfield, Mass.—Operation was begun by the Berkshire Street Railway on its extension from Lee to Huntington on Aug. 16.

Detroit (Mich.) United Railway.—Work has been begun by the Detroit United Railway on the construction of a double-track line from Ferry Park Avenue west to Linwood Avenue and on Linwood Avenue north to Joy Road and an extension on Warren Avenue north on Epworth Boulevard to Dailey Avenue, on Dailey Avenue to Highfield Avenue and on Highfield Avenue to Grand River Avenue. The contract for excavating and grading on these lines has been awarded to Closser Brothers. Within a few weeks the Trumbull line service will be extended northward from the present terminal to Ferry Park Avenue and Twelfth Street. A new "Y" is being constructed at Ferry Park and Twelfth Street for the turning of the cars at that point.

Duluth (Minn.) Street Railway.—Work has been begun by the Duluth Street Railway on its Kenwood extension. Double track will soon be installed along the Morgan Park line. Work is being rushed on the subway in Morgan Park and it is expected that this will be ready for the company to lay its tracks soon after Oct. 1.

Claremont Railway & Lighting Company, Claremont, N. H.—This company is reconstructing its tracks on Main Street with 7-in. T-rail in place of the present 4½-in. T-rail.

Freehold, N. J.—The project to build a trolley line from Freehold to the seashore resorts along the Jersey coast has been abandoned, according to a report made to the Chamber of Commerce. The committee, of which W. J. Landsley was chairman, secured subscriptions to the stock to the amount of $125,000, $25,000 of which was in cash. The subscriptions were secured from property owners of Freehold and Howell townships. The committee was unable to get residents of Long Branch and Asbury Park to co-operate and decided to abandon the project. [Feb. 10, '17.]

Brooklyn (N. Y.) Rapid Transit Company.—Track connections are being made in Corona between the Junction Avenue line of the Brooklyn Rapid Transit Company and the Jackson Avenue line of the New York & Queens County Railway for the operation of cars from College Point and Flushing to the elevated station at Junction Avenue, Corona. It is expected that the connection will be ready for service by Sept. 1.

Toledo Railways & Light Company, Toledo, Ohio.—Announcement has been made by the Toledo Railways & Light Company that it will double-track its Dorr Street line in connection with paving to be done by the city. The improvement will cost about $90,000.

Mahoning & Shenango Railway & Light Company, Youngstown, Ohio.—Three important extensions are now under way by the Mahoning & Shenango Railway & Light Company. The new Youngstown-Niles line, extending for 7½ miles over private right-of-way from the end of the Steel Street line in Youngstown to the Mineral Ridge line on the southern side of Niles, will be the most important addition to the system in recent years. Contracts for grading and other work were let early in July. The other lines being constructed are an extension to the Buhl Farm and the East Hill in Sharon and an extension of the Mahoning Avenue line in Youngstown from its present terminus to the city's western limits. At the same time the rebuilding of the lines in Boardman Street, Youngstown, and State Street, Sharon, add materially to the amount of trackage being laid.

Pacific Power & Light Company, Astoria, Ore.—To take care of 800 men to be employed at the McEachern Ship Company's plant on Youngs River, as well as other manufacturing plants in the vicinity, it is likely that the present terminus of the street car line in the east end of Astoria will be extended about 1 mile, at a cost of about $20,000.

Titusville (Pa.) Traction Company.—An important step has just been taken looking toward a trolley line across the county to connect Titusville and Cambridge Springs. It has been arranged to change the route of the Pennsylvania Railroad through Hydetown, thus eliminating six grade crossings in that town. It is expected that the work will be accomplished within the next two years. It is said that after the elimination of the grade crossings at Hydetown the Pennsylvania Railroad and the Titusville Traction Company will join in the building of a trolley road from Titusville to Cambridge Springs, giving quick passenger service to Meadville and Erie.

Dallas Southwestern Traction Company, Dallas, Tex.—The Creek Construction Company of Sapulpa, which has the contract to build the proposed line of the Dallas Southwestern Traction Company from Dallas to Cleburne, will begin construction at once. F. R. Perkins, 303 Gaston Building, Dallas, is chief engineer. [June 23, '17.]

Houston (Tex.) Electric Company.—Work has been begun by the Houston Electric Company on the construction of an extension to Camp Logan. The route selected is from the Washington Avenue line, on Bethje Avenue to Ariel Street, out Ariel Street to the main entrance of the camp site. The line will run just inside the army grounds and a loop inside will be made.

Port Arthur (Tex.) Traction Company.—It is reported that the Port Arthur Traction Company will soon begin the construction of a branch line in the northern part of the city.

Interstate Electric Corporation, San Angelo, Tex.—Work has been begun by this company on the construction of its line in San Angelo. It is expected that the system will be placed in operation about Nov. 1. [May 12, '17.]

Texas Electric Railway, Waco, Tex.—The City Commission has authorized the Texas Electric Railway to remove a section of track from the Provident Heights line to secure some of the material needed in making extensions to Camp MacArthur.

Gray's Harbor Railway & Light Company, Aberdeen, Wash.—Work has been begun by the Gray's Harbor Railway & Light Company double-tracking its line from the end of the Eighth Street bridge to beyond the passing track on Simpson Street. The curve at Simpson and Riverside will also be straightened. The work will involve the laying of several hundred feet of new track and moving of track now extending along the dyke.

Tacoma (Wash.) Municipal Railway.—The city of Tacoma will shortly call for bids for the construction of the municipal car line across the tideflats to the Todd shipbuilding plant, about 1 mile. All material, which has been purchased recently, will be furnished by the city.

SHOPS AND BUILDINGS

New York Municipal Railway, Brooklyn, N. Y.—The Public Service Commission for the First District of New York has announced that it has sent to the Board of Estimate for approval a modifying agreement of the contract under which the Flinn, O'Rourke Company, Inc., is constructing the tunnel from Whitehall Street, Manhattan, to Montague Street, Brooklyn, and on to the Fourth Avenue Subway, under which an additional station is provided to be located at Lawrence and Willoughby Streets. This station is designed to accommodate passengers going to the downtown shopping district of Brooklyn which would not have been reached so directly by the station at the Flatbush Avenue extension and by the one at Montague Street. The commissioners also ordered a public hearing to be held on Sept. 17 at which this and various other matters connected with the general problem of the third-tracking and reconstruction of the Fulton Street elevated line will be considered. These topics include the Ashland Place connection between the Fulton Street line and the Fourth Avenue subway, the reconstruction of the Bridge Street station of the Myrtle Avenue elevated line and plans for a new station at the Williamsburg Bridge Plaza.

Eastern Pennsylvania Railways, Pottsville, Pa.—Plans are being made by the Eastern Pennsylvania Railways to construct a one-story addition, 75 ft. x 100 ft., to its repair shops at Palo Alto.

POWER HOUSES AND SUBSTATIONS

Pacific Gas & Electric Company, Sacramento, Cal.—It is reported that the Pacific Gas & Electric Company will spend about $50,000 for repairs on its plant in Oroville in the next few months.

Connecticut Company, New Haven, Conn.—The Public Utilities Commission of Connecticut has granted the Connecticut Company permission to erect power cables along the New Haven-North Haven line through Montowese. These transmission lines will be equipped for transmitting energy at 11,000 and 33,000 volts.

Washington & Old Dominion Railway, Washington, D. C.—The power house of the Washington & Old Dominion Railway at Rosslyn will be closed down and the company will purchase power from the Potomac Electric Power Company to operate the line.

Chicago, Milwaukee & St. Paul Railway, Chicago, Ill.—The City Council of Tacoma is considering a proposal to furnish the Chicago, Milwaukee & St. Paul Railway energy to the amount of 2000 kw. daily. This is the amount, it is estimated, that the company will require within the city limits when it has completed changing its railway through the state from steam to electric operation.

Interborough Rapid Transit Company, New York, N. Y.—This company plans to construct a new substation, 50 ft. x 100 ft., on Nostrand Avenue, Brooklyn, to cost about $50,000.

Eastern Pennsylvania Railways, Pottsville, Pa.—Plans are being made by the Eastern Pennsylvania Railways for the construction of a new power plant at Palo Alto to replace the one recently destroyed by fire. The work will be in charge of The J. G. White Engineering Corporation, 43 Exchange Place, New York, N. Y.

West Chester (Pa.) Street Railway.—Work has been begun on the construction of an addition to the power house of the West Chester Street Railway in Lenape. The new building will be equipped with a large transformer, which will be used in connection with the new high-tension system connecting all three of the electric power plants of the company at Lenape, Downington and Coatesville.

Rutland Railway, Light & Power Company, Rutland, Vt.—Foundations for a 1000-hp. water wheel are being built at the East Pittsford power station of the Rutland Railway, Light & Power Company. This will increase the output of the station to 4000 hp. Machinery has already been purchased.

Wisconsin Valley Electric Company, Wausau, Wis.—This company is installing a new steam plant as accessory to the existing plant on Plumer's Island. The cost is estimated at $90,000.

Manufactures and Markets

Discussions of Market and Trade Conditions for the Manufacturer, Salesman and Purchasing Agent

Rolling Stock Purchases Market Quotations Business Announcements

Future Car Deliveries

Four to Six Months Required to Complete Present Orders—Raw Material Market and Government Orders Will Control Future Deliveries

The majority of car manufacturers are not taking any orders for deliveries to be made this year. Orders are being accepted, but all delivery dates, in case they are mentioned at all, are subject to war clauses and are dependent directly upon the receipt by the car manufacturers of raw materials. General conditions in the industry were discussed in the Aug. 11 issue of the ELECTRIC RAILWAY JOURNAL, but little attention was given to the matter of deliveries, which are most important to prospective purchasers. An indication of what the car builders can do is apparent from the deliveries that have been quoted on orders now going through the shops.

DELIVERIES QUOTED ON PRESENT ORDERS

The J. G. Brill Company, according to information given in the details of equipment for various car orders that have been printed in the Rolling Stock column of this paper, has quoted deliveries of from four to six months according to the number of cars ordered. The largest order received by this company for which details have been printed is that of the Montreal Tramways. This order was for 100 cars and delivery was placed at six months.

Deliveries being made by the Cincinnati Car Company are about the same as the above if the orders for cars being built for the New York State Railways, Rochester Lines, and for the Public Service Railway, Newark, can be taken as an indication.

Eight to eleven months is the time specified by the Pullman Company to build the 477 cars ordered by the Interborough Rapid Transit Company. The large number of cars explains why this unusually long time will be required to fill this order. These cars have been promised at the rate of five cars and ten trucks per day, beginning on Oct. 8, 1917.

Deliveries by the G. C. Kuhlman Car Company are also specified at from four to five and a half months, as noted by orders for the Mahoning & Shenango Railway & Light Company and for the International Railway.

The McGuire-Cummings Manufacturing Company has quoted five months for delivery on the order for the Gary & Interurban Railroad.

The Differential Car Company has quoted deliveries of three months on small orders for motor and trailer dump cars.

Six months delivery has been quoted by the Osgood-Bradley Company on an order for seven box-express cars for the Worcester (Mass.) Consolidated Street Railway.

Four months delivery has been quoted by the Wason Manufacturing Company on double-end freight and trailer box cars.

The St. Louis Car Company quoted five months delivery on the order recently received from the Fort Wayne & Northern Indiana Traction Company. This company has practically completed the order for 101 cars which it received from the Hodenpyl-Hardy Company about the first of the year. All of these city cars are of two standard types adopted by the Hodenpyl-Hardy engineers, one having a 28-ft. body and the other a 33-ft. body. The 33-ft. body cars are intended for use in Akron and Grand Rapids, while the other properties are being supplied with the 28-ft. body cars.

The American Car Company has also been quoting deliveries of from four to six months. This company has received an order for 141 light-weight safety cars for the Stone & Webster properties and a number of orders of this type of car have already been delivered.

In speaking of deliveries one prominent car manufacturer, in a letter under date of Aug. 16, says: "We have been building a number of cars for stock and have met with fairly good success in disposing of most of them. In regard to deliveries, we are not taking any further orders to be delivered this year. In fact, our deliveries now extend far into the latter part of the first quarter of next year. As to what effect the government wanting prices on steel plates would have on car deliveries I am unable to say, but I know it is extremely difficult to get material of all kinds, and with the government coming into the market on the scale orders have recently taken and the demands constantly increasing, car deliveries are bound to be affected adversely."

Electric Heater Equipment Prices to Be Advanced

Manufacturers on the Trail of Raw Materials Producers—Shipments Instead of Deliveries Quoted from Sixty to Ninety Days

Competition for this business has been keen and as a result no increases in prices have been announced for many months. Except where large quantities of raw materials were on hand heater manufacturers have been absorbing the difference between the present cost of raw materials and the reduced cost at which they have been sold up to the present time. An increase of 15 per cent in the cost of porcelain spools is reported to have been announced and as the other materials, including the heating elements, and castings and stamped sheet metal have been increased several times, a substantial boost in price may be expected at any time. It has been known for some time that manufacturers, while not increasing prices, have been selling heaters practically at cost and have been absorbing losses in case they were not covered by long-time contracts for raw materials.

THE TERM "SHIPMENTS" REPLACES "DELIVERIES"

Deliveries on very large orders are so far behind that in some instances the word "shipment" has replaced "delivery" in order to protect the manufacturer in case of embargoes, car shortages, etc. The government has recently placed large orders for porcelain fittings, weatherproof sockets and other electrical specialties. These take precedence over all other orders and as a result it is impossible to procure porcelain spools and those railway companies which have placed orders that are dependent upon the receipt of porcelain spools by the manufacturers may reasonably expect some delay on shipments. The potteries have been able to make fair deliveries up to the present time, but are sending out warnings that present orders will be held up in case the government increases the amounts which have been requested. The potteries are working to full capacity, but they are unable to meet the unprecedented demands. The manufacturers have had considerable trouble in obtaining stamped steel sheeting which is placed over the front of the heater where it is inclosed. The demand for stamped steel in other industries has been so great that there has been a big shortage of this material. What little is obtainable has increased 140 per cent in price. Insulated copper wire used in wiring up the heaters is another item which is giving the heater people much concern. The advance in cotton yarn has more than offset the recent decrease in the cost of copper, so that the price of insulated wire has increased.

The majority of railways needing heater equipments have already placed orders for their requirements, and unless the other railways place orders immediately, there is little chance that they will be able to insure deliveries in time for the coming winter.

Big Demand for Steel Rails

Government Order for 150,000 Tons of Rails May Postpone Deliveries to Electric Railways—Many Companies Considering Use of Standard Steam Sections

The prospects of electric railways receiving their quota of rails which have been on order for some length of time has been lessened during the past week owing to the order for 150,000 tons of rails recently placed by the government for use on the French railways. This order is for 80-lb. standard sections of either Bessemer or open-hearth steel, and the present market price of $38 per gross ton for the Bessemer and $40 per gross ton for the open-hearth rails as quoted in the table of current prices for materials in the ELECTRIC RAILWAY JOURNAL will be paid for these sections. What the probable effect of this and subsequent orders placed by the government will be is causing considerable comment among maintenance-of-way engineers, but it is believed that these orders will cause slowing up delivery of rails, orders for which have already been placed by electric railways.

As noted in the Aug. 18 issue, considerable attention is being given by electric railway officials to the use of standard rail sections such as are used by the steam railways. A well-known interurban railway in the Middle West which has heretofore used an 85-lb. T-rail has succeeded in purchasing its requirements by substituting 100-lb. standard steam sections. It was imperative in this case to obtain the rails for immediate delivery and the price paid for the standard sections was very satisfactory to the railway concerned. Many electric railways are considering the use of standard steam rail sections and have applied to the steel companies to be included on future rollings. This procedure appears to be the only means of obtaining the desired amount of trackage which is necessary in some cases to be laid on account of franchises, extensions, etc. Reports have been received to the effect that many companies are badly in need of rail and that the bidding on all the standard steam rail sections and relaying rail available has been very brisk. The second-hand equipment dealers have scoured the country for rails of every description and these are bringing record prices.

Car Shortage Decreasing Rapidly

Reports just received by the railroads' war board, of which Fairfax Harrison is chairman, show that the railroads, in their co-operative efforts to give to the country the greatest possible amount of freight service, have effected an extraordinary improvement in freight car supply. The excess of unfilled car requisitions over idle cars, or what is ordinarily but inaccurately termed car shortage, was only one-fourth as great on Aug. 1, 1917, as on May 1, 1917. The excess of unfilled car requisitions on May 1 was 148,627; on June 1 it was 106,649; on July 1 it was 77,682; and on Aug. 1 it had been reduced to 33,776. This result has been accomplished at a time when the railroads are supplying from 15 to 20 per cent more freight service with the same number of cars than was being given this time last year, for the railroads handled in July a tremendous increase in both government and commercial traffic. The movement of cantonment supplies alone occupied the full services of more than 30,000 cars. There was also an extraordinarily heavy demand for cars to transport food products, as well as materials to and from munitions factories.

This result has been accomplished by co-operation with the railroads of shippers, regulating bodies and the public generally. This co-operation has made possible the intensive loading of freight cars, prompter unloading, the elimination of a large amount of unnecessary passenger train service and an opportunity generally to utilize the railroad plant efficiently.

$6,000,000 of Electrical Supplies to Canada in 1916-1917

Figures are now available showing the foreign trade of Canada for the fiscal year ended March 31, 1917. The total imports of electrical merchandise during that period were $6,342,490, as compared with $4,896,106 for the corresponding period a year previous. Of the 1916-1917 total, $176,700 came from the United Kingdom and $6,149,342, or 97 per cent, from the United States.

While these figures show that virtually the entire amount of Canadian electrical imports originated in the United States, they do not show the extent to which Canada depends on electrical goods manufactured under supervision of interests in the United States. Many of the larger manufacturers in this country have Canadian branch factories where electrical goods for Canadian consumption are produced. The goods are identical with those manufactured in the States. They are made in Canada so as to avoid import duty.

Geological Survey Report on Present Coal Situation

The weekly statement of the Geological Survey shows that 72.8 per cent of full-time capacity was reported for the week ending Aug. 4, as compared with 75.1 per cent for the week ending July 28. It is thus seen that the coal production throughout the country is not only less than that for the week of July 28 but also less than for any week since July 7. The causes given were as follows: Car shortage, 13.6 per cent; labor troubles, 6.2 per cent, and mine disability, 3.4 per cent. The greatest decrease in production occurred in eastern Kentucky and Tennessee, although Illinois, Indiana and Alabama also produced less coal than for the previous week.

The Illinois output was curtailed by 75,000 tons daily, due to a strike of drivers and laborers, which ended on Aug. 18. Practically all mines which were affected resumed operation on Aug. 20.

NEW YORK METAL MARKET PRICES

	Aug. 17	Aug. 22
Prime Lake, cents per lb	28	26½
Electrolytic, cents per lb	28	26½
Copper wire base, cents per lb	36	36
Lead, cents per lb	10⅞	10¾
Nickel, cents per lb	50	50
Spelter, cents per lb	8¾	8¾
Tin, Straits, cents per lb	62¼	61¾
Aluminum, 98 to 99 per cent, cents per lb	56	50

OLD METAL PRICES

	Aug. 17	Aug. 22
Heavy copper, cents per lb	24½	24½
Light copper, cents per lb	21½	21½
Red brass, cents per lb	19½	19½
Yellow brass, cents per lb	16	16
Lead, heavy, cents per lb	8½	8½
Zinc, cents per lb	6	6
Steel car axles, Chicago, per net ton	$41.00	$41.00
Old car wheels, Chicago, per gross ton	$31.50	$30.00
Steel rails (scrap), Chicago, per gross ton	$39.00	$39.00
Steel rails (relaying), Chicago, per gross ton	$55.00	$55.00
Machine shop turnings, Chicago, per net ton	$17.00	$17.50

CURRENT PRICES FOR MATERIALS

	Aug. 17	Aug. 22
Rubber-covered wire base, New York, cents per lb.	34½	36
No. 0000 feeder cable (bare), New York, cents per lb.	36½	36½
No. 0000 feeder cable (stranded), New York, cents per lb.	33¾	33¾
No. 6 copper wire (insulated), New York, cents per lb.	33	33½
No. 6 copper wire (bare), New York, cents per lb.	36	36
Rails, heavy, Bessemer, Pittsburgh	$38.00	$38.00
Rails, heavy, O. H. Pittsburgh, per gross ton	$40.00	$40.00
Wire nails, Pittsburgh, per 100 lb	$4.00	$4.00
Railroad spikes, 9/16 in., Pittsburgh, per 100 lb.	$7.00	$7.00
Steel bars, Pittsburgh, per 100 lb	$4.50	$4.00
Sheet iron, black (24 gage), Pittsburgh, per 100 lb.	$8.35	$8.85
Sheet iron, galvanized (24 gage), Pittsburgh, per 100 lb.	$9.55	$10.05
Galvanized barbed wire, Pittsburgh, cents per lb.	$4.85	$4.85
Galvanized wire, ordinary, Pittsburgh, cents per lb.	$4.65	$4.65
Cement (carload lots), New York, per bbl	$2.22	$2.22
Cement (carload lots), Chicago, per bbl	$2.31	$2.31
Cement (carload lots), Seattle, per bbl	$2.65	$2.65
Linseed oil (raw, 5 bbl. lots), New York, per gal.	$1.24	$1.25
Linseed oil (boiled, 5 bbl. lots), New York, per gal.	$1.25	$1.26
White lead (110 lb. keg), New York, cents per lb.	12¾	12¾
Turpentine (bbl. lots), New York, cents per gal.	42½	42½

ROLLING STOCK

Colorado Springs & Interurban Railway, Colorado Springs, Col., has purchased ten one-man cars which will be placed in service on Nov. 15.

Tacoma (Wash.) Municipal Railway has purchased at a cost of $26,000 four motor cars, four trail cars and an electric locomotive for use on the Tideflats line.

Shenandoah Traction Company, Staunton, Va., has purchased four featherweight one-man cars. They will be equipped with 25-hp. Westinghouse motors, 24-in. wheels, and will weigh approximately 5 tons. The seating capacity will be twenty-four. These cars will replace the ordinary single-truck cars which weigh 9 tons.

Tampa (Fla.) Electric Company, noted in a recent issue as having placed an order with the American Car Company for fifteen double-end pay-as-you enter light-weight safety cars, has specified the following details for this equipment:

Number of cars ordered	15
Builder	American Car
Type	Light-weight safety
Seating capacity	34
Length over bumpers,	27 ft. 9½ in.
Length over vestibule,	26 ft. 9½ in.
Width over all	8 ft. 0 in.
Rail to trolley base	12 ft. 6 in.
Body	Semi-steel
Interior trim	Statuary bronze
Headlining	None, rafter finish
Roof	Arch
Air brakes,	Safety Car Devices Co.
Axles	Brill
Bumpers,	American Car-Channel Iron
Car trimmings	Brill
Couplers	None, pull bars used
Door mechanism,	Safety Car Devices Company-air-operated
Curtain material	Pantasote
Designation signs	Hunter
Hand brakes,	American Car with Pittsburgh ratchet drop handle
Headlights	Golden Glow S-M-95
Journal boxes	Brill
Sanders	Keystone air sander
Sash fixtures	O. M. Edwards
Seats, style	Heywood Bros & Wakefield 57-S.P.
Seating material	Mahogany wood, steel and canvas lined rattan
Springs	Brill
Step treads	Feralun
Trolley catchers	Keystone
Trucks, type,	Brill 78-M-1 special
Ventilators	Utility Ventilator
Wheels	24 in. diam. x 2½ in. tread x ⅝ in. flange
Special devices	Faraday high-voltage push button system

Hodenpyl, Hardy & Company, Inc., New York, N. Y., have received the majority of the 101 cars ordered from the St. Louis Car Company early in the year. A part of the thirty-five cars which were to be delivered to the Northern Ohio Traction & Light Company have been received and the remainder have been held at St. Louis awaiting the arrival of the gears. The fifteen double-truck four-motor cars for Grand Rapids, Mich., are nearing completion. The northeast division of the Michigan Railway Company has received five interurban passenger cars and two freight trailers. One freight car and one line car for this division are yet to come. The Northern Ohio Traction & Light Company also has four motor freight cars yet to come. The Public Utilities Company, Evansville, Ind., has received its quota of ten new passenger cars, and the Rockford (Ill.) Interurban Railway has received thirteen.

TRADE NOTES

T. H. Garland, president of the Garland Ventilator Company, died at his home in Chicago on Aug. 20, after an illness of six months.

M. J. McCormick, formerly manager of the machine tool department of the Canadian Fairbanks-Morse Company, Montreal, has become associated with the McCormick Machinery Company, dealer in machinery and supplies.

F. J. Page, who for many years has been connected with the sales department of the Whiting Foundry Equipment Company of Harvey, Ill., has been appointed representative in the Pittsburgh district for this company and will be located at 411 Fulton Building, Pittsburgh.

Railway Equipment Company, Portland, Ore., announces that, due to increasing business, it has become necessary to move into new and larger quarters at Second and Stark Streets. A line of mechanical tools will be added to the railway supplies now handled by this company.

Barrett Company, New York, N. Y., announces the appointment of L. L. Holmes as railroad representative in the Boston branch territory with headquarters at 35 Wendall Street. Mr. Holmes was formerly assistant purchasing agent of the Chicago, Indianapolis & Western Railroad at Indianapolis, Ind.

Diamond Power Specialty Company, Detroit, Mich., has established the first plant devoted exclusively to the production of "Insuluminum" soot-blower units. The process originated and was perfected in the laboratory of the General Electric Company, the latter company having granted to the Diamond Power Specialty Company the exclusive rights as lessee to its use.

Frank B. Kennedy has resigned as manager of sales for the Dayton Fare Recorder Company to accept the position of general manager of the Bonney-Vehslage Tool Company, effective Sept. 1. Mr. Kennedy was vice-president and general manager of the New Haven (Conn.) Trolley Supply Company before its absorption by the Dayton Fare Recorder Company and has been connected with the electric railway supply business for twenty-five years.

Westinghouse Electric & Manufacturing Company, East Pittsburgh, Pa., announces that W. J. Longmore, formerly purchasing agent of the company at the East Pittsburgh Works, has been promoted to be general purchasing agent of the company with headquarters at Pittsburgh, where he will have supervision of the purchases of the company as a whole, with special supervision over those involving contracts for material used by both the electric and machine works. Mr. Longmore is a veteran in the employ of the Electric company, having begun service at the Garrison Alley plant in October, 1881, and has been purchasing agent at the East Pittsburgh works since 1892. Charles G. Taylor, formerly assistant purchasing agent, has been promoted to be purchasing agent at East Pittsburgh, where he has headquarters, and also of the Shadyside, Cleveland and Newark works. Mr. Taylor has been in the service of the company since 1887 and has acted as assistant purchasing agent since 1895. A. W. Fullerton, formerly purchasing agent of the Westinghouse Machine Company, which is now known as the machine works of the Westinghouse Electric & Manufacturing Company, has been appointed purchasing agent of the machine works at East Pittsburgh, Trafford and Essington, with headquarters at the first-named place. Mr. Fullerton has likewise been in the employ of the Westinghouse Machine Company for a number of years, having begun work in February, 1899, and has been in charge of the purchasing department for the Machine company since 1915.

NEW ADVERTISING LITERATURE

Keppler Glass Constructions, Inc., New York, N. Y.: Bulletin 206 on roof lights for railroads.

Dossert & Company, New York, N. Y.: Catalog 15, describing, illustrating and listing prices of various types of solderless connectors.

Walter A. Zelnicker Supply Company, St. Louis, Mo.: "Blue Streak Special" bulletin 222, listing offerings in second-hand machinery.

Hartford (Conn.) Machine Screw Company.: Catalog descriptive of nuts, screws, special parts and fittings for electrical appliances, instruments, etc.

Nichols-Lintern Company, Cleveland, Ohio: Catalog describing and illustrating its selector switches, pneumatic sanders, battery tail lights, indicating tail lights and other products for use by electric railways.

Whitman-Barnes Manufacturing Company, Akron, Ohio: Catalog of twist drills, reamers, wrenches and drop forgings. Much useful data is tabulated. Instructions for grinding drills and ordering special tools, etc., are included.

General Electric Company, Schenectady, N. Y.: Bulletin 46251-B on outdoor metering outfits for use in outdoor substations for measuring the amount of power supplied to the various feeders. The low cost of installation and maintenance, the accessibility for inspecting and testing, as well as the safety of construction are special features mentioned in this bulletin.

The Carborundum Company, Niagara Falls, N. Y.: A very attractive, illustrated catalog printed in colors, 6½ in. x 9¼ in., 224 pages. The first twelve pages are devoted to the progress made by this company since it commenced business in October, 1891, and to the organization of branch concerns in Canada and in foreign countries. A description of Carborundum and Aloxite, their characteristics and uses take up the next ten pages. Then follow descriptions and prices of the various products of this company. A 4¼ in. x 6-in. booklet, printed in one color, and containing the same material as the larger book has also been prepared by this manufacturer.

Electric Railway Journal

Published by the McGraw-Hill Publishing Company, Inc.
Consolidation of Street Railway Journal and Electric Railway Review

Volume 50 NEW YORK, SATURDAY, SEPTEMBER 1, 1917 Number 9

Continuity in Industrial Power Service Is Essential

ELECTRIC railway companies are doing a substantial and increasing power and light business as a side line. Data given in the issue of this paper for Aug. 11, 1917, show that more than 23 per cent of the companies in this country furnish lighting service, and more than 18 per cent give power service. An important element of these services is continuity, and consequently we find that utilities and large power users as well are giving careful attention to means for insuring against interruptions, or at least minimizing their effects. The results of a study along this line made for a railway supplying power to a community of moderate size is given in an article by D. D. Ewing in this issue. In this case a plan involving the use of a reserve gas engine works out to be the most economical. Each such case presents its own problems but the fundamental principle is the same, namely, to give the people what they pay for—service. While in the case cited the gas-engine solution was undoubtedly best for the particular community in question it is quite likely that there are other communities along the same line which have quite the same right to continuous service. Taking the whole situation into consideration it might be better in the long run to spend the available funds in improving the transmission line as a whole and in introducing effective methods of restoring service after an interruption has occurred. Incidentally whatever improves the continuity of industrial service along the line has the same effect on the railway power supply.

Definitions Committee Should Be Revived

EACH year for some time past the committee on definitions of the Transportation & Traffic Association has made an interesting report, submitted additional definitions and made suggestions for the work of the succeeding committee. The matter, however, of establishing a set of definitions, with the influence of the association to give them backing, is of so great importance in view of the use which the various commissions will make of them, that it has been deemed advisable at each convention to continue the study another year before definite action was taken. At the last convention the committee was abolished, and the subject referred to the company sections for consideration and report. These reports have now been made and some interesting interpretations of proposed definitions are brought out. But now the matter lies dormant. It should not be allowed to remain so for another year. It would therefore seem a logical and wise procedure to revive the T. & T. Association committee on definitions at the coming conference and give it instructions to bring in a report at the 1918 convention, with definite recommendations for the association to act upon. The subject has been thoroughly treated and with ample time allowed for reflection and discussion. Steps should now be taken to put this dictionary of electric railway terms into concrete form for active use on any property. The completion of such a dictionary will be welcomed and its use will prove valuable.

Consideration of Vehicular Interference Necessary in Schedule Analysis

THERE seems to be a tendency on the part of some who analyze city car operation by means of speed-time diagrams to neglect the very definite and very important fact that the movement of a city car is not accomplished in a fixed and regular routine of acceleration, coasting, braking and stops for passenger interchange. Such a smooth sequence of events, as commonly displayed by the so-called "average speed-time curve," does not represent actual practice. On the contrary, car movement and schedule speed are affected not only by irregular spacing of stopping points (which invariably occurs), but also by vehicular interference. The latter brings about many stops, or their equivalent in slow-downs, in addition to the stops for passenger interchange, and if this fact is neglected in making up "average" speed-time curves, the theoretical results that the speed-time diagram indicates as possible may be little less than absurd. It is, for example, true that, by diagram, a car with acceleration and braking rates of 2.5 m.p.h.p.s. can, if the stops are seven seconds in duration and are made at the rate of six per mile, easily maintain an apparent schedule speed of 13 m.p.h., yet no such results seem ever to be attained in practice. The reason is that six passenger stops in city service would mean a total of eight or ten or even twenty stops of all kinds, when vehicular interferences as well as passenger interchange are considered. If, say, the equivalent of ten stops are caused by vehicular congestion and six stops are made for passenger interchange, the car above mentioned will be doing well if it makes 8 m.p.h. instead of the 13 m.p.h. indicated by a speed-time diagram that was based only on passenger stops. All of this is, no doubt, perfectly obvious. Our reason for referring to the matter at all is that the oversight of neglecting vehicular interference seems to appear quite regularly, and for this, in view of the growing experience of the industry with schedule problems, there is no good excuse.

Freight Traffic Should Be Developed

WE have referred in several issues to the need of electric interurban railways doing more to develop their freight business. A recent analysis of the impediments to this plan show that they can be broadly stated as follows:

The promoters of many of the early interurban railways built their tracks on the main streets of the towns through which they passed in order that they might discharge passengers at the business centers. This choice is all right for passenger traffic but all wrong for freight. In many instances short-sighted town councils limit the freight haulage over their city streets to the night time period. Some will not permit steam railway freight cars on their streets because the M. C. B. wheels play havoc with their particular brand of street paving, while others limit the number of trailers that can be hauled by a single motor car. Through freight rates, both between electric roads and between electric and steam roads, are not in as common use as they could and should be.

It has been feared by some that the auto truck would do to the freight business what the pleasure car has done to the passenger. But these fears have not been altogether realized, and auto-truck lines which were ostentatiously started a year or so ago have been abandoned. When all of the costs are counted, the cost for freight haulage per ton-mile over a railroad is less than it is over even a good highway in the summer time. Moreover, except for very short hauls, freight moves faster via the interurban than by motor truck.

To-day, above all other days, it seems to us is the time to attack the freight problem. Now, everything is in a state of flux. The public is changing its way of thinking about things; or rather, may be it is just beginning to do some thinking. It is beginning to realize that what is good for the public servant, in the end redounds to the good of the public itself. It is alive as never before to the waste of the empty car and the loaded car with its wheels idle. If it can be shown that more of the necessaries of life and of war can be hauled if some antiquated ordinances are consigned to the ash can, to the ash can they will go.

Belt lines and freight cut-offs are needed in many instances in order that the freight traffic be not impeded by having to pass through the more or less congested streets of the larger towns. While at present, in most instances, it is almost out of the question to build such lines new, the lease for joint use of existing steam belt lines or cut-offs and the equipment of these with the necessary overhead electric structures might go a long way toward an economical solution of the problem. As it is, we have too many miles of rails in this country that do service measured in hours per month when the service ought to be measured in hours per day.

The matter of rate agreements, interchange connections, etc., with other electric and with steam roads ought not to constitute an insurmountable problem at present. Patriotism, the enthusiasm of service in a common cause and the compulsion of state and federal authorities, all should tend to make co-operation along these lines easier than it was in former days.

Two Aspects of the Coal Supply Situation

CONTINUITY of supply and conservation in use are the essentials of the coal situation as it relates to electric railways and other fuel consumers.

Last Saturday service was discontinued in the New York subway for a short time due to a failure in the coal supply at the Fifty-ninth Street power plant. While the incident is local in character, the size of the subway system in New York and its intimate relation to the activities of the city are such that unusual attention has been attracted to this shutdown. The Public Service Commission having jurisdiction took up the matter immediately to insure against a repetition of the occurrence and is holding a hearing to locate the blame. This will be continued next week, but in the meantime the Interborough Rapid Transit Company has been ordered to bring up its reserve to 5000 tons at the Fifty-ninth Street plant within ten days and to maintain it at this safe figure. This plant contains generating equipment of about 200,000-hp. capacity, and its average daily rate of coal consumption varies from about 900 tons in summer to 1200 in winter. The reserve would, therefore, provide against a complete cessation of supply for five days more or less. Compared with the proportional supply maintained by some plants even this large reserve seems moderate, but the New York plant has exceptional opportunities for securing continuous supply, which has never before failed in the joint thirty-year life of the two Interborough power plants. Pending the reaching of a conclusion as to the blame in this case the lesson to all power plant operators is plain, namely, that continuous coal supply must be insured by all possible means, a reasonable stock in storage being essential thereto. This will be specially important during the coming winter. In next week's issue of this paper we shall give an interesting story of what the Milwaukee Electric Railway & Light Company has done in the way of providing for contingencies under present coal market conditions.

Continuity of supply of fuel, of course, comes first in order of importance, and next is conservation after the supply is insured. No matter how reasonable the price of coal may be under the restrictions of the federal coal administration, it will be a patriotic duty to use as little as possible. This week the Chamber of Commerce of the United States has issued a bulletin containing among others these suggestions to coal users: Inquire into the methods employed by your firemen and consider their methods in relation to those suggested by the United States Bureau of Mines. Learn what plants in your locality secure the best results from coal. Improve all local methods by consultation with the Bureau of Mines and study of the stoking methods recommended by the bureau. Buy your coal as near home as possible.

The Chamber's suggestions are all practicable. Railway power plant operators can follow these suggestions themselves and they can take the initiative in pushing coal-saving propaganda in their respective communities.

Fundamental Principles to Be Observed in Preparing Fare Cases

IT IS incumbent upon every electric railway, in instituting proceedings for an advance in fares, to keep in mind that a tremendous responsibility rests upon it. A poorly-planned campaign will prejudice the company in the minds of the public and will make difficult, if not impossible, the work of placing its affairs upon a sound financial basis. It is conceivable that mismanagement of what could be made a good case will alienate the sympathy of the commission and cause a denial of the desired relief. It would be particularly unfortunate at this time to have any company, through inexperience or mismanagement, lose a proceeding for higher fares.

What are the fundamental principles which must be kept in mind in presenting applications for higher fares? We refer not so much to the requirements of technical proof imposed by public utility laws and the regulations of commissions. Behind these requirements are certain broad, fundamental economic forces which are, in the last analysis, the real factors which must be presented in proceedings of this character. Electric railway officials must keep constantly in mind that success can only be won by full and complete frankness. The company must, figuratively speaking, lay all of its cards on the table. Every fact germane to the matter at issue must be made public property. There must be no half-truths, evasions or quibbles. The undesirable features of the case, if any, must be frankly and openly admitted. Popular misconceptions must forthwith be corrected. Skillful antagonists, who seek to divert public attention with ancient municipal scandals or alleged petty grievances, must never be allowed to obscure the basic truth that operating costs are constantly mounting and the company has but two alternatives—poorer service or an equivalent increase in fares. For permanent victory the company must win its case in the court of public opinion, no matter what the technical requirements of the statute may be.

Unusual care must be given to the thorough and careful preparation of the case. Executive officials must painstakingly and carefully instruct their attorneys, accountants and other witnesses as to facts and conditions. Everyone appearing for the company must be thoroughly familiar with the case. Nothing creates so unfavorable an impression as a witness who honestly does not know the answer to a question, but who, to the average man, gives the appearance of dodging. It is not sufficient to correct a mistake in the next day's proceedings. The newspapers have already published the previous testimony and most of the public will never see the correction.

In a sense every fact dealing with current operations of an electric railway is germane to a rate case of this character. A rate case, properly presented, is a straight-from-the-shoulder presentation of business facts in the language of business men, free from the verbiage and technicalities ordinarily attributed to lawsuits and legal papers. The company should be prepared, through its witnesses, promptly and fully to explain any feature of its operations concerning which inquiry may be made by the commission or by municipal attorneys. A prompt, frank, business-like and complete explanation of the facts is the proper policy in all proceedings of this character.

LIBRARY OF THE UNIVERSITY OF CALIFORNIA

A Three-Phase Electrification Operating Under Severe Conditions

ALTHOUGH not the latest heavy traction electrification in Italy the Mont-Cenis line is one of the most instructive, particularly in view of the increasing interest in the application of the induction motor in moving freight over mountain ranges in this country. As little has been published in this country regarding this line, and as it has been operating long enough to demonstrate its good qualities, the editors of the ELECTRIC RAILWAY JOURNAL recently commissioned one of its European correspondents to send them the latest available information concerning it. The result is an article published elsewhere in this issue. It is quite a coincidence that the issue contains also an important news item regarding the single-phase three-phase locomotive which is now undergoing tests by the Pennsylvania Railroad to determine its suitability for freight service over the Allegheny Mountains in Pennsylvania.

The Italian State Railways, which control the Mont-Cenis line, were pioneers in the use of the three-phase system, having electrified the Valtellina Railway just fifteen years ago. This line, however, cannot compare in severity of operating conditions with the Bardonèche-Modane line (including the Mont-Cenis tunnel railway) on which there is an unusual combination of heavy traffic, steep grades and severe climatic conditions. However, the experience on the early line proved so satisfactory that in the following ten years the same system was adopted on several more Italian roads. In the meantime we had but one three-phase electrification in this country, the Great Northern Railway Cascade tunnel, equipped in 1909.

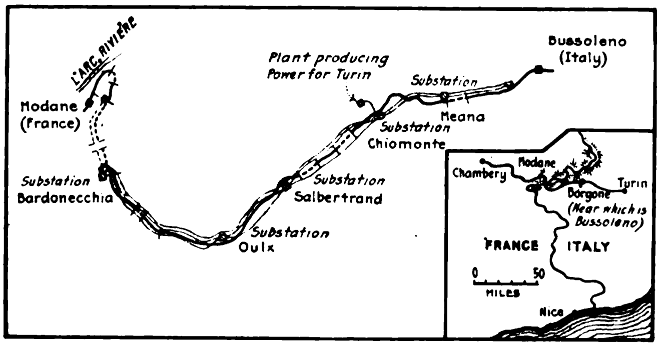
Certain inherent virtues of the induction motor have always made it attractive in connection with heavy traction on steep grades. It is essentially a rugged motor, and a large output can be obtained per ton of weight. The absence of a commutator is no small advantage. But above all, its splendid regenerative braking property is highly prized. On the other hand, when used for locomotive driving it requires either two overhead conductors or a phase converter on each locomotive. The recent success of the regenerative d.c. system, as on the Chicago, Milwaukee & St. Paul Railway, will no doubt influence the further progress of three-phase, but the new Pennsylvania locomotive is evidence that this progress has not yet ceased. All of this illustrates the fact that development in heavy traction is still far from stationary; it is apparently more mobile than ever.

Mont-Cenis (Italy) Railway Electrification

A Line Through the Mountains Between Italy and France on Which There are Twenty-nine Tunnels in 37 Miles—The Operating Conditions Are Unusually Severe

By LUCIEN PAHIN
Pontoise, France

DURING the period from 1912 to 1915 the Italian State Railways inaugurated electric service on the Mont-Cenis line between Bussoleno, Italy, and Modane, France. This was one of the most difficult of the European roads to operate, and it comprises the longest section of mountain line. The grades are very severe, the percentages being as follows: Bussoleno to Salbertrand, 2.7 to 3; thence to Beaulard, 1 to 1.6; thence to Bardonnèche, 2.4 to 3; beyond the latter in the tunnels and to Modane, 2.4 to 2.7. The curves have radii between 1200 and 2000 ft.



MONT-CENIS ELECTRIFICATION—OUTLINE MAPS OF LINE

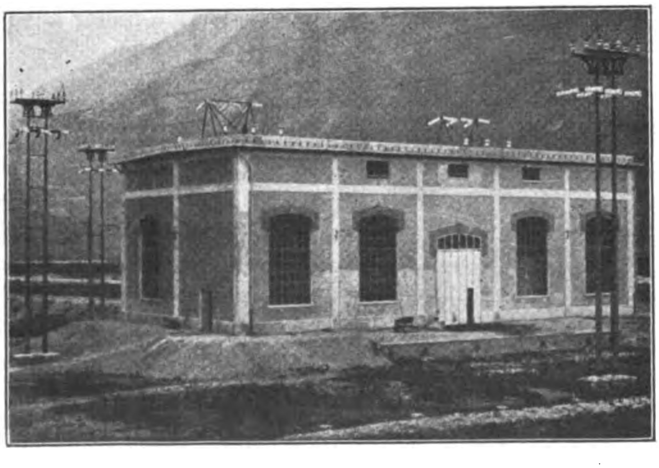
The line is single-track between Bussoleno and Salbertrand, and double-track between the latter and Modane. It is made up almost entirely of viaducts, deep grades and tunnels, the total length of the twenty-nine tunnels being 13.9 miles out of 37.2 miles; that is, more than 37 per cent of the total. The longest tunnel, under the Fréjus (Mont-Cenis) Pass, is nearly 8½ miles long, most of the grades in it being from 2.4 to 3 per cent. This tunnel is artificially ventilated through a conduit carrying compressed air emitted through the niches provided for linemen. In spite of this the ventilation proved inadequate with increasing density of traffic under steam operation. The annual traffic on the line is more than 100,000,000 ton-miles, with a potential traffic of 280,000,000 ton-miles.

The highest point on the Mont-Cenis line is 4180 ft. above sea level, while the stations at Bardonnèche and Modane, located at the two extremities of the Fréjus tunnel, have elevations respectively 4050 ft. and 3410 ft. Here, then, is a mountain line operating at a considerable elevation, with dense traffic and exposed in winter to snow, violent winds and great cold (minus 27 deg. C. and lower).

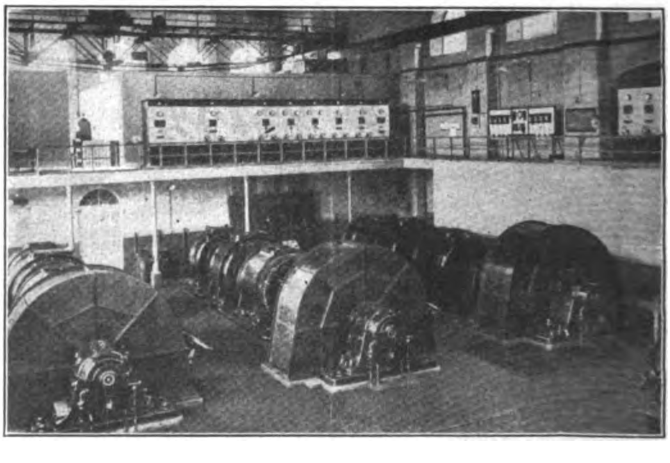
The decision to electrify this line was reached when it became evident that its capacity under steam operation was approaching a limit. The addition of an extra track was, of course, out of the question on account of the numerous and long tunnels. In 1911 the engineers of the Italian State Railways proceeded to design the system which has since produced excellent results, first on the Mont-Cenis line and later on other Italian lines. Electric operation was considered superior to steam in many cases on account of the greater capacity of line, higher operating speed of trains and greater regularity of operation. Three-phase current, at 16.7 cycles and 3700 volts pressure, was selected as standard. Arrangements were made with power companies in the region of the Mont-Cenis electrification for the supply of high-tension current.

PRODUCTION AND TRANSFORMATION OF CURRENT

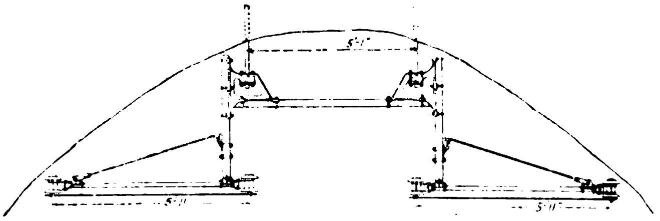
Until 1914 power was furnished in the form of three-phase current at 50,000 volts, 50 cycles, by the hydroelectric plant at Chiomonte and the steam station at Martinetto. It was transformed to lower frequency in a motor-generator substation at Bardonnèche. As the railway circuits operated in parallel with the light and



MONT-CENIS ELECTRIFICATION—VIEW OF SUBSTATION AT SALBERTRAND



MONT-CENIS ELECTRIFICATION—MOTOR-GENERATOR SUBSTATION AT BARDONNÈCHE power circuits of the city of Turin, supplied from the plants above mentioned it was at first considered necessary to provide against interference with the operation of trains due to variations in the light and power loads. For this purpose heavy flywheels were included in the rotating elements in the Bardonnèche substation. Each motor-generator set comprised a 2500-hp. induction motor, supplied at 7000 volts and 50 cycles; a three-phase alternator producing current at 3700 volts and 16.7 cycles, and a 50-ton flywheel.



MONT-CENIS ELECTRIFICATION—CONTACT LINE IN DOUBLE-TRACK TUNNEL

In these sets with no load or light load the speed is 500 r.p.m. It is lowered to 400 r.p.m. when the overload reaches 100 per cent. If the speed varies through the complete range in one minute each flywheel yields during this period 1000 hp.

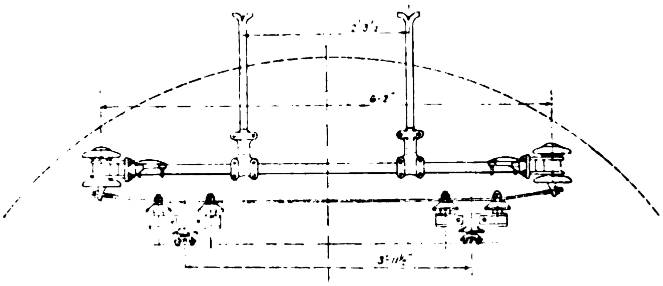
Since July 15, 1914, the current has been furnished in normal service from the hydroelectric power plant at Acceglio, operated by the Società per la forze idrauliche della Maira. The current is delivered at 65,000 volts, 16.7 cycles, three-phase, and the voltage is lowered in static substations at Bardonnèche, Meana, Chiomonte, Salbertrand, Oulx and Bussoleno, the locations of all of which are shown on an accompanying map. The combined capacity of these substations is 22,000 kw. The 6000-kw. motor-generator substation at Bardonnèche is now held in reserve.

In connection with the use of the flywheel sets at Bardonnèche it may be noted that, while induction motors possess numerous virtues, such as their ability to start without auxiliary motors and to operate satisfactorily at high tension, they do not lend themselves efficiently to speed variation such as that necessary to permit the functioning of the flywheels. When the variation is produced, as in this case, by the insertion of resistance in the rotor circuits, energy is dissipated in the form of heat precisely at the moment when there is the greatest need for it. It would have been more efficient to use a second motor connected in cascade with the first to utilize the energy necessarily given out from the rotor of the first motor when the speed is reduced. This could have been done with very small loss.

FEATURES OF POWER REGENERATION

When the frequency of the current produced by the alternators falls from 16.7 to 13.3 cycles, the speed of trains en route diminishes in the same ratio. At the same time the consumption of power is diminished, on account of the lower speed of the trains climbing the grades and of the regeneration of power by those descending grades at the same time. Thus the trains en route assist the flywheels at Bardonnèche in regulating the power supply when the latter are in use.

Regeneration is permissible even when no trains are climbing grades, because automatically functioning rheostats are provided to absorb excess power. When a train descending a grade is regenerating and there is not at the same time a train ascending a grade, the regenerated power is delivered to the substation. If the motor-generator sets are operating the alternators act as synchronous motors, and the excess power is dissipated in the rheostats. Ordinarily the excess all goes to the rheostats.

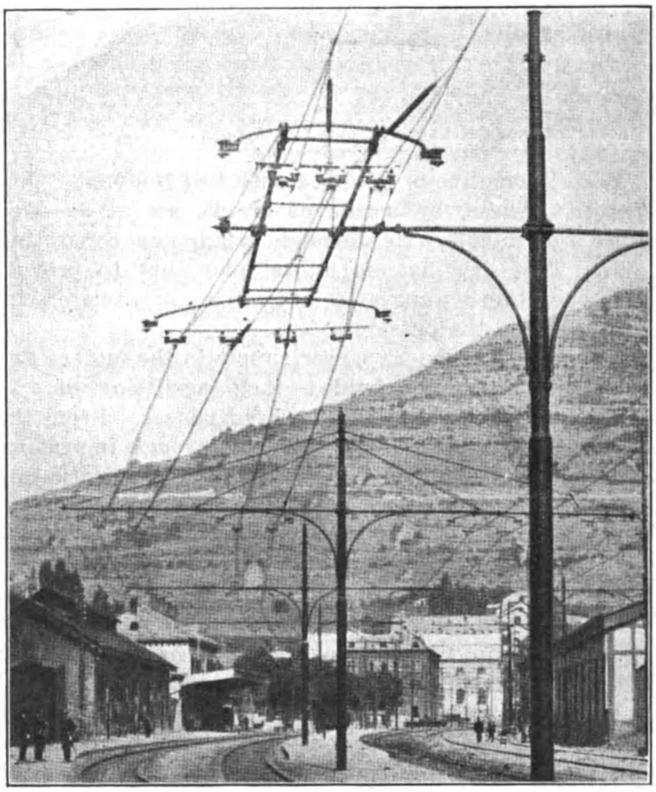


MONT-CENIS ELECTRIFICATION—CONTACT LINE IN SINGLE-TRACK TUNNEL

Each rheostat, of which there are two, consists of a metallic tank connected electrically to the earth and to the rails, through which water continuously circulates. Two electrodes are immersed in the tank, their position being controlled by an oil-operated regulator identical with the type employed in controlling the speed of hydraulic turbines. The regulator is controlled by a small induction motor, and a special 5-hp. motor drives the oil pump.

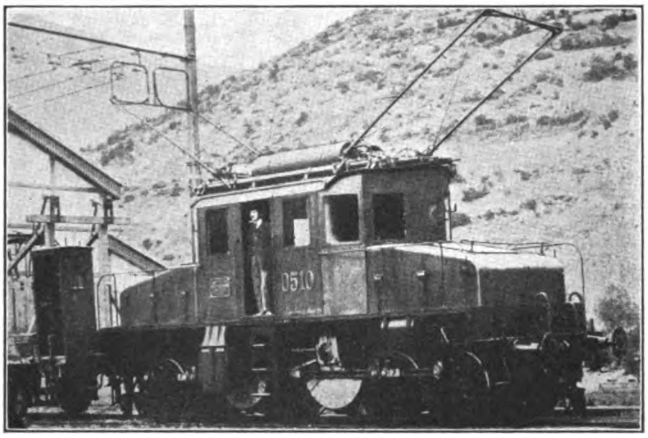
For the purpose of extinguishing the arc which occurs at each immersion and withdrawal of the electrodes an oil switch in the electrode leads is opened automatically by the motion of the regulator arm, closing just before the electrodes enter the water and opening just before they leave.

The overhead line consists of a double contact wire for each of two phases of about 200,000 circ. mil cross-



MONT-CENIS ELECTRIFICATION—STATION AND SUBSTATION AT BARDONNÈCHE section for each track. These are suspended 19.5 ft. above the rails in open country and 14.75 ft. or less in the tunnels. The third conductor is provided by the two running rails which are electrically connected, the rails being bonded with a special cement as well as with soldered copper bonds.

In the open country the line is supported on tubular posts spaced about 65 ft. apart. In the tunnels special brackets sealed into the roof are used. The suspension is of the transverse type. The contact wires are attached to double-petticoat insulators by means of clamps, and these insulators also are insulated from earth. The insulation is, therefore, quadruple between the two aerial phases and triple between each aerial phase and the ground. The crossings of the aerial phases, of course, require special care. A typical branchoff is shown in the illustration on page 345.


MONT-CENIS ELECTRIFICATION—ONE OF THE 2000-HP. LOCOMOTIVES

ELECTRIC LOCOMOTIVES

The locomotives used on this line have the following characteristics:

Wheel diameter	3 ft. 6 in.
Rigid wheelbase	20 ft. 1 in.
Length between bumpers	36 ft. 0 in.
Number of coupled axles	5

Each locomotive is equipped with two 1000-hp., 8-pole motors. These, by means of cranks set at 90 deg.. drive the middle axle through triangular connecting rods. This axle has no lateral play, but to provide easy operation on curves a lateral play of about ¾ in. is allowed on the outside axles.

To insure continuous power supply to the motors two bow collectors are provided, each consisting of two parts, one for each of the overhead phases. From the collectors the circuit is as follows: Through impedance coils with lightning arresters in shunt, automatic circuit breaker, series transformer for measuring instruments, and main circuit breaker (which also provides for the ground phase) to the motors.

The current is fed directly to the stators of the two motors for full speed, 31 m.p.h., or to the stator of one motor only for cascade operation at half speed. In the latter case the rotor of the first motor is connected to the stator of the second, and the rotor of the latter is short-circuited through a liquid starting rheostat. The main circuit breaker also provides for a reversal of aerial phases to change the direction of motion of the locomotive.

To prevent too sudden starting of the locomotive the rate of immersion of the rheostat electrodes is limited by a relay connected to the regulator. The relay contains two windings, one carrying a constant current, the other the current flowing to the two motor stators or the secondary stator, as the case may be. The reaction between the two windings is utilized to control the rate of movement of the electrodes, and the locomotive accelerates gradually.

Two 9-kw. static transformers, 3700/125 volts, supply power for manipulation of control apparatus and for auxiliary apparatus, including air brakes, reverser, speed controller, sander, whistle, starting rheostat, ventilating motor for cooling the traction motors, lighting, etc.

RESULTS OF THE ELECTRIFICATION

The technical and financial results so far secured on the Mont-Cenis line are excellent. The speed, the load on the trains and the number of trains have all been increased. The operating costs have been reduced due to the use of water power and regeneration.

The Italian State Railways have electrified and are electrifying other sections along similar lines. Among these are to old Giovi line, the line from Savonni to Giovi, and the Giovi extension. All of the central hydroelectric and steam stations have been joined on the high-tension side to provide against accident to one of the substations.

In closing the writer desires to express his appreciation of the courtesies extended to him by the officials of the Italian State Railways.

Philadelphia Employees Present Ambulance to Red Cross

Employees of the Philadelphia Rapid Transit Company have purchased and presented to the Jefferson Medical College Base Hospital Unit No. 38 the standard United States Army ambulance shown in the accompanying illustration. This is equipped with extra tires, stretchers, rubber blankets and linoleum floor covering. Its interior is electrically lighted, and is provided with a special system of piping which permits of its being heated during extremely cold weather. Unit No. 38 expects to leave for France in a few days. The men have also contributed about $1,000 to the Hahnemann Medical College Base Hospital unit.

THE AMERICAN RED CROSS
JEFFERSON MEDICAL COLLEGE
U.S. BASE HOSPITAL No. 38
RED CROSS AMBULANCE PRESENTED BY RAILWAY EMPLOYEES

Insuring Continuous Power Service

The Author Outlines a Study Made for a Railway Supplying Power to a Community of Moderate Size—Results Favor a Gasoline Standby Unit in This Case

By D. D. EWING
Associate Professor of Electric Railway Engineering, Purdue University, Lafayette, Ind.

THE writer recently had occasion to make a study of several methods of insuring continuity of service in a town of about 2500 inhabitants in which electric service is provided from a 33,000-volt railway transmission line. The railway company owns the local distribution system and acts as the local distributer of power service. The transmission line is fed from two plants, one 18.7 miles distant and the other about 100 miles distant in another direction.

An analysis of the interruptions in this service during the year 1916, as indicated by the charts of a graphic voltmeter, is given in Tables I, II and III. These interruptions may be divided into two classes—intentional and unexpected. Those of the first class were caused by switching, either for synchronizing purposes or to isolate a section of the line for repair. Momentary interruptions (of less than two minutes duration) constituted 52 per cent of the total. These were due to switching for synchronizing purposes mostly, and occurred in the main at about 4 a. m., or just before the daily train schedule started. Obviously they are of little moment as far as the average service user is concerned. A few of the longer interruptions occurring between 4 a. m. and 8 a. m. were also due to switching, the remainder being for the most part chargeable against the transmission line. Only the longer interruptions are classified in Tables II and III.

TABLE I.—INTERRUPTIONS CLASSIFIED AS TO DURATION

Duration of Interruption, Min.	Number of Interruptions
Momentary	115
2-5	32
6-10	17
11-15	27
16-30	15
31-45	2
46-60	3
61-75	2
76-90	2
140	1
165	1
189	1
195	1
Total	219
Total (excluding momentary)	104

Of the possible means of reducing the number and duration of interruptions the following were investigated: (1) Repair and betterment of existing line between the town and nearest plant. (2) Construction of duplicate line to nearest plant. (3) Installation of storage-battery standby equipment. (4) Installation of high-speed gasoline engine driving an alternator, as a standby unit.

REPAIR-OF-EXISTING-LINE PLAN

After an examination of the existing line, which has been in service for a number of years, it was decided that the replacement of 50 per cent of the poles and all of the crossarms, insulators and hardware would be necessary to put the line in first-class condition. The wire spacing on many of the old arms was insufficient and the insulators were of an inferior grade. It was felt that 44,000-volt insulators should be used in making replacements and that the line should be still further protected from lightning trouble by installing an overhead ground wire. The rehabilitation of the line to the nearest plant would not, of course, eliminate all trouble in that section, nor could it in any way minimize the trouble occurring in the other portion of the line. Such rehabilitation, however, would greatly reduce the number of long interruptions due to failure in the short end of the line, and as the line can be sectionalized the opening of the section switches would localize disturbances arising in the long end. Thus it might be expected that most of the long interruptions would be eliminated by this plan.

TABLE II.—INTERRUPTIONS CLASSIFIED AS TO TIME OF DAY

Period of Day	Number	Time Lost, Minutes
12-4 a. m.	17	535
4-8 a. m.	24	622
8-12 a. m.	15	222
12-4 p. m.	17	233
4-8 p. m.	20	488
8-12 p. m.	11	215
Total	104	2,315

DUPLICATE-LINE PLAN

The erection of an entirely new line 18.7 miles in length would obviate the washout troubles which hinder the operation of the present line. With it all of the interruptions of the intentional class could be eliminated, and also practically all long interruptions of the unexpected class. The cost estimates of this line given in Table IV covered the erection of 562 cedar poles 45 ft. long, 18.7 miles of three-phase line of No. 2 copper wire, and a 3/8-in. Siemens-Martin cable as a ground wire.

TABLE III.—INTERRUPTIONS CLASSIFIED AS TO SEASON OF YEAR

Season	Number	Time Lost, Minutes
January-March	31	1,011
April-June	20	463
July-September	33	572
October-December	20	269
Totals	104	2,315

STORAGE-BATTERY PLAN

With a floating battery and suitable control equipment a very high degree of continuity of service could be assured. In connection with this problem, however, a standby battery was considered since it could be both smaller in size and of a cheaper type; in fact, the cost of a floating battery would have been approximately 50 per cent greater than the first cost listed in Table IV. The equipment involved in the storage-battery plan

TABLE IV.—COMPARATIVE COSTS OF PLANS FOR IMPROVING CONTINUITY OF SERVICE

Plan	First Cost	Annual Charges
Repaired line	$9.574	$1,033
Duplicate line	38,049	5,699
Storage battery	19,460	3,288
Engine-driven generator	10,005	1.350

consisted of a 250-volt, pasted-plate battery with sufficient capacity to carry a 150-kw. load for an hour. In connection with this would be a 150-kva. 2200-volt, three-phase, 25-cycle synchronous motor direct connected to a 250-volt d.c. generator of the same output, with suitable control equipment, so that in case of trouble on the transmission line the local distribution would be automatically switched over to the motor-generator set, which in turn would operate with functions reversed, receiving its energy from the battery. Automatic starting of the d.c. machine was provided for in the plan. Thus the duration of the interruption would be only the few seconds required for the motor-generator set to come up to speed. This plan obviously would take care of all intentional interruptions on the transmission line without interruption on the local system, provided the substation operator received sufficient advance notice.

ENGINE-DRIVEN STANDBY UNIT

For the engine-driven standby unit a high-speed gasoline engine of the type used for railway motor cars was considered. This would be connected by a Morse "silent" chain to a 125-kva., three-phase, 750-r.p.m., 2200-volt, 25-cycle generator, and suitable control equipment. Gasoline is a far more expensive fuel than fuel oil, but fuel cost in this case would be insignificant as compared with the other charges entering the item "Annual Charges." The gasoline engine considered is much lighter, smaller and cheaper than a fuel-oil engine of the same rating. Further, it can be started up and given full load in a few seconds, while most fuel-oil engines require a starting period of something like ten minutes. While such a standby unit is not ideal it would take care of all interruptions of the intentional class and all long interruptions of the unexpected class.

COMPARISON OF PLANS

A comparison of the several plans both as to initial cost and annual charges is given in Table IV. The annual charges do not include a labor item for substation attendance since the railway service requires such an attendant anyway, although, of course, the power service should bear a proportion of such attendance charges. Proper fixed charges for the several items were included in the annual charges. The first cost estimates were made as for the first of April of the present year. While particular items have varied in price since then, the above figures are of value for comparative purposes.

In making these estimates the end in view was to provide this particular community with continuous service with a minimum outlay both for initial cost and annual charges. Viewed from this standpoint it will be noted that the rehabilitated-line plan involves the lowest initial and annual charges. The gasoline-engine plan is a close competitor. As the latter would provide a better guarantee of service it is to be recommended. Another aspect of this particular case also favors the gasoline-engine plan. The municipal ownership "bee" occasionally visits the community in question. Now, since to the layman nothing in the way of good intentions is so tangible as something that he can see, an engine-driven standby unit installed in the community would be no small argument against the plea of greater reliability which might be urged in favor of a municipal plant.

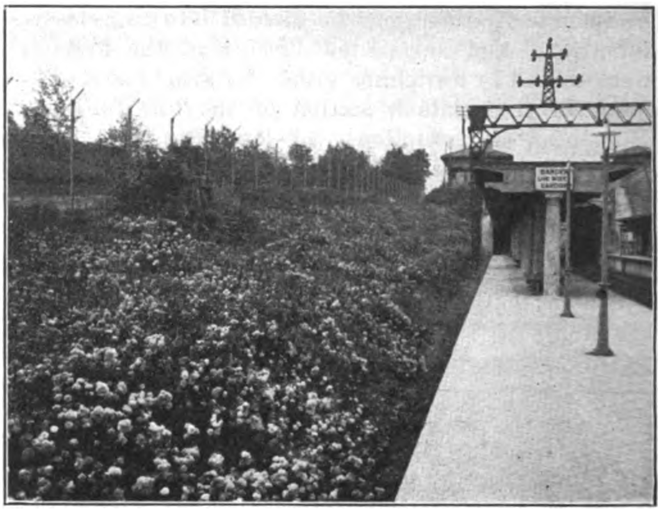
As noted above, no attempt has been made in this discussion to view the problem in hand from any standpoint other than that of the community affected. Obviously, before making a final decision in a problem of this kind the electric service company involved must consider other possible factors in the problem.

Practical Esthetics on the Westchester

Creeping Roses Have Been Utilized in Place of Sod to Hold Earth in the Cuts

At a number of points on the New York, Westchester & Boston Railway the practice of planting roses to hold loose earth on sloping banks has been followed in preference to the more common plan of sodding. The rose bushes, which are of the creeping type, are planted at intervals of 8 ft., and it has been found that the growth along the surface of the ground as well as the extension of the interlacing roots is very rapid and particularly effective in preventing the soil from being washed away.

In addition, the massed bushes furnish thoroughly satisfactory results from an artistic standpoint, since the growth takes place horizontally and thus presents to the eye a relatively regular surface. In the early summer, when the roses are in flower, the appearance is, of course, particularly beautiful as indicated in the accompanying illustration. This latter shows a typical installation at a suburban waiting station located in a heavy cut. Without the roses on the bank beside the platform there would have been the alternatives of taking the risk that earth would be washed down onto the platform during violent rainstorms or else providing sod, which would have required several years of growth to be satisfactory and which would have had to be made into a costly lawn to be really sightly at all seasons.



WESTCHESTER ROSE PLANTING—VIEW OF CREEPING ROSE BUSHES PLANTED TO PROTECT A SLOPING BANK BESIDE A SUBURBAN STATION PLATFORM

Maintenance expense for the rose bushes that have been installed is involved only to the extent of occasional attention of an expert gardener. Approximately 3200 bushes have been planted over something like 6000 sq. yd. of sloping ground at stations and in heavy cuts along the road, and the cost of upkeep on this installation amounts to $200 per annum. This unit cost of 3 cents per square yard would, no doubt, be materially less if the installation was of larger size.

Helping Out the Passenger Earnings

The Toledo, Bowling Green & Southern Traction Company Sells Power and Heat Service and Hauls Stone for the Dixie Highway

LIKE most other interurban railways the Toledo, Bowling Green & Southern Traction Company was organized with the handling of passenger traffic as the major, if not the only, thought in mind. Its interesting "by-product" business has in the main been a later development. This railway had its start in Findlay, Ohio, as a horse-car line in 1887. It was among the early lines in the country to substitute electricity for horse motive power, the electrification having been completed in 1892. In time other lines were purchased, connecting links were constructed and in 1904 its present line to Toledo, 51 miles almost due north, was opened for business. A matter of interest in connection with the operation of the local lines in Findlay is the fact that from the first the cars have been operated one-man pay-as-you-enter.

LIGHT
POWER
HEAT
T., B. G. & S. T. CO.—COMBINED CARHOUSE AND FREIGHT HOUSE AT FINDLAY

FREIGHT TRAFFIC

Freight haulage was begun in a small way in 1906, although in starting it the company had little thought that it would ever assume its present proportions. As the line passes through the richest farming country of Ohio, farm products are important items in the freight traffic. Among other things about 700 carloads of sugar beets are hauled annually from points along the line to Toledo, where they are passed on to the Toledo Terminal & Belt Railway, a steam line with which the company has an interchange agreement. To facilitate the loading of agricultural products sidings are located every few miles along the route. Several large stone quarries are located along the line and during road-making season from fifteen to twenty-five carloads of crushed stone are hauled daily. Some of this stone is also hauled for steam road interchange. For road making the stone is hauled from the quarry to sidings near which road-making contractors are at work. On large jobs temporary sidings are usually constructed. An accompanying illustration shows a road-material mixing plant temporarily located at Mortimer on the Dixie Highway. At first thought it might seem that the haulage of road-making materials would be only a temporary traffic. However, even good roads soon cut out when subjected to heavy automobile traffic, so that the haulage of repair material will still constitute a very considerable freight traffic even after all of the old dirt roads have been improved.

The regular freight schedule consists of three locals and one through freight each way per day. This makes package hauling very expeditious via the interurban. Through carload freight is hauled between Dayton and Toledo, and between Dayton and Detroit, the Toledo, Bowling Green & Southern forming a connecting link between the Western Ohio Railway and Toledo. Carloads of assembled automobiles form no inconsiderable part of the southbound through freight. An illustration shows the auto loading platform at the Toledo freight terminal. Three machines are loaded into one car, and during the selling season about one car per day is received from the Overland company at Toledo. End opening box cars have been provided especially for this traffic.

T., B. G. & S. T. CO.—FREIGHT TERMINAL AT TOLEDO, SHOWING AUTOMOBILE LOADING PLATFORM

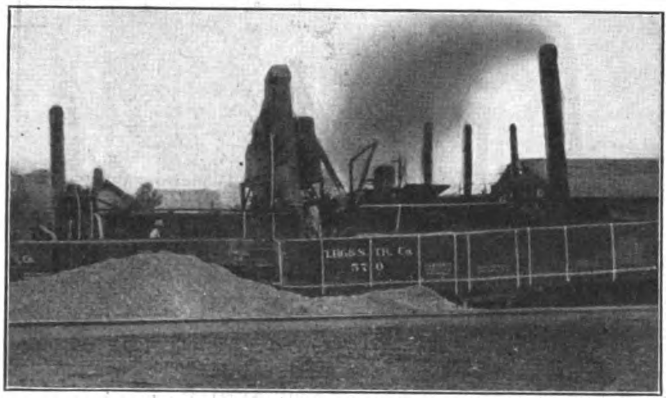
FREIGHT EQUIPMENT

At present the road is handling about 2000 carloads of freight per year. The new-business end of the work is carried on by solicitors who work along the same lines as do steam road solicitors. The freight-hauling equipment consists of thirty-one cars and one 25-ton locomotive. Seven of the cars are equipped with motors. Two of these are new steel cars and are virtually locomotives as they are able to haul three or four loaded trailers. The road is fortunate in that it is permitted to haul steam rolling stock in the streets of the towns through which it passes.

POWER SALES BUSINESS

Ever since the electrification of the local lines in Findlay the company has conducted a retail power business at that place. At present the average daily load of 60-cycle power is about 400 kw., and the business is growing rapidly. Short-time peaks run up much higher than the average. Twenty-five cycle power from the railway transmission line is sold wholesale to the North Baltimore Service Company, a stock concern which owns and operates a distribution system furnishing energy to several small towns along the railway. It has been the feeling of the railway officials that in small towns it is more satisfactory to furnish energy wholesale to local distributers than for the railway to act as retailer.

The route passes through a wing of the Ohio oil fields, and at present several operators are using 600-volt d.c. energy from the trolley for pumping purposes. The oil-bearing rock, or "sand" as it is called, is about 1500 ft. below the surface. The pump located at the bottom of the well is operated by means of rodding, the upper end of which is attached either to a walking beam or a pump jack. In one instance a 7½-hp. motor is used to operate a walking-beam outfit. While limited in possibilities, this type of load is very satisfactory as the pumps run twenty-four hours per day. According to the oil operators electric power is very much more satisfactory than the gas engines formerly used. A motor-pumped well has operated continuously for five months without other attention than oiling, while engine-driven pumps will often average a rod breakage every two weeks. The uniformity of speed accounts for the fewer breakages with electric power.



T., B. G. & S. T. CO.—ROAD MATERIAL MIXING PLANT ON THE DIXIE HIGHWAY

Another interesting power application is the electrification of the buildings on a farm located near one of the substations. The returns from the energy sale here are, of course, small, amounting to between $1.50 and $2 per month. The farmer paid for the installation of the service complete which cost him about $480, which is less than the cost of an isolated plant capable of giving the same service. Obviously the railway power has everything in its favor from the standpoint of convenience in this case.

Power Rates and Equipment

The company's power rate schedule classifies rates as "retail commercial," "wholesale commercial" and "power." If a consumer uses less than 300 kw.-hr. per month he comes under the first class, for which a straight rate of 7 cents is charged. The second class covers consumers using between 300 and 1000 kw.-hr. per month. The rate for this class falls in a sliding scale from 7 cents to 4 cents for the last hundred of the thousand. Large users pay according to the connected load and monthly consumption, the minimum rate being 1.9 cent per kilowatt-hour. Five per cent discount is allowed if the bills are paid within ten days.

The power station is located at Findlay and energy is furnished to three substations located along the line from a 20,000-volt transmission line. Each substation is equipped with one 400-kw. converter. The generating equipment consists of two 1000-kw., 25-cycle, three-phase generators direct-connected to McIntosh-Seymour cross-compound engines, and a 1000-kw., GE, 60-cycle turbo-generator. The turbine set is a recent addition necessitated by the rapidly growing power load. In normal operation the turbine set is operated in parallel with one of the engine-driven generators, the two being tied together by two 300-kw. frequency changers operated in parallel. This rather unique combination works very satisfactorily, an interesting feature being that the turbine, because of the greater kinetic energy of its moving parts and some difference in the sensibility of its governor as compared with the engine governor, absorbs all of the sudden load peaks and permits the engine to operate under a practically constant load. In the winter season the engines are run non-condensing, the exhaust steam being used to operate a central heating system. The turbine has a bleeder connection for the same purpose. A locomotive crane is used to transfer coal either from the cars to the storage pit or direct to the boiler bunkers. It was installed about three years ago and according to the superintendent of power, Daniel Riedel, it has more than paid for itself.

The general manager of this property, C. F. Smith, has been with this road ever since it started and is the the only man of the pioneer organization still alive.

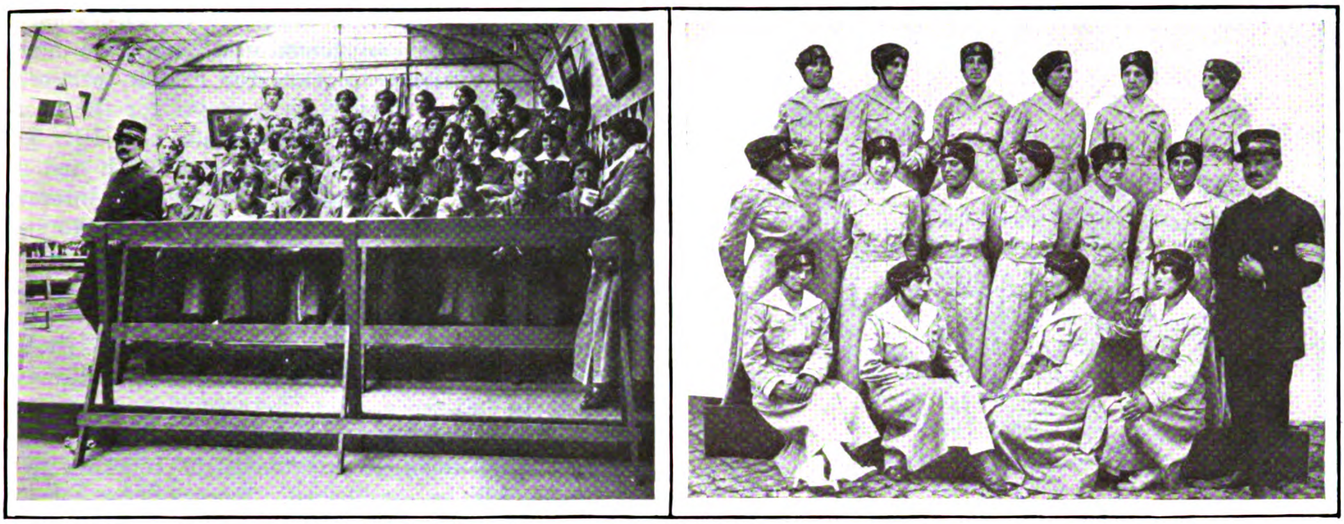
American Engineering Service Committee

The Engineering Council, composed of representatives of four leading technical societies, has appointed an "American Engineering Service Committee." This comprises five members representing the same number of engineering societies, with George J. Foran, International Steam Pump Company, as chairman, and A. S. McAllister, formerly editor of *Electrical World*, secretary. It is expected that the committee will complete a tabulation of all engineers in the United States already begun by the separate societies. At present it is devoting itself to procuring men for special government service.

The above is separate from the council's war committee of technical societies, of which H. W. Buck, consulting engineer, New York City, is chairman. This was appointed to assist any organization in Washington in bringing to the attention of the engineers of the country the necessity for thought and help in the numerous problems that arise. The office of the council and of its committees is at 29 West Thirty-ninth Street, New York City.

An Attractive Time-Table Cabinet

A compact and convenient time-table rack is in service at the main offices of the Springfield (Mass.) Street Railway. The rack is mounted in the corridor at the main entrance beside a seat used by persons waiting for appointments. It contains fifty-six pockets, each holding about twenty folders. The rack is composed of ⅜-in. wood stock, 6 ft. 4 in. x 3 ft. 2¾ in. in dimensions, and occupies no space which would be valuable for other uses.



GROUP OF STUDENTS RECEIVING INSTRUCTION, AND CLASS WHICH HAS COMPLETED THE COURSE AND IS READY FOR WORK

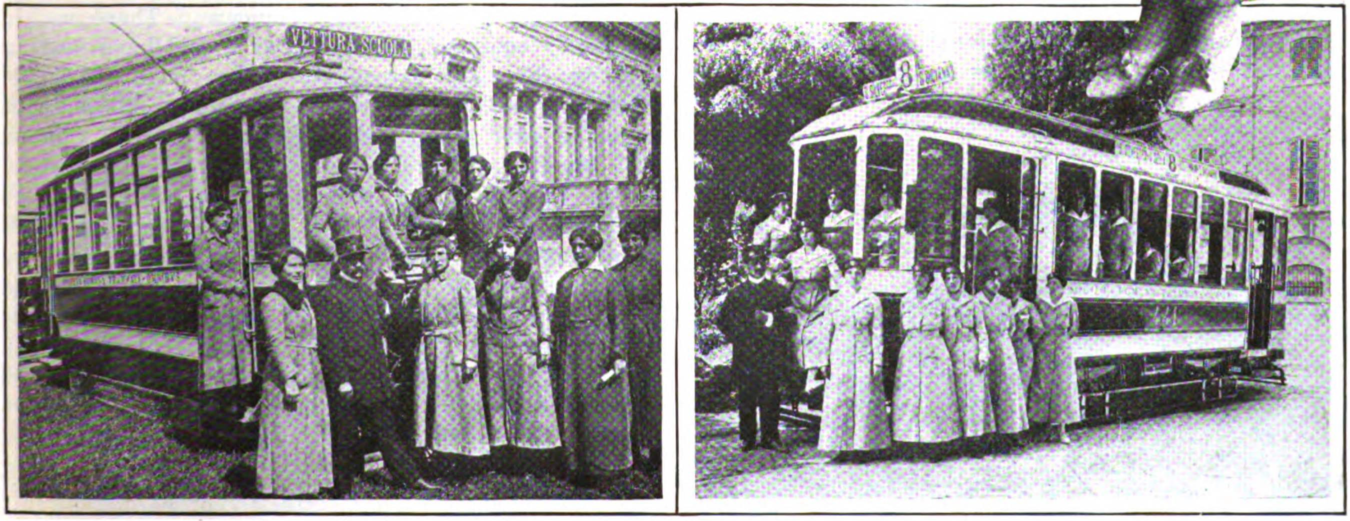
Motorwomen a Success in Rome, Italy

Women Conductors After Special Training Are Found to Be Well Qualified for Car Operation Also

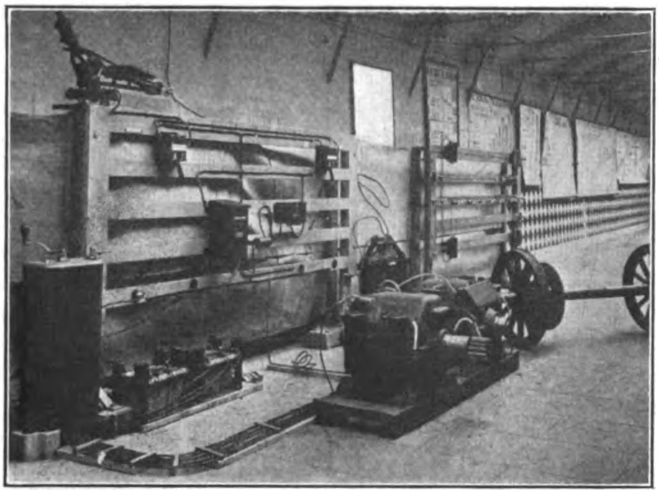
WHILE the Società Romana Tramways-Omnibus was the first company in Italy to employ women as conductors on tramway cars (see ELECTRIC RAILWAY JOURNAL, Aug. 7, 1915), it is not certain that it was the first to make use of them to operate these vehicles, because it was only a short time ago, and not until two years after their employment in the first-named capacity, that they made their advent as motorwomen. The project had been regarded with hesitation because of the steep inclines on some of the company's routes, such as do not exist on the trunk lines of any other Italian city. Moreover, the rolling stock, most of which has been in use for many years, is not furnished with air brakes, except in the case of the newer equipment, and the physical strength requisite to operate the hand brakes was thought beyond that of most women.

The experiment was made, however, and the results have justified it. After 100 days at the school of instruction, the pupil motorwomen of the company are prepared for service on any line and with any type of equipment, and the management says they are found more reliable than the men. They work without excessive fatigue.

Photographs reproduced herewith show the first sixteen motorwomen during the period of theoretical instruction, in the period of practical in-



STUDENTS BEING SHOWN THE PRACTICAL DETAILS OF CAR, AND CLASS BEING INSTRUCTED ON CAR UNDER SERVICE CONDITIONS



DEMONSTRATION EQUIPMENT IN THE INSTRUCTION SCHOOL

struction and after passing the final examination. The pupils are taken from the ranks of the women conductors and thus are already accustomed to railway service. It will be seen by comparison of the illustration shown herewith and those used in the previous article referred to that their uniform is different from that of the conductors, a style of garment being necessary that would obviate the danger of accident from the brake handle catching the clothing. The headgear is rendered less feminine in appearance, without losing its becomingness, by means of the throat strap.

The remaining photograph shows a corner of the instruction school, where the equipment and mechanism of the cars are explained by means of actual parts, showing the scheme of the electric circuits for the motors and the lamps and of the pneumatic circuit for the brakes.

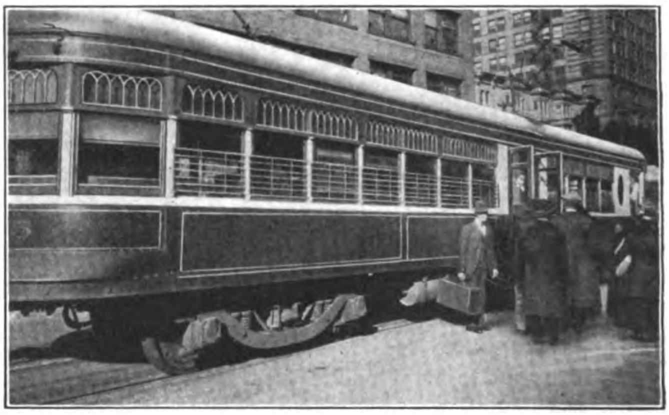
A New Interurban Which Co-operates with Rock Island Railroad

The Kansas City, Kaw Valley & Western Railway Is Developing Freight and Passenger Traffic Rapidly in Eastern Kansas, Immediately West of Kansas City, Mo.

ULTIMATELY the Kansas City, Kaw Valley & Western Railway will operate a total of 75 miles of main line, from Kansas City, Mo., to Topeka, Kan., passing through Kansas City, Kan., Bonner Springs and Lawrence. At present, Lawrence is the western terminus, two-thirds of the line thus being completed. This is the first step in the establishment of a high-speed interurban service efficiently to care for a rich territory. Kansas City, Mo., is famous as a center for the accumulation of wheat, corn and oats, and also as a distributing point for cereals consumed in the South and in foreign markets. An unusually large flow of interurban traffic radiates out of and into Kansas City to and from the surrounding farming and stock-raising districts of Kansas. This extensive service is furnished by six railway companies.

ONE OF TWO ELECTRIC LOCOMOTIVES ON SERVICE ON K. C., K. V. & W. RAILWAY, BONNER SPRINGS, KAN.

The passenger service of the K. C., K. V. & W. Ry. at present consists of an hourly local service from Kansas City, Mo., to Lawrence, Kan., between 6.30 a. m. and 11.30 p. m., practically two hours being required for the trip. When the road is extended to Topeka a limited service will be established. Passenger cars leave the center of the business district of Kansas City and pass through Kansas City, Kan., both over the tracks of the Kansas City Railways, to the city limits, where the interurban company's own line is reached. In addition to its passenger traffic the company also handles a considerable freight business, arrangements having been made with the Chicago, Rock Island & Pacific Railroad whereby the interurban handles local freight consigned over the Rock Island for points between Kansas City and Topeka.



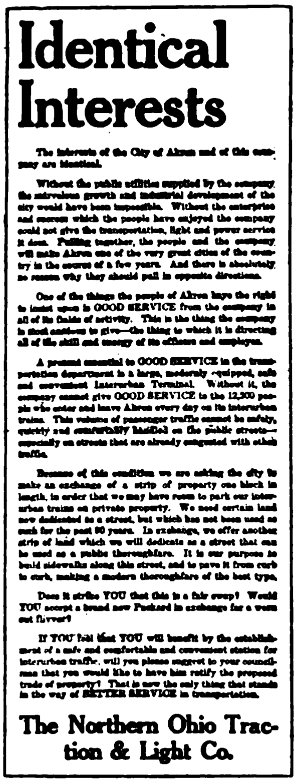
PASSENGER CAR OF K. C., K. V. & W. RY. LOADING IN BUSINESS DISTRICT OF KANSAS CITY, MO.

In passenger service the company has seven steel interurban cars of the center-entrance type, manufactured by the Cincinnati Car Company. These weigh, completely equipped, 52,000 lb. each, and have seating capacity for sixty passengers. They have quadruple Westinghouse 306 CV motor equipments, 65-hp., with 26 to 58 gear ratio, and single-end type HL control, with bus-line and train-line attachments. The trucks are of Baldwin make, with 6-ft. 6-in. wheelbase and 34-in. wheels. The air brakes are Westinghouse S. M. E., arranged for two-car operation, and the couplers are Tomlinson, Form 8, of the air-connecting type. For the freight business two electric locomotives are in use at present, the underframing and cabs of which were built by the railway company. Each locomotive is equipped with four Westinghouse 75-hp. motors, type 318 C, with a gear ratio of 16 to 73 and double-end control. Westinghouse type AMM brakes, with motorman's valves, St. Louis Car Company trucks with 6-ft. 8-in. wheelbase and 33-in. wheels, and Tomlinson Form 12 M. C. B. couplers, are also features. The locomotives are 31 ft. over bumpers, weigh each, complete, 36,800 lb., and are capable of handling 3000 tons trailing load on level tangent track.

POWER SUPPLY

Current for operating the interurban road is purchased from the city of Kansas City, Kan., at 6600 volts, three phase, 60 cycles. At Muncie, Kan., about 4 miles from the city, the voltage is raised for transmission to substations at Mahon and Leroy. Details of the substation equipment were given in the issue of the ELECTRIC RAILWAY JOURNAL for June 9, 1917.

Offering a Fair Swap



Identical Interests

The interests of the City of Akron and of this company are identical.

Without the public utilities supplied by the company the marvelous growth and industrial development of the city would have been impossible. Without the enterprise and success which the people have enjoyed the company could not give the transportation, light and power service it does. Pulling together, the people and the company will make Akron one of the very great cities of the country in the course of a few years. And there is absolutely no reason why they should pull in opposite directions.

One of the things the people of Akron have the right to insist upon is GOOD SERVICE from the company in all of its fields of activity. This is the thing the company is most anxious to give—the thing to which it is directing all of the skill and energy of its officers and employes.

A present essential to GOOD SERVICE in the transportation department is a large, modernly equipped, safe and convenient Interurban Terminal. Without it, the company cannot give GOOD SERVICE to the 12,500 people who enter and leave Akron every day on its interurban trains. This volume of passenger traffic cannot be safely, quickly and comfortably handled on the public streets—especially on streets that are already congested with other traffic.

Because of this condition we are asking the city to make an exchange of a strip of property one block in length, in order that we may have room to park our interurban trains on private property. We need certain land now dedicated as a street, but which has not been used as such for the past 80 years. In exchange, we offer another strip of land which we will dedicate as a street that can be used as a public thoroughfare. It is our purpose to build sidewalks along this street, and to pave it from curb to curb, making a modern thoroughfare of the best type.

Does it strike YOU that this is a fair swap? Would YOU accept a brand new Packard in exchange for a worn out flivver?

If YOU feel that YOU will benefit by the establishment of a safe and comfortable and convenient station for interurban traffic, will you please suggest to your councilman that you would like to have him ratify the proposed trade of property? That is now the only thing that stands in the way of BETTER SERVICE in transportation.

The Northern Ohio Traction & Light Co.

ADVERTISEMENT OFFERING TO SWAP LAND

The Northern Ohio Traction & Light Company, Akron, Ohio, is conducting its affairs with municipalities on the basis of equity, rather than on the authority of any right or power that may be given it by law. In this way the company proposes to establish friendly relations which will be of the greatest advantage to both the company and the public. At the present time the company needs a strip of land, belonging to the city of Akron, on which to park its interurban cars near the new terminal being erected. Instead of endeavoring to force negotiations, a proposition has been made to the city for the exchange of another piece of land which will be of more value for public purposes than the one the railway needs. The advantages of this exchange have been set forth in an advertisement in the local papers, as well as the policy of the company with reference to co-operation between utilities and municipalities or the public. The advertisement is shown in the accompanying illustration.

New York Association Committee Appointments

Wilbur C. Fisk, president New York Electric Railway Association, has announced the following committee appointments for the coming year:

Committee on Standards: W. G. Gove, Brooklyn, N. Y., chairman; J. S. McWhirter, New York City; W. J. Harvie, Syracuse, N. Y.; B. Penoyer, Schenectady, N. Y.; J. P. Ripley, New York City.

Committee on Military Operation: James P. Barnes, Schenectady, N. Y., chairman; J. E. Hewes, Rensselaer, N. Y.; J. J. Dempsey, Brooklyn, N. Y.; T. C. Cherry, Syracuse, N. Y.; James McCrea, New York City.

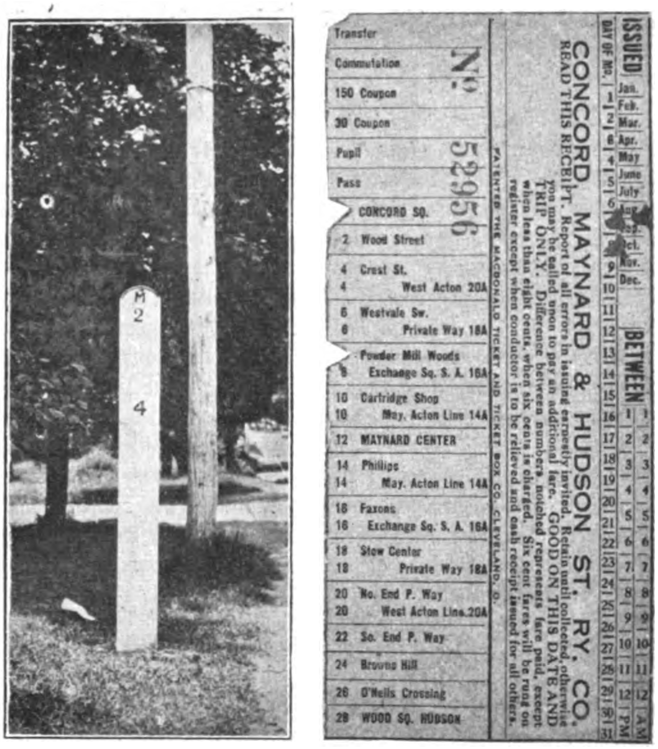
Committee on Membership: James F. Hamilton, Rochester, N. Y., chairman; B. A. Hegeman, New York City; James P. Barnes, Schenectady, N. Y.; J. J. Dempsey, Brooklyn, N. Y.; W. H. Collins, Gloversville, N. Y.

Copper Zones in Massachusetts

Method of Indicating Limits and Collecting Fares on Concord Line

THE Concord, Maynard & Hudson Street Railway on July 1 began a system of fare collections on the basis of 1-mile zones of 2 cents each, with a minimum fare of 6 cents, under the approval of the Massachusetts Public Service Commission, which has sanctioned this schedule for a six-months period.

The main line is approximately 14 miles in length, the termini being Concord and Hudson, and a branch extends about 5 miles from Maynard to West Acton.



CONCORD, MAYNARD & HUDSON ST. RY. CO.

READ THIS RECEIPT. Report of all errors in issuing earnestly invited. Retain until collected, otherwise you may be called upon to pay an additional fare. GOOD ON THIS DATE AND TRIP ONLY. Difference between numbers notched represents fare paid, except when less than eight cents, when six cents is charged. Six cent fares will be rung on register except when conductor is to be relieved and cash receipt issued for all others.

PATENTED THE MACDONALD TICKET AND TICKET BOX CO. CLEVELAND, O.

No 52956

ISSUED

Jan.
Feb.
Mar.
Apr.
May
June
July
Aug.
Sept.
Oct.
Nov.
Dec.

DAY OF Mo. 1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19 20 21 22 23 24 25 26 27 28 29 30 31

BETWEEN

PM 1 2 3 4 5 6 7 8 9 10 11 12

AM 1 2 3 4 5 6 7 8 9 10 11 12

Transfer
Commutation
150 Coupon
30 Coupon
Pupil
Pass
CONCORD SQ.
2 Wood Street
4 Crest St.
4 West Acton 20A
6 Westvale Sw.
6 Private Way 18A
8 Powder Mill Woods
8 Exchange Sq. S. A. 16A
10 Cartridge Shop
10 May. Acton Line 14A
12 MAYNARD CENTER
14 Phillips
14 May. Acton Line 14A
16 Faxons
16 Exchange Sq. S. A. 16A
18 Stow Center
18 Private Way 18A
20 No. End P. Way
20 West Acton Line 20A
22 So. End P. Way
24 Browns Hill
26 O'Neils Crossing
28 WOOD SQ. HUDSON

MILE POST AND FARE RECEIPT USED WITH ZONE SYSTEM

At exactly each mile, measured from the Concord end of the line, is a mile board which states the miles distant from that terminus, and below, the figure representing the cash fare at the 2-cent rate. The boards are 8-in. x 1.5-in. spruce plank, about 6 ft. high above the ground, except that at locations in the centers of the towns the face of a telephone or electric light pole is utilized, instead of a special mile post. The lettering is black on white background, and of neat appearance.

In its collections of fares the company uses a system of fare receipts, furnished by the MacDonald Ticket & Ticket Box Company, Cleveland, Ohio, and consisting of duplicate fare receipts showing date, mile points and fares, the limits for each passenger being notched into the main portion of the slip which is given to its passenger, to be surrendered at destination. These fare receipts, with the stubs turned in by the conductors, are checked by the company.

The early difficulties arising from the conductors having to explain the system are being overcome, and the public is taking kindly to it inasmuch as it more nearly equalizes the burden on short and long-haul riders. The increased revenue expected from the system is based on the slightly increased through fares, rather on the short rides, which remain, as before, a 6-cent minimum. C. H. Persons, president of the road, hopes that from an experience of several months a substantial gain in gross revenue will be indicated.

The railway issues workingmen's tickets for daily use (fifty-two rides per month), based on 75 per cent of the regular fare, and also 150-mile mileage books at $2.80, a saving to the passenger of 6 2/3 per cent on the regular rate. It has also filed a petition with the Public Service Commission for permission to operate one-man cars on its branch line.

Fare Hearings Continued at Albany

Five More Companies, Asking for Increased Fares, Present Their Cases Before Up-State New York Commission

THE hearings before the Public Service Commission for the Second District of New York on the applications of twenty-eight up-state electric railways for an increase in fares were resumed on Aug. 27. On that date testimony was taken in the case of the Hornell Traction Company which seeks to establish a 6-cent fare on each of its lines. Robert W. Bull, secretary and treasurer of the company, presented the company's case, speaking at length of the management during the past three years.

The Hornell Traction Company was organized in 1892. It operates 10.88 miles of line. The total capitalization of the company is $270,000. The replacement value of the company's property is fixed at $300,000. Figures submitted to the commission showed that the road was operated with a profit until 1913. From then until the present time it has been operated at a deficit which last year was in the vicinity of $6,000. No dividends have been paid since 1913.

Henry A. Bull, counsel for the company, stated that the matter of increasing fares had been taken up by the municipal authorities of Hornell and that the necessity for the company increasing its rate of fare was generally realized by its patrons. No one appeared in opposition to the application. The commission reserved its decision in the case.

Testimony on the applications of three Long Island companies for 6-cent fares, the Glen Cove Railroad, the Huntington Railroad and the Northport Traction Company, was heard on Aug. 29. According to reports filed with the commission the Northport Traction Company has not earned operating expenses since 1915. In 1916 it operated at a loss of 1.6 cents per car-mile. The Huntington Railroad has earned the interest on its bonds only one year since 1909 and in 1916 operated at a loss of 2.8 cents per car-mile. None of the companies has been able to pay dividends.

The application of the Ithaca Traction Corporation was heard on Aug. 30. The company having been reorganized in 1914 and a valuation having also been made by the commission, no question was involved about stock not entitled to consideration. The company earned only 2.4 per cent in 1914 on the commission's valuation, but increased sale of steam for use in salt production increased its earnings in 1915 to 3.2 per cent and in 1916 to 3.4 per cent. The company, however, has paid no dividends since 1908.

Witnesses testified that although additional funds had been needed for various improvements in service it had been unable to procure the capital by the sale of bonds. The company's passenger revenue has increased less than 2 per cent since 1914, and operating expenses have increased more than 27 per cent in the same period. The company has been especially hard hit by the war since a large part of its traffic comes from students of Cornell University, many of whom have enlisted.

NO HOLD-UP FOR TEST CASE

The commission denied the request of Corporation Counsel Richard C. Drummond of Auburn that a test case be heard in the matter of the 6-cent fare petitions now pending at Albany. As noted in a recent issue, Mr. Drummond asked that the Schenectady Railway case be first disposed of, the idea being that the questions raised would be reviewed by the Court of Appeals before hearings were held in the other cases.

In denying this request from the conference of mayors for the cities concerned, the commission stated that it did not feel that it could properly agree to the suggestion that the Schenectady case should be the first heard. As a matter of fact, several other cases involving very nearly the precise questions of law which will come up in this Schenectady case have already been heard, although not yet decided, by the commission. These were noted in the ELECTRIC RAILWAY JOURNAL of July 28, page 146.

The commission was unable to see why any one of these cases would not serve as a suitable vehicle for arriving at a prompt judicial determination of the question of the commission's right to approve of increases in fare where special franchise conditions are involved. Apart from that, however, it did not seem to the commission to be either fair or in accordance with orderly procedure that it should indefinitely delay its decisions in a large number of cases which do not involve the particular question above referred to, and as to its jurisdiction over which the commission entertains no doubt whatsoever. In conclusion, therefore, the commission stated that it believed it should proceed as expeditiously as possible with its hearings in the last-mentioned cases.

Multiplicity of Uses for Electricity

Under the title "More than 3000 Uses for Electricity" the Society for Electrical Development after an exhaustive research has recently issued a booklet listing these applications, totaling 3000 and embracing the operations in 109 trades and industries. The booklet has been sent free to all members of the society.

"More than 3000 Uses for Electricity" is a complete, up-to-date guide for sales managers, contractors and all sellers of electric service. It reminds them at a glance of new possibilities for the sale of additional energy in their localities. In these days every trade and industry is giving special attention to modernizing its equipment on a basis which is both more efficient and more productive of profits.

This booklet is one of a carefully planned series to be issued in connection with The Society for Electrical Development's "Keep Business Going" campaign.

Coasting Records as an Aid to Faster Schedules

Within a Few Months After Installation of Coasting Recorders, the Pacific Electric Railway Began to Secure More Mileage Per Car on Several Lines

THE first year's experiences of the Pacific Electric Railway with the coasting recorder are of exceptional interest because of the diversity of this company's lines and of the service given over them. The interurban lines, for example, vary from what is practically city rapid transit to the magnificent high-speed service to San Bernardino, 58 miles from Los Angeles. In connection with these lines are various branches and city networks, and on nearly all the trackage there is an average growing volume of express cars and electric locomotive freight.

The large proportion of big car and train service on the Pacific Electric Railway makes the possibilities of energy and brakeshoe savings especially attractive, but the company is finding the coasting recorder also valuable as a means for taking up the slack in the line. It rightly regards the percentage of coasting obtained as an index of efficiency in operation. When the system of instruction and recording has developed the latent skill of the motormen, existing schedules are analyzed to see to what extent speeds may be raised and car and platform expense reduced accordingly. Naturally, this increase in running speed cuts the percentage of coasting, but the figures achieved by those making the best records indicate that the possibilities of coasting are far from exhausted.

All types of cars of the Pacific Electric Railway, except the locomotives of non-schedule freight trains, are equipped with 600 Rico coasting recorders, which were applied during the early part of 1916. Previous to the use of the recorder the men were informed at meetings of its purposes, how to make records, where to key in, etc., in addition to getting the usual pointers on the best way to handle the car from the company standpoint of "Safety, first; schedules, second; coasting, third."

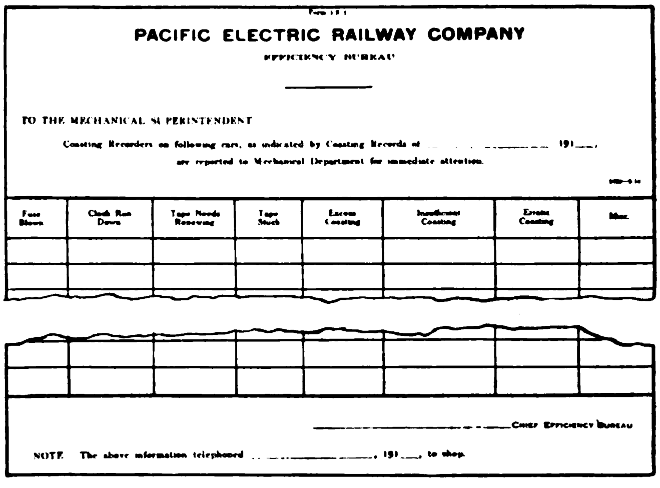
From the first, the men have taken a keen interest in the coasting records. As the dispatching system keeps the men closely to their time points there is no opportunity for low-coasting motormen to cast aspersions on the performances of high coasters. However, each motorman watches his records carefully and does not fail to record his opinion of his car or of exceptional running conditions, should he fall below par.

HOW THE RECORDS ARE CLASSIFIED

The coasting records are classified by the efficiency department, which comprises a chief clerk, four clerks, a stenographer and the department head, who has also other duties. In compiling the records use is made of a special type Burroughs adding machine, which adds running time and coasting time simultaneously. Percentages are determined with a slide rule.

Mimeograph sheets are prepared to show weekly comparisons of men on the same line, of the lines in a division and of the divisions as a whole. On these the names of the men, lines and divisions above the average are printed in capital letters—a little psychological touch. All recorder tapes are carefully scanned not only for reports of equipment defects but also for excessive, insufficient and erratic coasting. Such data are conveyed to the mechanical department on the form reproduced.

Because of the complex conditions on the Pacific Electric system, it is difficult to say just what the coasting recorders have saved in energy or brakeshoes, but the energy saving alone would pay for the recorders in two years. The saving in maintenance is still less tangible, but there is no doubt that lower maintenance has resulted. Still more important are the changes in schedule speeds fostered by the use of the coasting recorder. Several examples follow:



PACIFIC ELECTRIC RAILWAY COMPANY

EFFICIENCY BUREAU

TO THE MECHANICAL SUPERINTENDENT

Coasting Recorders on following cars, as indicated by Coasting Records of ________ 191__,
are reported to Mechanical Department for immediate attention.

Fuse Blown	Clutch Run Down	Tape Needs Renewing	Tape Stuck	Excess Coasting	Insufficient Coasting	Erratic Coasting	Misc.

________ Chief Efficiency Bureau

NOTE. The above information telephoned ________, 191__, to shop.

COASTING RECORDS—FORM USED FOR ORDERING REPAIRS

Line *A* formerly had sixteen cars operating on an average headway of five minutes. As the coasting average went up to 40 per cent and more, it was found feasible by May, 1916 (following two months' experience), to increase the schedule speed about 10 per cent, which meant cutting running time from thirty minutes to twenty-seven minutes. This gave the company the option of increasing the service or saving one car and two crews. After the change was made the coasting dropped to an average of 25 per cent, but even this was far in excess of what had been accomplished before the use of recorders. By April 21 the average had risen to 27 per cent. However, the real possibilities are indicated by the top-notch man, who showed 47 per cent coasting under the faster schedule!

Line *B*, which is operated on a forty-minute headway, was speeded up so that four cars would do the work of five. Despite this, the average coasting dropped from 44 per cent only to 32 per cent and is climbing upward again.

On Line *C*, with fifteen to twenty minute headways and trains of one to three cars, it was not found practicable to reduce the number of trains, but the running time of certain extra runs was shortened. On these runs the coasting average dropped from 43 per cent to

COASTING RECORDS—TYPICAL TABLES USED FOR COMPARISON

PACIFIC ELECTRIC RAILWAY COMPANY,
EFFICIENCY BUREAU.
Motormen's Coasting Percentages By Divisions.
Week Ending Nov. 21, 1916.

		Percentage This week.	Last week.
1	Northern Division	32.2	31.8
2	Eastern Division	29.8	29.8
3	Southern Division	27.5	28.1
4	Western Division	26.2	27.3
	Average entire system	29 2	29.5

PACIFIC ELECTRIC RAILWAY COMPANY,
EFFICIENCY BUREAU.
Motormen's Coasting Percentages By Lines,
Week Ending Nov. 21. 1916.
NORTHERN DIVISION.

	Line	Percentage This week.	Last week.
1	Glendale-Burbank	40 3	39.9
2	Sierra Madre	37.9	38.0
3	Oak Knoll	37.5	36.4
4	South Loop, Pasadena local	36.9	36.6
5	North Loop, Pasadena local	35.8	35.4
6	San Gabriel	35.4	36.1
7	Pasadena Short	33.6	33.2
8	South Pasadena-Watts	33 3	34.0
9	Express	33 3	35.6
10	Lake Avenue, Pasadena local	33.1	32.9
11	City Limits, Pasadena local	32.4	31.5
12	Glendora	32.2	32.1
13	Altadena, Pasadena local	30.7	31 6
14	Lamanda Park, Pasadena local	28.2	25.1
15	Edendale	28.0	27.7
16	Sierra Vista	27.8	29.3
17	San Bernardino	26.8	26.3
18	Pomona-Ontario	26.4	24.5
19	Shore and Depot	25.6	27.4
20	San Dimas	25.5	24.6
21	Pomona Locals	24.2	21.5
22	Euclid Avenue	19.5	20.5
	Average regular motormen	32.9	32.7
	Average extra motormen	27.2	26.4
	Average all motormen	32 2	31.8

29 per cent, but as the top-notchers to-day are getting 43 per cent, there is still plenty of room for coasting under the new conditions.

The case of the Hollywood local service is of peculiar interest because of the jitneys. On this line the slack revealed by the recorders plus additional cars made a service so efficient that the jitney buses one by one quit the field. They could not beat a once-a-minute service over the main part of the line. The increase in speed was 7 per cent.

Taking the performance of the top-notch coasters as a criterion of what can be accomplished by the majority, the company began on March 8, 1917, a survey of its lines to see what could be done to bring the low men up, particularly to determine to what extent some runs average higher than others. In this survey, the actual running time was checked against schedule time, coasting time, number of stops, length of stops and number of passengers for a majority of the trips throughout the day. Instructors also rode the lines in the course of this survey.

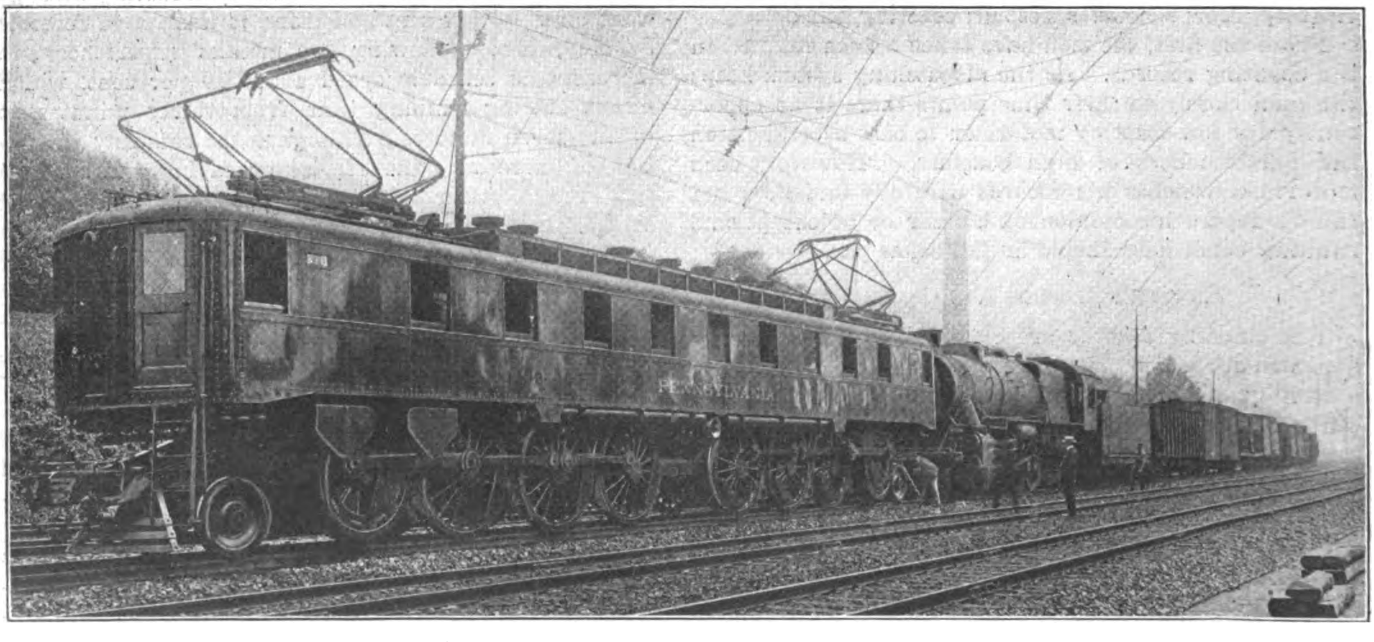
This intensive cultivation immediately showed excellent results. Thus the Western Division, which was the first to be surveyed, showed for the week ended March 7 an average coasting of 27.4 per cent; yet by April 30 the average had risen to 31.8 per cent. The personal instruction and the moral effect of seeing men use stop watches and counters led the motormen on this division to jump from fourth place to first. The Hollywood jitney-figuring line, which is in this division, climbed from an average of 22.1 per cent on March 7 to 27.2 per cent on April 30.

These encouraging results indicate that intensive personal instruction is an important factor in attaining and retaining a high standard of operating efficiency.

Pennsylvania Freight Locomotive Develops 7000 Hp.

Tests of the Pennsylvania Railroad's new freight locomotive were made on the Paoli division of the main line electrified section on Aug. 24, 1917. The illustration shows the locomotive hauling a train weighing nearly 4000 tons and composed of sixty cars and an idle steam locomotive. While the rated capacity of the locomotive is 4800 hp. the maximum horsepower developed was 7000.

The mechanical parts of the locomotive were built by the Pennsylvania Railroad and the electrical equipment was supplied at East Pittsburgh by the Westinghouse Electric & Manufacturing Company. Details of the construction of the locomotive were given in the June 9, 1917, issue of the ELECTRIC RAILWAY JOURNAL, page 1048. This is the first locomotive of its type and is designed for use on the Altoona grade electrification of the Pensylvania Railroad between Johnstown and Altoona in Pennsylvania. This route includes the famous Horseshoe Curve and many heavy grades, the maximum being a 12-mile stretch at 2 per cent.



PENNSYLVANIA RAILROAD'S NEW ELECTRIC FREIGHT LOCOMOTIVE DRAWING A 4000-TON TRAIN

COMMUNICATION

Electric Railways and Marketing of Foodstuffs

UNITED STATES DEPARTMENT OF AGRICULTURE
BUREAU OF MARKETS
WASHINGTON, D. C., Aug. 24, 1917.

To the Editors:

We have read with interest your comments, on page 214 of the ELECTRIC RAILWAY JOURNAL of Aug. 11, 1917, concerning the bureau's article entitled "Possibilities of a Market Train Service." Our study of this subject leads us to the conclusion that those cities which are termini of many of the leading electric lines of the country need more joint terminals, particularly terminals that serve or at least are immediately adjacent to the cities' markets. Doubtless the present war emergency will give impetus to movements of this kind.

We believe that one of the essential things to-day in the distribution of marketing of foodstuffs in all of our large cities is a wholesale terminal market provided with ample cold and common storage facilities, to which all of the rail carriers should have access on equal terms. Whether or not the term "rail carriers" should include the interurban electric lines, would appear to depend very largely upon the character of the freight traffic of such lines. If they handle carload shipments of perishable commodities that will be sold at wholesale, their cars should reach the wholesale terminal market. In view of the fact that the greater portion of their traffic to-day appears to be less-than-carload shipments that will be sold largely at retail, some plan ought to be put into effect whereby the cars carrying such shipments can run directly to the retail market, where their contents can be unloaded and placed on sale without the necessity for their being hauled long distances by wagons or auto trucks from the terminals of the electric lines. There are many difficulties in the way of perfecting plans of this kind, but the difficulties should not be regarded as insuperable obstacles. One of the principal difficulties is the increasing population of our cities, with consequent increasing congestion of street traffic and increasing prices of property. But we should look to the welfare of our cities in the next generation, and not merely to their immediate welfare at this time, and a beginning should be made now of plans for the relatively more efficient and more economical provisioning of our cities than is possible under existing conditions. CHARLES J. BRAND, Chief of Bureau.

H. M. Byllesby & Company, Chicago, Ill., are distributing a pamphlet entitled "Rational Public Ownership," a reprint of a lecture delivered by W. H. Hodge of the company at Harvard University to the students of the Graduate Business School. It describes a movement which has for its aim the bringing of the public and the companies into closer harmony by providing for the ownership of the securities of a public utility by the customers in the territory which the public service company serves. This plan, already in effect at more than half of the Byllesby properties, is being extended as rapidly as possible to all of them. It has been described in detail previously in this paper.

AMERICAN ASSOCIATION NEWS

Committee on National Defense Loses Head

On account of the appointment of Gen. George H. Harries to be brigadier-general in command of the National Guard of Nebraska, he has been obliged to resign his chairmanship of the committee on national defense. His successor has not yet been appointed.

Engineering Association Nominations

The Engineering Association committee on nominations has presented a report as required by the constitution, retaining the list of officers and executive committee members as at present except as affected by the resignation of First Vice-President G. W. Palmer, Jr. The nominations are: President, F. R. Phillips, Pittsburgh, Pa.; first vice-president, W. G. Gove, Brooklyn, N. Y.; second vice-president, E. R. Hill, New York City; third vice-president, C. S. Kimball, Washington, D. C.; secretary-treasurer, E. B. Burritt, New York City; members of executive committee, C. L. Cadle, Rochester, N. Y.; C. F. Bedwell, Newark, N. J.; J. W. Welsh, Pittsburgh, Pa., and J. M. Waldron, New York City.

Auditing Department Has the Floor at Manila Meeting

The Manila section held its thirtieth meeting on July 10. The paper of the evening was by D. M. Shaw, auditor Manila Electric Railroad & Light Company, on the topic "The Relation Between the Auditing and Other Departments." Five men were elected to membership in the railway division of the section, four from the motor and one from the stores department. Fifty-five members attended the meeting.

Among the many interesting things which Mr. Shaw said the following abstracts are typical:

The art of accounting is commonly thought to include only making a record of facts. But it is more than bookkeeping. It is not the act of making records but rather the art of learning the facts which bookkeeping is supposed to record. The work of the accountant is almost entirely governed by judgment, which is acquired through experience in actual business or in dealing with imaginary cases which might arise in business.

Among the things which the accountant should do are these: Prepare accounting forms for his own use and that of other departments; examine office routine of all departments to insure economy and the correct making of returns; assist in preparing estimates for proposed work; insure the receipt of materials ordered by the purchasing department and check invoices relating thereto; check and price requisitions from the stores department; keep such detailed accounts as will show at any time the amounts of materials in store; keep running inventory of material in hand; check time records, make up necessary pay-rolls and see that men are promptly paid; compile monthly statistics to show true status of the company's affairs; tabulate data for the guidance of department heads, etc.

In the discussion C. H. Van Hoven, claim agent, referred to the accounting department as the corporation scales upon which the corporation weighs itself frequently to learn whether it is gaining or losing weight.

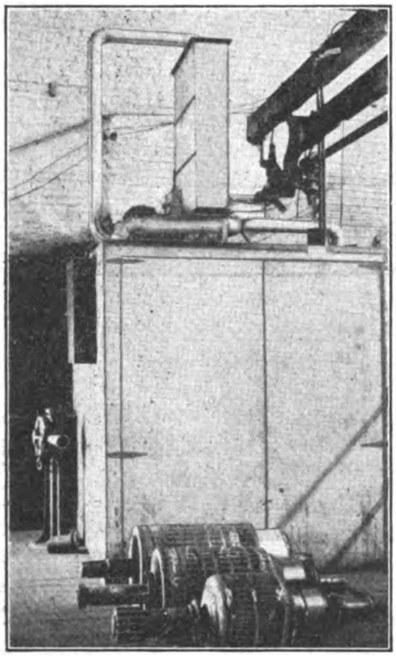
EQUIPMENT and MAINTENANCE

HAVE YOU A GOOD WAY
OF DOING A JOB?
—Pass It Along

Read in This Issue:
How A. W. Reddersen Bakes Armatures and Field Coils

Oven for Baking Motor Coils

BY ARTHUR W. REDDERSEN
Superintendent Motive Power Fort Wayne & Northern Indiana Traction Company



HOT AIR BAKING OVEN FOR DRYING ARMATURES AND FIELD COILS

A specially-designed hot-air oven for baking armatures and field coils has recently been installed in the shops of this company with successful results. The hot air is supplied to a large galvanized baking oven with the help of an ordinary motor-driven blacksmith's forge blower and four sets of electric heating coils. These coils are inserted in a galvanized-iron case lined with asbestos and mounted on top of the oven as shown in the illustration. They are connected up so that it is possible to take the top off the case and lift all heaters out for repair. Air from the blower, which is also mounted on top of the oven, is forced into the top of the case containing the heaters through a 4-in. galvanized-iron duct, and after passing through the heater it is directed into the top of the oven at two opposite corners. The intake side of the blower is connected with two 4-in. air ducts leading from the bottom of the oven so that the larger part of the air circulated is used over and over again.

Current for the electric heaters is taken from the 600-volt trolley circuit, while the blower motor is operated off the lighting circuit. The degree of heat inside the oven is regulated by a damper in the air duct and by the control on the heaters, from one to four of which can be connected in the circuit. The blower is operated at a constant speed. With all four heaters in operation, a temperature of 185 deg. Fahr. is readily maintained.

The oven is 6 ft. square on the inside, 8 ft. high and is constructed with double galvanized iron walls with a 4-in. air space between filled with asbestos paper. Entrance to the oven is made through large double doors which open up the entire front. There is sufficient space to bake at one time four 100-hp. armatures and several field coils placed on top of them. With all four heaters on and the air damper about one-half open, the armatures are maintained at a temperature of 176 deg. for a period of fifteen hours.

Safety First at the Switchboard

Switches on Multiple Feeders Should Be Marked When Circuit Breakers Do Not Furnish Complete Protection

BY G. H. McKELWAY
Engineer of Distribution Brooklyn Rapid Transit System

Many railway switchboards are composed of panels upon each of which are mounted two feeder switches and but a single circuit breaker as shown in the diagram. This is a safe and comparatively cheap method of construction when there is only one power house or substation feeding each line.

When, however, one or both of the feeders on the panel supply current to a line which also obtains power from another station, there is a very different condition to be met. A ground on one of the feeders on the panel may be heavy enough to open the circuit breaker on that panel, but this will not kill the line as the current will feed through the bus connections between the switches and the circuit breaker and the grounded line will receive current from the ungrounded one on the same panel. Often the ground will be so far from the second station that the resistance in the line will limit the current to an amount below that required to blow the breaker in the distance station, although it will amount to several hundred amperes. The only way, then, to break the circuit and clear the grounded line, except by telephoning to the other station, a method too long to be thought of in an emergency, is by pulling the switches on the panel. To break such a current means that a heavy arc will be drawn when the switches are opened and the work must be done quickly and carefully or

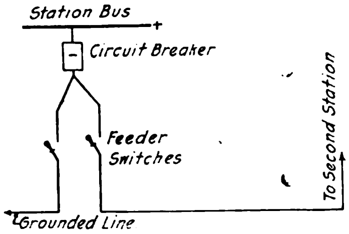


DIAGRAM SHOWING FEEDER SWITCHES WHICH SHOULD BE MARKED TO CAUTION OPERATOR both the switches and the station attendant will be injured by the arc.

In order to warn the men of their danger when opening such switches and to make sure that the switches are properly opened, it is the practice of one large company to have all of the switch handles of such multiple feeders painted with red stripes, so that there is now no excuse for an attendant making a mistake in opening them. Results have shown that this "safety first" suggestion has been followed with much fewer accidents to both men and equipment than there were before it was put in force.

Kerosene-Electric Car Having a Large Reserve Power

New Type of Gas Generator Makes the Kerosene-Electric Car Practical—Standard Railway Motors and Control Used

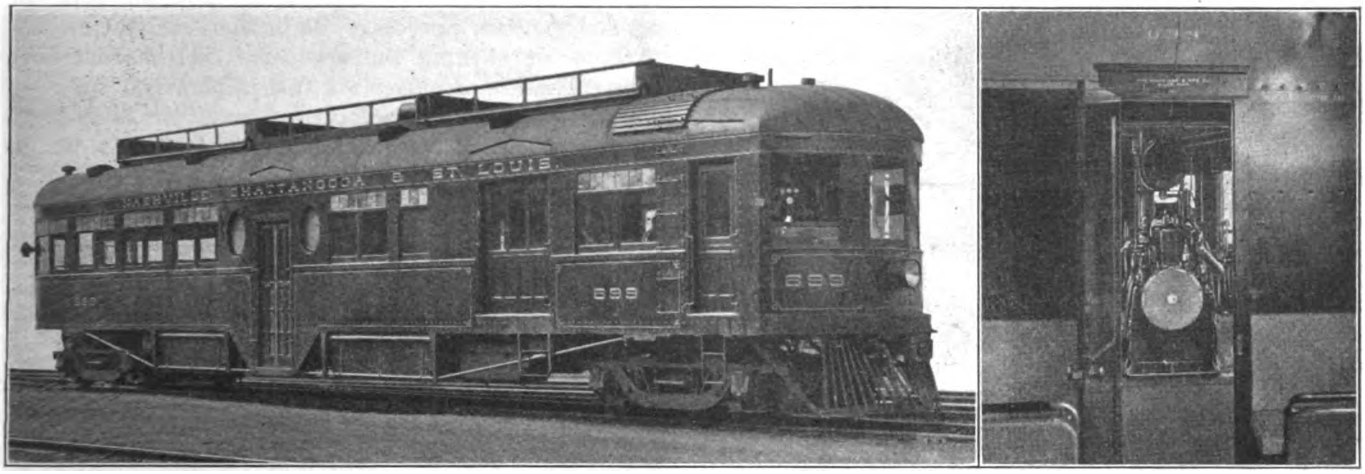
On Aug. 22, 1917, a kerosene-electric combination locomotive and passenger car, known as the Beach oil-electric car, was given a test run between Newark and Trenton, N. J. This car is the first of its kind and thus far has proved to be a success. The source of power is kerosene oil, which is converted into a gas by means of a special gas generator. It is then fed to an eight-cylinder 4-cycle high-speed engine of the marine-gasoline type, in which it is ignited by electric spark plugs as in the ordinary automobile engine. This engine drives an electric generator which supplies current to standard railway motors through regular railway control apparatus, there being a storage battery floating on the line to smooth out the load on the generator.

The most novel feature of the equipment is the kerosene-gas generator which was developed especially for this car. In this generator the kerosene oil is brought in contact with a porous material at a temperature of about 1300 deg. Fahr., at which temperature it is possible to transform the oil to a permanent fixed gas without depositing tar or other carbon products in the generator. The development of a gas generator, which will completely gasify kerosene oil so that it can be used in a high-speed engine of the common automobile type, is considered so important that representatives of United States and British navies who were present at the trial run are investigating the subject, believing that the apparatus may help greatly in solving their fuel problem.

At the engine the gas is mixed with air in the proportion of one part gas to six parts air. This mixture is said to contain 98 per cent of the heating value of the kerosene oil and to burn in the engine cylinders without smoke or any other deposits. The rating of the engine is 150 hp. and its speed is 1000 r.p.m.

The electrical equipment is operated at 250 volts instead of the usual 600 volts, but otherwise it is essentially standard railway apparatus which has already been tried out in years of successful operation. This is an important feature since new maintenance troubles are not likely to develop, and it is equipment which railway men know how to operate and maintain. The engine is direct-connected to a Westinghouse 100-kw., 250-volt generator, and the current is fed to the motors through the Westinghouse standard HL control, which with slight additions has been made to handle a storage battery in parallel with the generator. The storage battery is also used to start the engine by driving the generator, to which it is connected as a motor.

Completely equipped, the car weighs 56½ tons, it accelerates at 0.8 m.p.h.p.s. and has a running speed of 45 m.p.h. It requires 140 hp. to operate a car of this weight at 45 m.p.h. and 340 hp. to accelerate it at 0.8 m.p.h.p.s. As previously mentioned the engine develops 150 hp. so when the car is traveling at a uniform speed of 45 m.p.h. the surplus power, or 10 hp., is used to charge the storage battery. There is a limit switch which automatically cuts out the storage battery when it is completely charged. During acceleration the storage battery discharges and supplies the difference between the 340 hp. required and the 150 hp. furnished by the generator, or 190 hp.



GENERAL VIEW OF KEROSENE-ELECTRIC CAR AND NEAR VIEW OF THE 150-HP. ENGINE WHICH DRIVES IT

The battery consists of 128 cells, giving a total voltage of 250. It is connected in parallel with the generator, which is differentially compounded so that the voltage falls off as the load increases. When the load increases beyond the rated capacity of the generator the voltage falls slightly below 250, and the battery begins to discharge. The generator is compounded so that its voltage characteristic is the same as that of the battery, hence the voltages of the two are always equal and they operate readily in parallel, the battery taking all of the load above the rated capacity of the generator. The battery is capable of delivering 400 hp. for five minutes, 210 hp. for fifteen minutes, 93 hp. for one hour and 30 hp. for five hours. This power, in addition to the 150 hp. developed by the generator, gives the car abundant power for acceleration and negotiating heavy grades. There is a 75-hp. Westinghouse No. 342 railway series motor geared to each axle. These are standard railway type motors but are wound for 250 instead of 600 volts.

The body of the car, which was built by the Niles Car & Manufacturing Company, is entirely of steel with the exception of the interior trim, sashes and doors, which are mahogany. It is 59 ft. long and is divided into four compartments: an engine room, 12 ft. 5 in. long; a baggage room 7 ft. 5 in. long with folding seats for four persons, a negro or smoking compartment 10 ft. long with seats for eighteen people, and a main passenger compartment 25 ft. 6 in. long seating fifty-three people, making a total capacity of seventy-five. The car is heated with hot water from the engines which is by-passed when not wanted.

Baldwin double trucks of the equalized high-speed type with 7-ft. 3-in. wheelbase, Westinghouse straight and automatic air brakes, 33-in. M. C. B. rolled-steel wheels and 5-in. x 9-in. M. C. B. journals are used.

The car was developed by the Electric Car & Locomotive Corporation of New York, and has been tried out on the Nashville, Chattanooga & St. Louis Railway, where it is to be used. On this road the operating costs were as follows:

	Cents
Wages	7.5
Fuel and lubricants	4.0
Repairs and supplies	3.5
Depreciation	3.85
Total cost	18.85

The service upon which these figures were obtained consists of one stop for every 2 miles and a continuous equivalent grade of 0.3 per cent. Running on straight level track the car goes 2½ miles per gallon of fuel.

Of course the field of a car such as this for electric railway operation is only at locations where the density of traffic is not great enough to pay to install overhead or third-rail construction with the necessary arrangements for supplying power. This car is built according to steam railroad standards and is thus heavier than would be necessary for some electric railway purposes. Lighter weight designs, however, are now in the course of construction.

Reducing Pin Wear and Truck Noise

BY G. J. SMITH

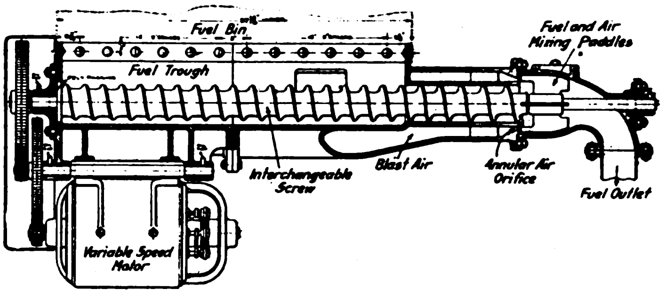
Superintendent of Rolling Stock and Shops, Kansas City (Mo.) Railways

On all of our trucks we have adopted the practice of placing a coil spring under the nut on all bolts which perform the functions of pins, as, for example, those in the brake-hanger links, pull-rod jaws, etc. These springs are generally made of 3/16-in. or ¼-in. round spring steel and are oil tempered. They are compressed until practically solid. The breakage of springs is almost negligible, and the wear on pins is reduced considerably. Also, the parts are constantly and firmly held together, thus entirely eliminating any tendency to rattle. On the new types of trucks these springs are in many cases furnished by the manufacturers.

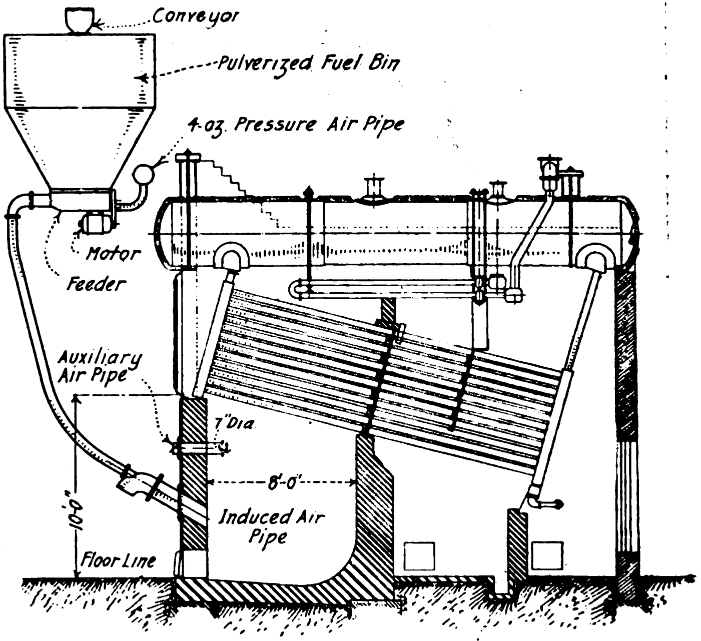
Burning Powdered Coal

Pulverized Coal at $3 per Ton Is Said to Be Equivalent to Fuel Oil at 1½ Cents per Gallon

That there is available a large amount of low-grade fuel and mine waste rich in fuel value which could be used in addition to the developed sources of high-grade coal is pointed out in an article by V. Z. Caracristi, vice-president Locomotive Pulverized Fuel Company, in the September issue of the *General Electric Review*. He points out that this fuel has not been developed more extensively because high-grade fuels have in the past been available at reasonable cost, so that the development work necessary to produce satisfactory apparatus for burning the low-grade fuel has not been done. The use of pulverized fuel in plants of sufficient size to warrant the necessary expenditure is justified by the following considerations: The boilers can be forced materially without loss of combustion efficiency; full steam pressure can be maintained under overload conditions, and heavy overloads can be taken on quickly; greater heating value per cubic foot of furnace volume can be had; clinkering of coal grates, draft blowers, banked fires and the smoke nuisance are eliminated; the initial boiler plant investment is reduced through the use of less heating surface in the boilers, and the



SECTIONAL VIEW OF PULVERIZED FUEL FEEDER



B. & W. TYPE BOILER SHOWING APPLICATION OF APPARATUS FOR USING PULVERIZED FUEL size of boiler house, the height of stacks, and the cost of firing and ashes handling are reduced.

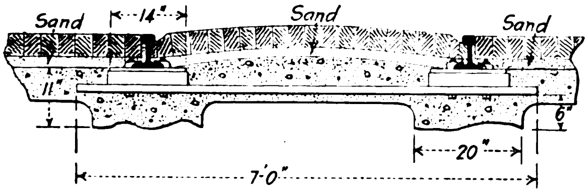
On the other hand, certain disadvantages are met in the expense of preparing the fuel, as follows: The expense of crushing and drying the coal and freeing it from stray iron and elevating it to bins preparatory to pulverizing, the cost of power for pulverizing and the maintenance of necessary equipment.

Much has yet to be done in developing equipment required for drying and pulverized fuel, but it is said that the cost under present commercial conditions is not prohibitive. The cost of pulverizing coal at $3 per ton has been found under some conditions to be comparable with that of fuel oil at 1½ cents per gallon.

Asphalt Cushion Is Principal Feature of New Mechanical Tie

Combination Wood Block and Steel Rail Support Claimed to Lessen First Cost and Greatly Reduce Maintenance—Installations Made in Dayton, Ohio

A suitable cushioning of the rails in combination with a construction which assures the maintenance of the rails at proper gage and alignment are the particular features embodied in a combination wood and steel mechanical tie manufactured by the Dayton Mechanical Tie Company of Dayton, Ohio. The accompanying illustrations show an installation in the course of construction as it was recently made on North Jefferson Street, in Dayton, by the People's Railway Company.



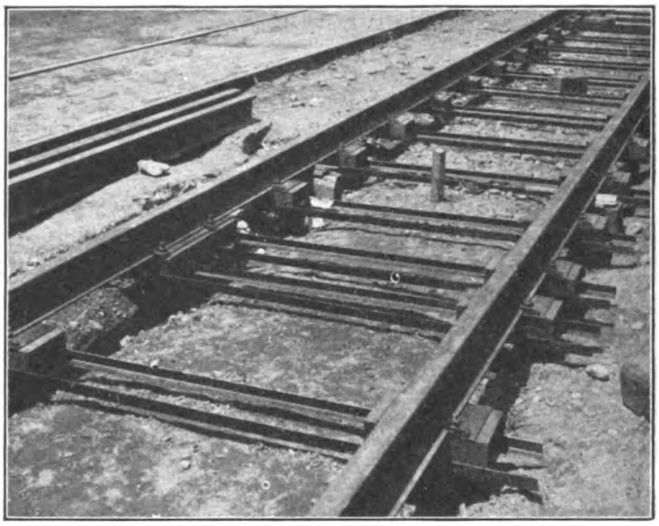
CROSS SECTION OF TRACK CONSTRUCTION USED IN DAYTON WITH MECHANICAL TIE

This new tie is made up with two wood blocks held in position by metal forms and embedded in a cushion of asphalt. The wood blocks are the immediate support for the rails, and are fastened to them by clips and bolts extending through the blocks and steel forms. The two iron containers holding the blocks and asphalt are held at proper spacing by two angle irons.

For use at rail joints a special tie is made up with two pairs of the angle irons and a longitudinal wood block extending underneath the joint at one or both ends of the tie, depending on whether the joints are being laid opposite or staggered. The ordinary mechanical tie and the joint tie are both clearly shown in the photographs.

In new open-track work it is the idea of the manufacturer that the tie will be molded in concrete and allowed to season before placing in the track. In replacing wooden ties in old track with the mechanical ties the latter are suspended in proper position in earth trenches across the roadbed, which serve also as the forms for pouring the concrete on the job. After this has thoroughly set, gravel is tamped underneath the portions directly below the rails, thus bringing the ties into bearing and placing them in service. In paved streets, in city work, the method specified for the installation of the mechanical tie is to dig a trench 6 in. deep and 20 in. wide under each rail. The rail is blocked up to surface and the mechanical tie bolted to it. The concrete is then poured, filling in the space up to the base of the rail.

The asphalt cushion underneath the wood blocks absorbs the hammer blow of the rolling stock moving over the track, and thus preserves the concrete from disintegration. The theory which has caused the manufacturer to use this asphalt cushion is that a constant hammering directly upon concrete, no matter how slight, will eventually powder and wear away this non-resilient substance. If this hammering, however, is absorbed by a struction which has a resilient cushion such as the asphalt beneath the wood blocks, then it is claimed that no amount of hammering or movement of rolling stock over the rail will cause any deterioration of the concrete base.



MECHANICAL TIE FASTENED TO RAIL AND BLOCKED UP READY FOR POURING CONCRETE

Another advantage claimed for the mechanical tie is that the spikes used in ordinary wood tie construction are replaced by ¾-in. bolts. In contrast to the spike, this bolt cannot pull out or work loose without first breaking. It cannot work away from gage because it is held in place by the steel angle irons. It cannot rust out because it is embedded in asphalt and concrete. The two bolt holes through the wood blocks are so spaced as to allow just sufficient space for the rail base to set between the bolts. This arrangement, it is claimed, will not permit the rail to move from gage without jumping straight up and over the bolts (a physical impossibility) even though the nut and clip should work loose. The blocks used are 4-in. x 8-in. x 14-in. selected white oak, and these, when embedded in asphalt and concrete, it is claimed, will last indefinitely without decay. There is also no respiking to impair their life.

The possibility that the angle iron will bend and throw the rails out of gage owing to the track becoming centerbound is eliminated by removing the cause. In the construction recommended for use with this tie the latter bears upon the roadbed under the rail and for a few inches on each side only, but the angle-iron crosspieces are kept free, and serve simply as the means of holding the wood blocks to gage. This is the condition in open trackwork. In paved streets, the trenches. filled with concrete, are located underneath the rails where the weight comes. A trench 6 in. deep brings the surface of the ground upon which the concrete in the trench bears at a depth of about 18 in. below the top of the rail. This is ordinarily below the frost line, and when under pavement it is also below the softening of the earth by weather. Thus the likelihood of the ties sinking below the original level, causing center-binding of the tracks, is very remote.

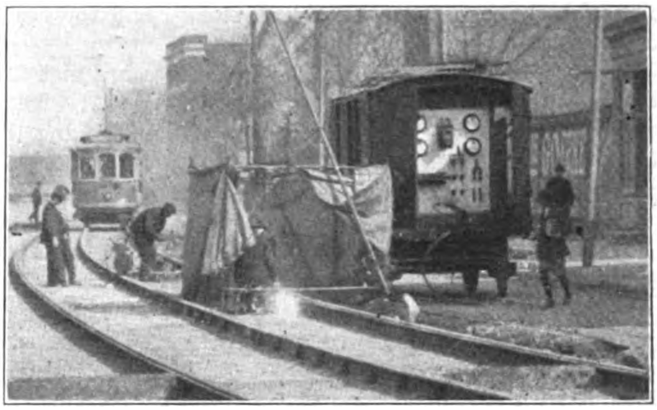
If it becomes necessary to renew the wooden blocks used in the mechanical tie in tracks in paved streets, this is done by first removing the pavement directly above the blocks and for about 18 in. at the outer end. The bolts are then removed, which permits the wood block and iron container to be slid out from under the rail.

POURING CONCRETE AROUND DAYTON MECHANICAL TIES

A new block, embedded in the asphalt, is then prepared, bored to fit the base of the rail, and returned to the place occupied by the old block. The bolts are then inserted and tightened, and the opening is ready for restoring the paving. This replacement work can be done by one man in a day or less, whereas the replacement of a wooden tie in concrete foundation will require the work of several men for probably a longer time. Owing to the careful selection of the sound white oak blocks used in connection with the mechanical ties, these replacement features from wear or decay are claimed to be remote possibilities.

New Insulating Tape Made by Special Process

To meet the scarcity of woven tapes for insulating purposes a new kind of cambric tape has been developed which has a fast edge even though it is not woven. This tape, which is known as "Fastej" is made by Freydberg Brothers, Inc., New York City, and a special process is used which prevents the edges from unraveling. The tape is said to have the same mechanical and electrical properties as the woven type, and it is somewhat cheaper to manufacture. It can be made in any desired width, and while it can be secured in several thicknesses, 6 mils is the thickness most generally used.



WELDING OUTFIT IN OPERATION—A BASE WELD IS BEING MADE

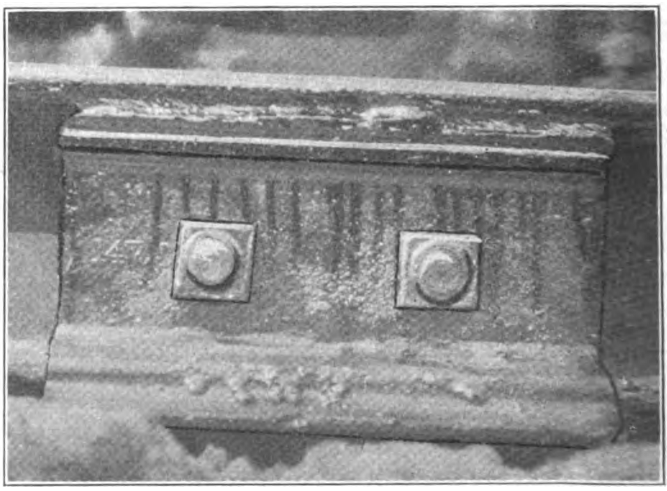
Experiment in Welding Mechanical Track Joints

An Attempt to Combine the Virtues of Electrically-Welded and Mechanical Joints

BY MARTIN SCHREIBER
Chief Engineer Public Service Railway, Newark, N. J.

At a recent convention of the American Electric Railway Engineering Association the writer was impressed, while examining the exhibits of track joints, with the fact that development in this field has been along two general lines, namely, mechanical joints and welded joints. Each of these has been developed to a considerable state of perfection, but each has its limitations. In the mechanical joints it is difficult to utilize the full strength of the material in the plates, due to irregularities in the surfaces which are supposed to be in contact. In the welded joints, dependence is placed largely upon welded areas, and again the full mechanical strength of the plate cannot be utilized.

As the merits of each type of joint were so great it was thought that possibly they could be combined in a single joint, and accordingly the first opportunity was taken to carry out this idea in an experimental way. For this experiment, Continuous rail joints were selected. The upper edges of the plates were welded to the under side of the rail heads by the Atlantic Welding Corporation's process, and a spot weld was also made between the plate and the rail base. A photograph of a sample joint is reproduced herewith.



12-IN. RAIL JOINT ELECTRICALLY WELDED TO HEAD AND BASE OF RAIL

HEAD WELD IN 16-IN. EXPERIMENTAL RAIL JOINT

It seemed reasonable to suppose that if the plate metal were used to the maximum advantage it might be possible to shorten the plates of the Continuous joint from 24 or 26 in., as had been standard with this company before. To test out this point twelve joints 16 in. in length were installed, and also one 24 in. long and one 12 in. long. These have been in the track in Newark, on South Orange Avenue, between Brookdale Avenue and Boyden Street, since last April. We hope from the experiment to learn what will be the best length of joint, although data obtained from such a small number cannot be entirely conclusive.

So far the joints have done very well, and electrical tests made upon them show an average conductance 19 per cent greater than that of an equivalent length of solid rail. Electrically, therefore, the joints leave little to be desired. The cost of these experimental joints was, of course, considerably higher than that of joints put in in large numbers, but it is believed that on a large scale this cost would not be prohibitive, especially if it proves that a very short joint will do the work.

A photograph, reproduced on page 362, shows the welding apparatus at work, and in the one above is seen a seam weld under the rail head.

Emergency Storage of Coal

Coal Unloaded and Stored in Large Quantities Without Special Equipment

As many railways are now considering the storage of coal on a much larger scale than ever before practised, the method used by the Virginia Railway & Power Company, Richmond, Va., for unloading coal for emergency storage is of interest. An ordinary track is first laid on the ground on which the coal is to be stored, and the coal in hopper-bottom cars is run onto this track and dumped. To spread out the coal and clear the track for the car to pass over an 8-in. x 8-in. timber is placed in front of the rear trucks.

When covered up to the top of the rails the track is jacked up until it rests on top of the coal. It is then ready for another layer. In this manner coal is stored to a depth of 10 ft. or 15 ft., the danger of spontaneous combustion preventing the use of a larger pile. When one pile is completed the track is shifted to the ground alongside of the first pile and the process is repeated.

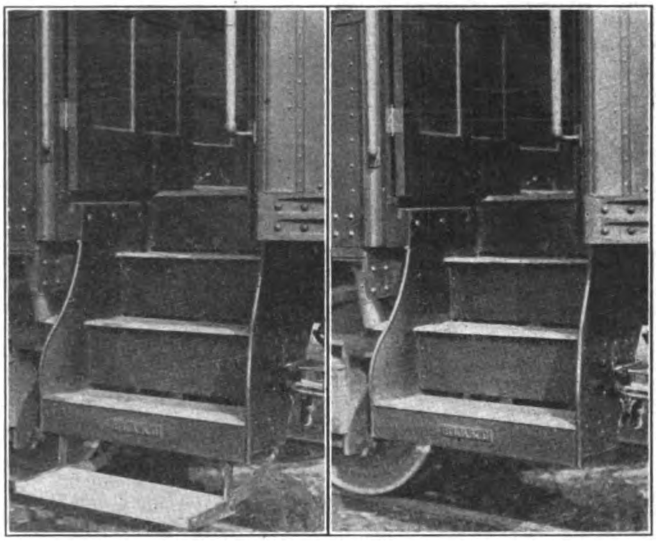
The controller of coal mines has sent out a letter to the mayors of all principal towns in Great Britain urging the organization of committees for the distribution of coal during the coming winter. It was suggested that each committee consist of the mayor or deputy, the chief constable, a coal merchant, a representative of each railway and canal, and a secretary.

Safety Step for Interurban Cars

Step Lowered by Compressed Air and Raised by Counterweight as Soon as Car Starts

A safety car step, especially designed for interurban service, has been in successful operation for some time on the Piedmont & Northern Railway, Charlotte, N. C. The step is pneumatically operated, but is different from the apparatus in common use in that the step will return automatically to its raised position as soon as the car starts. In addition to this the step cannot be lowered until the car is at a standstill.

The step operates in the following manner: When the train comes to a complete stop the conductor or porter on the train presses a foot lever or button, thus applying the air pressure to an operating cylinder which forces the step into the lower or alighting position. At the same time air is admitted to a smaller cylinder which forces a small cam down on top of the car axle. As long as the car remains at rest the step is held in the alighting position by the air pressure, but when the axle of the car turns the little cam on top of the axle is rolled off. This automatically releases the air pressure which holds the step, and the latter under the influence of a counterweight is carried back to its upper position where it is housed under the first stationary step of the car. The air pressure can also be released by the conductor by pressing a release lever in the housing of the trapdoor, and the closing of the trapdoor will accomplish the same purpose. The novel feature of the device is that it is not really left to an employee to put the step up before the train starts, as the automatic release on the axle cannot fail to take care of the step when the car moves. As the step is returned to its raised position by a counterweight, it will not operate if the passenger has his weight on it. This avoids throwing a passenger who is trying to alight when the step starts to raise.



PNEUMATICALLY OPERATED SAFETY STEP IN LOWERED AND RAISED POSITIONS

While this step was designed especially for interurban cars or steam roads where a stepping box is commonly used, the manufacturers, the Blake Car Step Works, Charlotte, N. C., believe that by slight changes in the operating mechanism it can be made suitable for application on city cars.

London Letter

Glasgow Trams Have Prosperous Year—Leeds to Have Women Inspectors—London County Council Tramways Show Estimated Surplus of Only £8,598

(From Our Regular Correspondent)

The Glasgow Corporation Tramways accounts for the year ended May 31 show that the net surplus to be paid over to the common good amounts to £160,984, the largest sum that has been available for this purpose since 1894, when the tramway system was municipalized. Previous to this year the highest contribution to that fund was in 1911, when the amount was £68,678. Last year £43,548 was paid to the common good. The gross revenue for the year shows an increase of £100,212, compared with that of the previous year, while the average traffic revenue per car-mile has increased from 11.049*d.* to 11.592*d.* Working expenses, including expenditure incurred on account of the war, increased by £52,414. Allowances paid to dependents of employees in the service amounted to £71,576. The sum of £31,000 has been placed to the credit of the fund under which, since 1914, the tramways department has carried on its own third-party risks. Claims and other expenses during the year amounted to £37,017, and the balance at the credit of the fund on May 31 was £12,696. There are now 1514 women conductors and 203 women drivers in the department, and at the depots 450 women are employed in the cleaning of the cars. The total number of employees who have joined the colors since the outbreak of war is 3129. Of that number reports have been received of the death of 291.

The Leeds Corporation tramways committee has decided to appoint six women inspectors on the cars, subject to the approval of the City Council. They will be selected, it is understood, from a number of the women who were among the first to appear as conductors. The women will be supplemental to the existing staff of inspectors, which has been reduced by four or five owing to war-time demands. Their duties will be confined to the inspection of tickets and the supervision of the conductors, who are nearly all women. This step has received the approval of the general purposes committee "as a war measure." In its decision on this matter the committee had in mind the fact that not only is an increased measure of inspection desirable, but that in practically all establishments to which women have been introduced in large numbers since the outbreak of war, a system of women inspectors, while not always popular at first, has been completely justified.

For the second half of 1916 the final dividend on the 6 per cent income bonds of the Underground Electric Railways was 2 per cent only, making 5 per cent for the year, as against the full 6 per cent paid for the three previous years. The interim dividend for the last half year is at the rate of 4 per cent per annum only, and considerable disappointment has been occasioned thereby. The Underground is a holding company, with a controlling interest in the various tube railways of London, the Metropolitan District Railway, and the London General Omnibus Company. The company is the holder of the whole of the ordinary capital of the London General, and an explanation for the reduced income bond dividend is doubtless that the Omnibus Company is only paying at the rate of 4 per cent, as compared with 5 per cent a year ago. With regard to the distributions of the others of the Underground group there is little to be said as they are exactly the same as a year ago.

The tramways in London, with the exception of about 2 miles, are owned by the London County Council, and it is worth noting that the lines on Blackfriars Bridge, although worked by the Council, belong to the City Corporation. At a recent meeting of the Council reports dealing with the tramways were presented from both the finance and the highways committees. These show that on the basis of the annual estimates submitted the results of the working of the tramways for 1917-1918 indicated a net estimated deficiency on revenue account of £89,402. Owing to circumstances which have arisen since the estimates were prepared, however, there will now be an estimated surplus of £8,598 instead of the deficiency anticipated. The tramways have a length of 149 street-miles, and the accounts for 1916-1917 show an income of £2,552,204. The working expenses (including war service allowances) came to £1,817,694, thus showing a surplus on the year's working of £734,510. The number of passengers carried during the year was 586,127,976, and the number of car-miles run 49,478,973. The corresponding figures for 1915-1916 were 545,423,397 and 47,879,675, respectively. The highways committee says that it has decided that the time of issue of workmen's tickets on all-night cars on down journeys shall be fixed to commence at 3 a. m. from the central terminals. Such tickets are not to be issued after 7.30 a. m. The committee further reports that it has arranged for the issue of transfer tickets on the cars only where there are no direct services and these will be available for change of cars at specified points only.

The final important section of the boring for the Post Office Railway has been completed. This is the parcels tube which is eventually to link up the big district offices of London. It will save a great deal of the mail van traffic on the streets. There is now a boring right through from Paddington, the western end of the undertaking, below the Western District office in Wimpole Street, and the West Central District office, to Mount Pleasant. On some of the remaining sections there are small points where further boring remains to be done. It is the policy of the post office, in view of the shortage of labor and materials, to do only what is essential. The entire suspension of work on the tunnel would at an earlier stage have considerably increased the outlay on construction in the long run, but the work was slowed down. The expenditure upon the undertaking so far approaches £600,000. The boring work has been carried out by means of the Greathead shield, with the assistance of compressed air where special difficulties were encountered. The laying of the rails and the installation of electric equipment will probably be postponed till after the war.

The Glasgow Corporation is discussing a proposed new tramway comforts scheme to take the place of the prize lottery drawing which was discontinued as illegal. The plan proposed provides that war comfort tickets be sold by conductors to the public at 1 penny each. A draw will take place each Monday, the number of tickets to be drawn depending on the number sold. The holders of the tickets bearing the numbers drawn will be entitled to select from a list exhibited on the cars the comforts funds to be benefited. The holder of the ticket bearing the first number drawn will have the first choice, and will have the disposal of the largest percentage of the receipts. The tramways committee has approved of the scheme, and recommended that a special sub-committee be appointed to carry out the arrangements, and that the town clerk be instructed to communicate the foregoing to the Secretary for Scotland. No decision has yet been reached.

The manager of the Keighley Corporation Tramways expresses, in his annual report, the belief that if inter-running between the Keighley and the Bradford tramways is brought about in the near future the benefits that must accrue to the Keighley tramways department by having about 9 miles more tramway track added to the section will be so great as to put the department on a thoroughly satisfactory basis. There are many instances in other parts of the country, he says, to show that a tramways system which is less than 6 miles in length—if an average is taken over a number of years—can never be made to pay. Immediately, however, it is increased to something approaching 12 miles, things automatically begin to adjust themselves on a paying basis.

Prof. Sir Richard Lodge, in his award as arbitrator in the Edinburgh tramways dispute, has decided that a war bonus of 5*s.* a week shall be paid to pointsmen, drivers, conductors, regulators, depot staff and pit and pulley greasers. A bonus of 2*s.* 6*d.* is to be paid to conductresses, and one of 1*s.* 6*d.* to boys under eighteen years of age. Time-and-a-half rates are to be paid for Sunday duty, except to those receiving a weekly wage. A. C. S.

News of Electric Railways

Traffic and Transportation
Financial and Corporate Personal Mention Construction News

St. Louis Settlement Protests

Many Objectors Heard at Third Session on St. Louis Franchise Compromise—Civic League Protests Second Plan

A third public hearing on the two proposed ordinances providing for settlement of the mill tax and franchise differences between the city and the United Railways, St. Louis, Mo., was held on Aug. 22 in the chamber of the Board of Aldermen. The first ordinance is known as the partnership plan. The second ordinance does not provide for partnership, but fixes a tax on the gross receipts of the company.

The hearing on Aug. 22 was the longest and liveliest of the three that have been conducted. Opponents of the bills were in the majority, and most of them urged objections to specific provisions. The advocates of the compromise suggested some form of adjustment to overcome the objections, if possible. In all, sixteen speakers were heard by the committee, ten of them opposing the measures until amendments shall have been made, while six of the speakers thought the bills should be adopted as they are, or should be passed with only slight modifications. The largest delegation of speakers was from the Central Trades & Labor Union, which some time ago adopted resolutions opposing the passage of either bill. The argument of the labor men on Aug. 22 was supplementary to the position taken in the resolutions adopted by their body at a recent meeting.

CIVIC LEAGUE REPORTS ON SECOND ORDINANCE

The report of the special committee of the Civic League on the second ordinance was made public on Aug. 19. This report was prepared by William F. Woerner, author of the mill tax ordinance and former member of the Missouri Public Service Commission; Joseph L. Hornsby, former chairman of the St. Louis Public Service Commission; Frank P. Crunden, former member of the City Council, and Charles W. Bates, former city counselor. Lambert E. Walther, former city counselor, who was a member of the committee which prepared the report on the first ordinance, resigned on account of having been employed to represent some of the preferred stockholders of the railway. Louis F. Budenz, secretary of the Civic League, in making public the report, stated that he was authorized to announce that Mr. Walther agreed with its provisions. The league also gave out an analysis of some features of the proposed ordinances by Delos F. Wilcox of New York, former franchise expert for the Public Service Commission for the First District of New York. Mr. Wilcox expressed the opinion that the ordinances would give the company the upper hand in the important Board of Control which would pass upon extensions and conditions of service.

The committee of the Civic League prefaced its report by saying that "while the second proposed compromise ordinance is an improvement upon the first one in that it eliminated some of the objectionable features pointed out by the committee, it retains others, among them the fundamental vice heretofore pointed out by us." The committee said that the city should make a law, not a contract. It should not put itself on an equality with its public utilities, but remain the sovereign. In addition to protesting against a contractual ordinance, which could not be changed in any manner during the fifty-year period, the committee called attention to other provisions of the ordinance which it considers to be defects. Among these are the provision for establishing a valuation of $60,000,000 for United Railways properties without a survey, and the provision requiring people who desire extensions of certain lines to furnish the money for building them.

Arbitration of Key Route Wages

Company Unable to Pay More to Men Unless Means Are Found to Increase Its Earnings —Arbitrators Selected

Through an agreement to arbitrate the wage demands of the union, the threatened strike on the electric railway and ferry lines of the San Francisco-Oakland Terminal Railways, Oakland, Cal., known as the Key Route, has been averted. By the terms of the arbitration agreement the public is recognized as a third party to the controversy. It is agreed that the whole matter shall be laid before the State Railroad Commission on an application looking to a fair adjustment between the company, its employees and its patrons.

Pleading the high cost of living, the car men's union presented demands for a wage increase. The request of the men if granted would seriously impair the ability of the company to maintain an efficient service and might result in insolvency for the company. Conferences were held between the officers of the company and the representatives of the union. The company took the position, first, that it has always maintained a liberal wage policy, the existing wage scale being considerably higher than the average on other electric railway and interurban lines; and, second, that its financial condition rendered any increase absolutely impossible in the absence of a corresponding increase in its income. In support of these two contentions the company offered the following facts:

WHAT THE COMPANY HAS DONE IN THE PAST

1. That it established more than nine years ago a wage schedule carrying a higher rate than that paid by any other traction system of equal size in the United States—at least 25 to 30 per cent higher than the average.

2. That under the agreement of Feb. 29, 1908, between the company and the union, which agreement was voluntarily canceled by the union on June 17 last, the platform men in the employ of the company have been paid more than $1,300,000 in excess of what they would have received during the same period from any other company.

3. That the existing scale was agreed to at a time when the rapid development of the east bay communities immediately after the San Francisco fire gave great promise for the future, and before the era of automobile and jitney competition, high taxes, expensive paving and higher prices for materials and supplies of all kinds.

4. That under this agreement the company has carried its platform men without diminution of pay through dull times and automobile competition, although its gross earnings declined, its surplus disappeared and the market value of its securities dropped 50 per cent.

WAGES 26.2 PER CENT OF GROSS

In the four years from 1913 to 1916, inclusive, there has been a steady decrease in gross revenues and an equally steady increase in trainmen's wages, as shown by the following table:

Year	Gross Revenues	Trainmen's Wages	Per Cent of Gross
1913	$4,695 086	$1,017,897	21 6
1914	4,546,226	1 042,811	22.9
1915	4,513 513	1,072,760	23 7
1916	4,310,640	1,129,844	26.2

WAGES INCREASED 11 PER CENT—GROSS DECREASED 8.2 PER CENT

Thus in three years the gross revenue decreased 8.2 per cent, or $384,445, while trainmen's wages increased 11 per cent, or $111 947. In other words, the annual earnings available for interest charges, sinking fund requirements, etc., fell away $496,382, equivalent to interest at 5 per cent on nearly $10,000,000. In consequence of this sharp decline the company is in default for three years on its sinking funds and is now nearly a year in arrears in the interest on its mortgage bonds. The company closed its books on Dec. 31, 1916, with a deficit of $269,571 for the year, without including $300,000 due its sinking funds from the income of this period and without including an adequate depreciation reserve. The floating debt amounted on May 31, 1917, to $768,125. The company has not paid a dividend for five years. The bonds are selling for from 40 to 75 per cent of their face value. A calculation in July showed a shrinkage of more than $6,500,000 since 1909 in the market value of bonds alone.

THE COMPANY'S PLEA

In a statement which it issued the company said:

"This company cannot pay higher wages until it has the money to do it with, and its only source of income is the public. Hence the problem of the platform men is that of the company—to increase the common fund from which both are sustained; that is, the gross earnings. In submitting the wage question to arbitration, both sides have agreed that the arbitration board shall certify its conclusions to the State Railroad Commission. Wages are the largest item in operating expense, and the commission, in determining what the public should pay for its service, must allow a return which will cover a fair wage schedule. Without the co-operation of the public, for whose service and benefit alone the property is operated, no solution is possible."

Arbitration was agreed upon on Saturday, Aug. 25. The arbitrator for the company is John S. Orum, president of the Savings Union Bank & Trust Company, San Francisco, one of the directors of the San Francisco-Oakland Terminal Railways and chairman of its executive committee. The arbitrator for the men is George C. Kaufman, a member of the Civil Service Commission of Oakland, well known as having been connected with the Mexican mining properties controlled by the Guggenheim interests. The third arbitrator, selected by the company and the men, is Paul A. Sinsheimer, assistant to the president of the Union Trust Company, San Francisco, formerly the bond and stock expert of the State Railroad Commission of California.

This is an unusual form of arbitration between labor and employers, especially electric railways, inasmuch as the public is regarded as the third factor and the entire findings of the arbitration are to be certified to the Railroad Commissioners, the only body that has the power to fix rates of fare in California.

WHAT THE MEN DEMAND

Since Feb. 29, 1908, a schedule of wages has been in effect for traction men calling for 30 cents an hour for the first year and graduated to 40 cents an hour for men with the company more than ten years. For Key or Ferry division men the rates of pay have been 38 cents an hour for one year of service or less, 40 cents between one and two years and 42 cents between two and three years and over. On June 6, 1917, before a determination had been reached by the Railroad Commission of the company's petitions for increased revenues on its traction lines, the union requested for traction division motormen and conductors and Key Route division brakemen the following scale:

For first six months of service	40 cents an hour
For second six months of service	41 cents an hour
For second year of service	43 cents an hour
For third year of service and thereafter	45 cents an hour

For Key Route division motormen and conductors the union requested the following scale:

For first six months of service	50 cents an hour
For second six months of service	51 cents an hour
For second year of service	53 cents an hour
For third year of service and thereafter	55 cents an hour

At a meeting of the union on Aug. 5 the original requests were modified and the following schedules were submitted to the company in their stead as a compromise and without reference to arbitration:

For Traction division motormen and conductors and Key division brakemen, 35 to 41 cents an hour.

For Key or Ferry division motormen and conductors, 45 to 51 cents an hour.

Kansas City Welfare Work

Some of the Activities of the Company Along These Lines May Be Affected by the Recent Strike

It is presumed that the rearrangement of welfare work of the company will be a serious problem in the readjustment following the strike of the employees of the Kansas City (Mo.) Railways. Upon the reorganization of the company, and the accession of Philip J. Kealy as president, welfare work was established as one of the most important phases of the company's activities. Outsiders now observe that some of the men who have been the chief beneficiaries of the desire of the company to be helpful in all the private as well as workday activities of the men were among the most radical of the strikers.

The safety work of the company has perhaps affected the largest number of persons in the most helpful way. The benefits to the public, the men and the company, already apparent and effective, have far exceeded the value of efforts expended, and were fully worth while, whatever the present loss may be in the personnel of men trained in the safety propaganda.

A building and loan association was established on Feb. 23, 1917. Trainmen were beneficiaries of this enterprise in larger proportion than any other class. There are 900 employees holding stock, representing $525,400 of the total capitalization of $1,000,000. Employees have deposited $46,369. Thirty-nine real estate loans have been made amounting to $58,495. Three homes have been built, and seven employees have been assisted in paying for homes.

A pension system was established on Jan. 1, 1917, whereby employees in service twenty years, or more than sixty-five years old, might retire on a minimum of $240 a year. Nineteen men have been put on this "honor roll," as it is called, and five men have been granted temporary pensions.

A loan fund was created in August, 1916, through which 237 loans for a total of $12,270 have been made to employees, to whom no interest was charged, thus freeing them from the loan sharks.

An employees' lawyer was retained in June, 1916, to be available to all employees without cost to them. In twelve months 3400 cases were handled for more than 1000 employees, almost all trainmen. In five cases the property of men was saved from foreclosure, three at the very last moment.

Life insurance for all employees was established on March 1, 1917, the company paying more than half the premiums. Practically all the employees have been insured under this plan.

A free hospital service was established on April 1, 1917. through endowments by the company of $10,000 and $25,000. Nine of the twelve employees using this service were trainmen. They received 207 of the 299 days of treatment.

A fraternal aid and protective association, entirely for trainmen, has been operating since 1905. It is managed by the trainmen, and pays $1,000 to $1,500 monthly in benefits. The company has contributed in the last few months about $1,200 to this association, which was in need of funds.

The company had planned and was carrying out elaborate arrangements for encouraging athletics, and since 1916 had paid all the expenses of the baseball teams—composed almost exclusively of trainmen and shopmen.

Another feature of the effort to inspire the co-operative spirit was the publication of *The Railwayan*, a monthly magazine going to employees, correspondents from various divisions and departments being paid for their services and elected by the divisions. The magazine has been filled with personal notes of the employees, and with articles describing the activities of the company and the men.

There have been numerous special enterprises and instances in which the company had tried to assist the employees to self-betterment, and to cultivate an *esprit de corps*. One of the most notable was the encouragement to recruiting in the Third Regiment, Missouri National Guard. The men who joined the regiment were paid a proportion of their wages while in service at the Mexican border. An entire company of the Third Regiment is composed of street railway employees. The president of the Kansas City Railways is colonel of the regiment.

Friendly Relations at Portland, Ore.

Men Appeal to Public Service Commission to Allow Increase of Rates if Investigation Verifies Statement of Company Officials

The platform men of the Portland Railway, Light & Power Company, Portland, Ore., recently asked for an increase in wages and a shorter working day which would, if granted, increase the company's cost of operation about $1,000,000 a year. Franklin T. Griffith, president of the company, discussed the situation fully and frankly with a committee of the men and showed them that the earnings not only would not permit of an increase of expenditures but did not warrant present expenditures. He pointed out that the company realized the justice of the men's claims of higher living expense and would like to grant increases to all employees were it possible for the company to do so, and that while earnings were limited, expenditures exceeding that limit could not be made.

The platform men then took the matter up with the Central Labor Council and after some further conferences adopted a resolution petitioning the Public Service Commission of Oregon to look into the company's affairs and, if necessary to meet the need for increased wages, to permit the increase of rates. The resolution was, in part, as follows:

RESOLUTION ADOPTED BY MEN

"Whereas, It is a matter of common knowledge that the increased cost of living makes it impossible for many of the car men, in common with other workingmen, to meet their obligations under present conditions, the executive board therefore presents the resolution:

"That the Central Labor Council of Portland urge upon the Public Service Commission of the State that it immediately investigate the claims of the Portland Railway, Light & Power Company, and if the investigation disclose the fact that the present revenues are adequate to meet the necessary increase in wages that public announcement of the findings be made; and, further, if the revenues be not adequate, the company be permitted to revise its tariffs to meet this necessary readjustment."

The conferences between President Griffith and the men terminated in a manner entirely satisfactory to both sides and the men are now working for the increase of rates which they believe will relieve the situation. An advance in the fare unit from 5 cents to 6 cents has been discussed in the daily press of Portland and seems to be regarded as the logical outcome of the present movement. It is notable that the action of the labor council was taken with a knowledge of the fact that about 75 per cent of the company's patrons are workingmen and that about 90 per cent are in the wage-earning class.

New York Commission Sustained

Federal Court Upholds Order of Commission Requiring Brooklyn Company to Purchase 250 New Surface Cars

A special statutory federal court, consisting of Circuit Judge Ward and District Judges Veeder and A. N. Hand, sitting in Brooklyn, has denied the application of the Brooklyn Rapid Transit Company for an injunction to restrain the Public Service Commission for the First District of New York from taking steps to enforce its order, directing the company to purchase and put in operation 250 new cars on its surface lines. The company was recently defeated in the New York State courts, in an effort to obtain a certiorari review of the commission's proceedings and order in the car purchase matter. The company thereupon had recourse to the federal courts, maintaining that the order of the commission was unconstitutional and that the law creating the commission was also unconstitutional and that the order of the commission was confiscatory. All of these points have been decided by the Federal Court, in a decision issued *per curiam*, in favor of the commission. The court held that the company had not been deprived of any of its rights, and that the order had only been issued after a full and fair hearing and was not unreasonable or confiscatory.

Night Service in San Francisco

United Railroads Resumes Operation After Dark—On August 28 Service Had Reached About Two-Thirds Normal

The United Railroads, San Francisco, Cal., the employees of which are on strike, operated cars at night on Aug. 27 for the first time since Aug. 23, when one employee was killed and two were seriously wounded. The company asked for a policeman for each car. This request was refused by the chief of police, who contended that the streets were well guarded where cars were run. On the afternoon of Aug. 28 a meeting was held at which Mayor Rolph, the members of the public utilities committee of the Board of Supervisors and the head of the Board of Public Works were present looking toward a solution of the strike. President Jesse W. Lilienthal of the United Railroads will not meet the representatives of the strikers. City officials have discussed the possibility of seizing the lines of the United Railroads and operating them with municipal employees. They base their right to do this on the ground that the United Railroads has forfeited its franchise by not providing adequate service. City Attorney Lull is working on the legal phases of the situation to determine whether or not this can be done.

For the first time since the strike was started a car was run to the Union Iron Works on Aug. 27. This was an armored car, of which there are several in use. Some lines are still without service. H. T. Jones, superintendent of the United Railroads, declares that service is about two-thirds normal. B. F. Bowbeer, an official of the union, is assuring strikers that they will win by Labor Day. It is believed that he is depending upon a general strike of union men throughout the city, including the iron workers at the Union Iron Works, to force the United Railroads into a settlement. Few disturbances occurred on Aug. 28.

The only action taken by the Mayor and others at the conference on Aug. 29 was the securing of the use of the Ocean Shore Railroad and the Southern Pacific steam lines by the city for service to the Union Iron Works and similar plants in the Potrero District, where from 10,000 to 15,000 workmen are employed. In view of this the Iron Trades Council called off the strike which was scheduled for Labor Day. Train service to Potrero started on the afternoon of Aug. 29. The Ocean Shore line provides the trains, engine crews and operation. The city pays a fixed price for the trains, collects the fares, handles the transfers and assumes responsibility for accidents. The trains are called Municipal Specials. The fare is 5 cents, with transfer to all the lines of the San Francisco Municipal Railway, owned and operated by the city. Beginning Sept. 1 the city proposed to operate large motor buses to supply the sunset district and the southern part of the city, which have been without adequate service.

Company officials say that the service of the United Railroads is steadily improving. To a copy of the resolutions passed by the Board of Supervisors of San Francisco suggesting and recommending that the strike difficulties be submitted to a board of arbitration, Mr. Lilienthal replied on Aug. 29 in part:

"There is no controversy to arbitrate. Certain of our employees without giving any notice or making any complaint abandoned their cars. We have proceeded to fill their places. With adequate police protection or permitted to provide open armed protection ourselves we are prepared to operate every car on a normal schedule."

Anonymous letters received by Mr. Lilienthal and other officials of the company threaten death, destruction of property by dynamite and a general reign of terror after Labor Day if the strike is not ended.

Ohio Strike Broken

The strike of the employees of the Dayton, Covington & Piqua Traction Company, West Milton, Ohio, declared on Aug. 15, has petered out. The company was able to operate part of its schedule on Aug. 16, 17 and 18 without help from outside. It then offered the strikers a chance to return to their former places at a flat rate of 30 cents an hour, without recognition of the union. Only five of the men accepted this offer, and it became necessary to employ new and experienced men. The regular schedule was resumed on Aug. 19. On Aug. 22 the Brotherhood of Interurban Trainmen disbanded, thus ending the strike. At no time did the operation of cars cease entirely. The men were offered a scale of wages ranging from 26 cents to 31 cents an hour, effective from July 1, but they insisted upon a flat rate of 30 cents an hour for all trainmen and recognition of the union. As stated previously, the company agreed to the 30-cent rate, but refused to deal with the union. It promptly filled the places of the men who refused to return under these terms.

Dinner to R. B. Stearns at Chicago

Thirty-one of the intimate railway and supply men friends of Robert B. Stearns, former vice-president and assistant general manager of the Milwaukee Electric Railway & Light Company, Milwaukee, Wis., and now vice-president of the Bay State Street Railway, Boston, Mass., tendered a congratulatory dinner to him at the Chicago Athletic Club on Aug. 28. G. T. Seely, assistant general manager of the Chicago Elevated Railways, acted as toastmaster, and W. F. M. Goss, W. V. Griffin, Harry H. Adams, John J. Cummings, Lawrence E. Gould, Harry F. Keegan, John Benham and Bion J. Arnold responded. Just eleven years before, almost to the day, Mr. Stearns was tendered a similar dinner when he resigned his connection with the Northwestern Elevated Railway, Chicago, to take charge of the operation of the Chicago & Milwaukee Electric Railroad. A very complimentary review was made by the speakers of the important work which Mr. Stearns has contributed to the American Electric Railway Association and to the industry in general. Some pride was manifested in the fact that Mr. Stearns' accession to the big Eastern position adds another important name to the already long list of Middle West successful railway operators who have been called East. Mr. Stearns was tendered a farewell dinner on Aug. 29 by the officials of the Milwaukee Electric Railway & Light Company.

Preparing for Seattle Arbitration

In a recent letter to the Puget Sound Traction, Light & Power Company, Seattle, Wash., Charles A. Reynolds, attorney for the Seattle local of the Amalgamated Association of Street & Electric Railway Employees of America, asked the company to establish the eight-hour day for employees of the company, and grant the increased scale of wages. The company was given until Aug. 28 to reply. If the request was not granted by that time, the matter was to be referred to the arbitration board, consisting of Dr. Henry Suzzallo, president of the University of Washington, and chairman of the State Council of Defense; James A. Duncan, secretary of the Seattle Central Labor Council, and C. J. Franklin, Portland, Ore. The object of the communication to the company was to remove as many as possible of the issues to be arbitrated between the men and the company before the arbitration board meets to settle hours, wages and working conditions as agreed upon at the conclusion of the recent strike.

Bonus for Topeka Employees

The Topeka (Kan.) Railway has announced a bonus system of 10 per cent of the yearly wage to all its employees, with a minimum bonus of $50 to any employee whose bonus would amount at the 10 per cent rate to less than that sum. The bonus is to apply for the calendar year 1917. In addition the company will hereafter pay time and a half for all overtime, ten hours to constitute a basic day.

This is the second wage increase granted to the employees of the Topeka Railway this year, a revision of the wage scale having been announced last Christmas Eve, effective on Jan. 1.

In making the announcement A. M. Patten, assistant general manager, said that while the earnings of the company have been less than in previous years, the management felt that it should do all it could to make the lot of its employees easier. The increase was no sudden decision on the part of the company. He had it up with the heads of the company for some weeks.

Toronto Arbitration Finding

Board Appointed in July Concludes Its Work—Company Representative Files Dissent

On Saturday, Aug. 25, the Minister of Labor for the Dominion of Canada made public the report of the Board of Conciliation appointed in July last, following the settlement of the two days' strike of the employees of the Toronto Railway, to hear evidence and decide the various questions which were in dispute at the time of the strike.

The report was signed by Judge Colin G. Snider, chairman, and D. A. Carey, the representative of the employees. Duncan McDonald, who was the third member of the board, acting on behalf of the Toronto Railway, dissenting from the report of the majority on the ground that the weight of evidence did not warrant the award made to the men. The conditions of the report fixing wages were as follows:

"From June 16, 1917, until the termination of this agreement, the wages of the employees shall be as follows:

"For motormen and conductors: For the first six months, 30 cents an hour (to apply only to men employed after this date). For the second six months, 32 cents an hour. For the second year, 35 cents an hour. For the third and subsequent years, 37 cents an hour.

"Motor and truck repair men: For the first six months, 30 cents an hour (to apply only to men employed after this date). For the second six months, 32 cents an hour. For the second year, 35 cents an hour. For the third and subsequent years, 37 cents an hour.

"Shedmen: Foremen, 37 cents an hour. Operating shedmen, men who operate cars and do general shed work, 33 cents an hour. Shedmen, men doing general shed work, but not operating cars, 32 cents an hour.

"Car cleaners, 31 cents an hour.

"The rate of wages for motormen and conductors engaged in train work on Sunday shall be 4 cents an hour platform time in excess of weekday rates. Emergency crews of motor and truck repair men shall receive time and one-fifth for Sunday work.

"Any employee against whom a charge is received shall have the right of appeal in person to the general superintendent.

"The general superintendent or manager shall receive a committee of the company's employees or a duly appointed committee of the members of Division No. 113 at any reasonable time to discuss any matters arising out of this agreement."

The agreement is to continue in force for two years from June 16, 1917.

The report of the Conciliation Board was submitted to a mass meeting of the employees at midnight on Aug. 25, and accepted by the men by a vote of 684 to 289. The report will now be submitted to a meeting of the directors of the Toronto Railway for acceptance.

Strike in Montgomery

The motormen and conductors in the employ of the Montgomery Light & Traction Company, Montgomery, Ala., organized recently and went on strike on Aug. 15. They were receiving 16 cents an hour as a minimum. They demanded a minimum of 20 cents and a maximum of 25 cents, recognition of the union and the reinstatement of the men who they claimed had been discharged recently for participating in the deliberations of the union. The president of the company, Richard Tillis, agreed to discuss all the demands except recognition of the union. This request he refused flatly to entertain. About twenty-five of the men remained faithful to the company. A spokesman for them said that they had no objection to their fellow workers forming a union, but that those who did not care to affiliate with the union should be equally free to choose the course of action which they deemed best for their own interest. The company resumed service with these men, and then set about rebuilding its transportation organization. The practice was followed of operating cars on all lines until 9 p. m. After that hour service was continued only on the Pickett Springs line, on which Camp Sheridan is located. There have been several outbreaks of disorder. In one of these four men were shot, two of them, it is said, probably fatally.

Another Minneapolis Valuation Report

The report of C. L. Pillsbury, consulting engineer to the City Council of Minneapolis, Minn., will show a value of $24,346,113 for the properties of the Minneapolis Street Railway, as of Jan. 1, 1916. In 1923, when the present franchise expires, it is estimated the value will be increased $5,850,000, with $3,500,000 for needed extensions.

Mr. Pillsbury was employed to check up a report of F. W. Cappellen, city engineer, made in connection with franchise matters, whose appraisal was $21,252,121. Mr. Pillsbury arrived at his figures as follows:

Tracks, bridges, electric distribution system, rolling stock, power plant equipment, substation equipment, bridges, furniture and fixtures	$18,302,835
Real estate	1,088,862
Administration, organization and legal expenses	329,420
Taxes during construction	325,194
Expenses prior to construction	250.000
Interest during construction	1,440,742
Expenditures due to municipal improvements	239.206
Working capital	360.883
Development costs	2,775,649
Water-power leases to end of franchise, December, 1923	513,172
	$25,625,964
Depreciation	1,279,851
Total value	$24,346,113

The company's gross earnings for the seven years are estimated at $47,344,267, with net earnings of $20,918,806. For the same period renewals and depreciation are estimated at $4,830,312 and net income, less taxes and depreciations, will be $16,088,494. The interest on capital for seven years is fixed at $13,524,875 in the report, leaving expected surplus of $2,563,619.

The Pillsbury report recommends an immediate new contract between the city and the company, holding that a new franchise can best insure the extensions needed to take care of the city's growth. It also recommends an expert traffic survey of the city, to determine future needs, as the next duty of the street railway committee of the City Council.

Railway Purchases Power.—The Connecticut Power Company has contracted to supply power to operate the Milford & Uxbridge Street Railway, Milford, Mass. The railway will keep its local power plant in reserve for use in case of emergency.

Trenton Companies Must Sprinkle Tracks.—The City Commission of Trenton, N. J., has adopted a resolution compelling the electric railways operating there to sprinkle their tracks with water. The recommendation was made by A. S. Fell, city health officer, who said that the cars stirred up dust germs.

Municipal Ownership at Toledo Constitutional.—City Law Director Harry Commanger of Toledo, Ohio, was quoted recently as saying that the municipal ownership plan to be secured through the proposed charter amendment is constitutional. He was said some time ago to have expressed doubts as to this matter. Mayor Milroy is said to favor the amendment. It will be submitted to the voters on Sept. 11.

Cleveland Interurban Terminal Plan Maturing.—O. P. Van Sweringen said a few days ago that plans for the proposed interurban terminal at Cleveland, Ohio, are nearing completion, and that an announcement will be made regarding them soon. The steel work on the new Hotel Cleveland, which is included as part of this plan, is being placed and the Terminal Building Company, one of the corporations interested, has acquired five more parcels of land. All of the interurban electric railways will probably use the terminal. The building will be located near the retail business section of the city and close to the Public Square.

Link Proposed to Connect Illinois and Indiana Roads.—It is stated unofficially that plans are under consideration for the construction of an electric railway from the terminus of the lines of the Illinois Traction System at Ridge Farm, near Danville, Ill., to a connection with the lines of the Terre Haute, Indianapolis & Eastern Traction Company at Clinton, Ind. The road would extend through the new coal mining field near Dana, Ill., and would complete the link necessary to provide for the trip entirely by trolley from Indianapolis, Cincinnati, Columbus, Dayton, Springfield, Toledo, Detroit, Cleveland or Buffalo to St. Louis.

Financial and Corporate

Annual Report

North Carolina Public Service Company

The comparative income statement of the North Carolina Public Service Company, Greensboro, N. C., for the fiscal years ended March 31, 1916 and 1917, follows:

	1917	1916	Increase
Gross earnings	$580.491	$513 391	$67,100
Operating expenses	320 713	285,453	35.260
Taxes	18.396	17,178	1,217
Net earnings	$241.382	$210,760	$30,622
Interest charges	159,506	145,724	13,782
Net surplus	$81,876	$65,036	$16,840

The railway department of the company suffered on account of the continual high cost of supplies of all kinds and the continual increase of the number of automobiles in the territory served, due largely to the many improved roads. The management hopes to better the financial results of the operation of this department by the installation of "light cars" now being built for the company, and by other economies, and it is also hoping to obtain permission from the city of Greensboro to alter certain burdensome franchise requirements. If this is done, it is believed that the company will still be able to maintain and operate this department with financial success.

The business of the gas department in all cities and towns served shows a consistent growth and with a bright outlook for new industrial business for the coming year, one long term contract having been closed which will increase the "send out" in the Salisbury plant 25 per cent. Under the new gas rates put into effect during the last year the new-business department expects to close numerous long term contracts with hotels, restaurants, hospitals and other industries. During the last year the largest increase was in the electric light and power department, due especially to a large increase in power business—42 per cent greater than the previous year.

At the annual meeting of the stockholders the necessary action was taken to reduce the present outstanding common stock to $1,500,000 by the exchange pro rata of $500,000 preferred stock authorized for this purpose, the preferred stock to bear 4 per cent dividend the first year, 5 per cent the second year and 6 per cent thereafter. For example, the owners of 100 shares of the present common stock will receive in the exchange fifteen shares (plus fraction) of new preferred stock and forty-five shares (plus fraction) of common stock. Fractional scrip will be issued for all amounts under one share and arrangements will be made whereby owners of fractional amounts may buy, or sell, at a fixed price. This action will result in considerable saving in taxes and also bring the capitalization more in line with the earning capacity.

Empire United Sold Under Foreclosure

The Rochester, Syracuse & Eastern Railroad and the Empire United Railways, Inc., properties, exclusive of the Rochester, Syracuse & Eastern Railroad, were sold in mortgage foreclosure proceedings at Syracuse on Aug. 28. These corporations are in process of reorganization and the sale in each instance was a formal proceeding to meet legal requirements. A. W. Loasby, chairman of the bondholders' protective committee of the Rochester, Syracuse & Eastern Railroad, bid in that road for $1,000,000. The Empire United properties were bid in by Thomas W. Meachem, representing security holders, for $300,000.

A brief review of the terms of the plan proposed for the reorganization of the Rochester, Syracuse & Eastern Railroad by the committee of which Mr. Loasby is chairman was published in the ELECTRIC RAILWAY JOURNAL of May 26, 1917. The plan of reorganization for the lines of the Empire United Railways other than the Rochester, Syracuse & Eastern Railroad was reviewed in the issue of this paper for Feb. 17, 1917.

Electric Railway Statistics

Comparison of Returns for May, 1917, with Those for 1916 Show Operating Revenues Almost at Standstill While Expenses Grow

A comparison of electric railway statistics for the month of May, 1917, with figures for the corresponding month of 1916, made by the information bureau of the American Electric Railway Association indicates that the operating revenues of electric railways in the United States are almost at a standstill while the operating expenses are growing. The eastern district again is suffering most in this respect.

Data From 8084 Miles of Line

Data for May, representing 8084 miles of line of companies scattered throughout the country, figured on the per mile of line basis, indicate an increase in operating revenues of 0.83 per cent, in operating expenses of 7.41 per cent, and a decrease in net earnings of 9.05 per cent. Data representing approximately 75 per cent of the above mileage indicate a slight decrease in the amount of taxes paid and a decrease in operating income of 14.65 per cent.

The returns from the city and interurban electric railway companies, as shown in detail in the accompanying table, have been classified according to the following geographical grouping: Eastern Division—East of the Mississippi River and north of the Ohio River. Southern District—South of the Ohio River and east of the Mississppi River. Western District—West of the Mississippi River.

Of the three groups shown in the accompanying table, returns for the Eastern representing 5615 miles of line indicate an increase in operating revenues of 0.20 per cent, in operating expenses of 8.28 per cent and a decrease in net earnings of 11.79 per cent. Taxes paid by companies represented by approximately 70 per cent of the above mileage have decreased 4.40 per cent, while in spite of this the operating income of these companies decreased 19.62 per cent.

Returns for the Southern group indicate a condition similar to that affecting the Eastern group, the operating income having decreased 4.03 per cent and there being a slight decrease in revenue. On the other hand, the Western group shows some improvement. Both groups show increases in the amount of taxes paid.

Results in Country as a Whole

The operating ratio for the country as a whole has increased from 60.06 per cent in 1916 to 63.97 per cent in 1917. The operating ratio of the Eastern district has increased from 59.75 per cent in 1916 to 64.57 per cent in 1917. The operating ratio of the Southern group has also risen, while that of the Western shows a slight decrease.

Investors Organize

Holders of Securities of Massachusetts Electric Railways Organize to Protect Their Interests—Homer Loring, President of New Association

A meeting attended by owners of street railway securities from all parts of Massachusetts was held recently at the Algonquin Club, Boston. Representatives of savings banks and of insurance companies in attendance represented $38,000,000 invested in street railway securities. The meeting was called to order by Homer Loring, Boston, president of the Fort Dodge, Des Moines & Southern Railroad. He said in part:

"The critical situation in which street railways find themselves demands the active and immediate co-operation of all interests. The managing officials are using their utmost endeavors to meet this condition, but the situation is so extraordinary that they alone cannot accomplish the results which will restore the confidence of the investing public in street railway securities. For many years the value of these securities has been declining. This is due to the fact that the roads have been the victims of inimical legislation. Add to burdensome legislation the extraordinary expenses imposed by war-time conditions, and we have a situation which calls for heroic action. Unless those who have invested their money work together as a unit to assist the street railway managers in bettering conditions they will not only fail to secure dividends, but will lose what they have invested. Street railways need money continually for improvements. This they cannot get without assuring investors that their investments will be reasonably protected."

Charles C. Peirce characterized the standardized unit of fare as unbusiness-like. He said that because they were compelled to sell their product for less than it cost them street railway managers found their properties being slowly starved to death.

On motion, the Association of Owners of Massachusetts Street Railway Securities was formed. This association will consist of the owners of securities wherever residing. The officers are as follows: Homer Loring, president; Alfred D. Foster, vice-president; W. E. Gilbert, vice-president; William O. Kimball, secretary and treasurer. The board of directors is composed of the following: Jirah Swift, New Bedford; Francis Peabody, Jr., Boston; Charles G. Bancroft, Boston; Burton H. Wright, Worcester; Charles P. Adams, Worcester; W. W. McClouch, Springfield; A. W. Damen, Springfield; John W. Stevens, Greenfield; W. D. Wyman, Pittsfield; and the officers of the association.

The association hopes to enroll among its members most of the 30,000 owners of Massachusetts street railway securities, and plans to take an active interest in all matters affecting the credit and security of their holdings.

COMPARISON OF REVENUES AND EXPENSES OF ELECTRIC RAILWAYS MAY, 1917 AND 1916.

Account	United States				Eastern District				Southern District				Western District			
	Amount May, 1917	Per Mile of Line			Amount May, 1917	Per Mile of Line			Amount May, 1917	Per Mile of Line			Amount May, 1917	Per Mile of Line		
		1917	1916	% Increase		1917	1916	% Increase		1917	1916	% Increase		1917	1916	% Increase
Operating revenues	$17,502,790	$2,176	$2,158	0.83	$13,991,008	2,492	2,487	0.20	$1,335,389	$1,392	$1,394	†0.14	$2,266,393	$1,501	$1,427	5.19
Operating expenses	11,254,028	1,392	1,296	7.41	9,035,634	1,609	1,486	8.28	787,413	821	799	2.75	1,430,981	948	908	4.41
Net earnings	6,338,762	784	862	†9.05	4,955,374	883	1,001	†11.79	547,976	571	595	†4.03	835,412	553	519	6.55
Operating ratio, per cent	1917, 63.97; 1916, 60.06				1917, 64.57; 1916, 59.75				1917, 58.98; 1916, 57.32				1917, 63.16; 1916, 63.63			
Average number of miles of line represented	1917, 8,084; 1916, 7,992				1917, 5,615; 1916, 5,546				1917, 959; 1916, 955				1917, 1,510; 1916, 1,491			

COMPANIES REPORTING TAXES

Account	United States				Eastern District				Southern District				Western District			
Operating revenues	$12,364,749	$2,165	$2,198	†1.50	$9,413,234	$2,493	$2,574	†3.15	$759,961	$1,449	$1,441	0.56	$2,191,554	$1,553	$1,480	4.93
Operating expenses	8,102,888	1,419	1,344	5.58	6,288,600	1,665	1,574	5.78	442,123	843	797	5.77	1,372,165	972	937	3.74
Net earnings	4,261,861	746	854	†12.65	3,124,634	828	1,000	†17.20	317,838	606	644	†5.90	819,389	581	543	7.00
Taxes	800,091	140	144	†2.78	573,482	152	159	†4.40	60,315	115	109	5.50	166,294	118	116	1.72
Operating Income	3,461,770	606	710	†14.65	2,551,152	676	841	†19.62	257,523	491	535	†8.12	653,095	463	427	8.43
Operating ratio, per cent	1917, 65.54; 1916, 61.15				1917, 66.79; 1916, 61.15				1917, 58.18; 1916, 55.21				1917, 62.59; 1916, 63.31			
Average number of miles of line represented	1917, 5,712; 1916, 5,624				1917, 3,776; 1916, 3,707				1917, 524; 1916, 524				1917, 1,411; 1916, 1,393			

†Decrease.

Utility Bonds Recognized in California

The State of California had passed an amendment to its Savings Bank law, making certain public utility bonds legal for investment by savings banks. The amendment to the California law reads as follows:

"Bond of any street railroad corporation; or any gas, water, pipe line, light, power, light and power, gas and light and power, electrical, telephone, telegraph, or telephone and telegraph corporation or any other 'public utility' incorporated under the laws of the State of California, and

"Operating exclusively in the State of California, provided said corporation has had for the period herein fixed, net earnings amounting to one and a half times the interest on all outstanding mortgage indebtedness, or

"Operating its property in part within the State of California, provided said corporation has had one or each of its two fiscal years next preceding such investment, net earnings amounting to one and a half times the interest on all its outstanding indebtedness, or

"The payment of which is guaranteed both as to principal and interest, by a public utility corporation meeting the requirements of either subdivision 1 or 2 of the paragraph."

Somewhat similar changes with respect to legalizing bonds for savings bank investments were made in the laws of Maine, Vermont and Connecticut at the recent sessions of the Legislatures in those States.

Cities Service Company, New York, N. Y.—The Gas & Electric Securities Company, which financed the organization of the Cities Service Company, is offering an issue of $1,000,000 collateral trust notes—Series "A" at 98¼ and interest to the investor, to yield 6.95 per cent. The notes will be dated Sept. 1, 1917, and mature Sept. 1, 1919. Interest is payable in New York City on March 1 and Sept. 1, without deduction for the normal federal income tax. The notes are redeemable at any time, on thirty days' notice, at 101 and interest, and the Bankers Trust Company is acting as trustee. The notes are followed by $1,000,000 par value of 7 per cent cumulative preferred stock and $1,000,000 par value of common stock, both paying regular dividends. They are the direct obligation of the company and are secured by the deposit with the trustee of $1,250,000 principal amount of mortgage bonds of seven public utilities.

Dominion Power & Transmission Company, Ltd., Hamilton, Ont.—The Dominion Power & Transmission Company has declared a quarterly dividend of 1 per cent on the common stock, payable on Sept. 15 to holders of record of Aug. 31. Semi-annual dividends of 2 per cent have been paid on this issue for some time.

Electric Bond & Share Company, New York, N. Y.—The holders of the preferred stock of the Electric Bond & Share Company were notified on Aug. 28 by A. E. Smith, treasurer of the company, that pursuant to a vote of the board of directors adopted on Aug. 28, arrangements have been made to offer to the holders of the preferred stock of record at the close of business on Aug. 30, the right to subscribe pro rata for 10,000 shares of the preferred stock at par plus accrued dividends. Each holder of preferred stock is entitled to subscribe for one share of new stock for each four shares of preferred stock held by him at the close of business on Aug. 30, 1917. The increase in the capital stock from $16,000,000 to $20,000,000, consisting of 20,000 shares preferred and 20,000 shares common stock, was approved by the stockholders recently.

Iowa Railway & Light Company, Cedar Rapids, Iowa.—Harris, Forbes & Company, New York, N. Y., Harris, Forbes & Company, Inc., Boston, and the Harris Trust & Savings Bank, Chicago, are offering at 98⅝, yielding 6.75 per cent, $700,000 of two-year 6 per cent secured gold notes of the Iowa Railway & Light Company, dated Aug. 15, 1917, and due Aug. 15, 1919, but callable on thirty days' notice at 101 and interest prior to Aug. 15, 1918, and at 100½ and interest thereafter. The notes are secured by the pledge of $972,500 of first and refunding mortgage twenty-year 5 per cent gold bonds, the notes being issued on the basis of 72 per cent of the face value of the bonds pledged.

Lackawanna & Wyoming Valley Rapid Transit Company, Scranton, Pa.—Brooks & Company, Scranton, Pa., announce a proposed agreement for the creation of a sinking fund to retire the $888,000 of 5 per cent fifty-year collateral trust bonds of the Lackawanna & Wyoming Valley Rapid Transit Company, by which the Scranton & Wilkes-Barre Traction Corporation will pay to the Guaranty Trust Company, trustees, $15,000 in cash, or deliver $15,000 of the bonds per year. The bonds will then be purchased at 105 and interest or retired by lot at this figure. The Scranton & Wilkes-Barre Traction Corporation is the owner of the bonds and capital stock of the Lackawanna & Wyoming Valley Railroad, which are pledged to secure the payment of the bonds of the Lackawanna & Wyoming Valley Rapid Transit Company.

Lehigh Power Securities Corporation, Allentown, Pa.—The Electric Bond & Share Company and Brown Brothers & Company, New York, N. Y., and Edward B. Smith & Company and Henry & West, Philadelphia, Pa., are offering for sale the ten-year 6 per cent secured gold notes of the Lehigh Power Securities Corporation dated Aug. 1, 1917, and due Aug. 1, 1927. The company was incorporated on July 19, 1917, in Delaware, and has acquired by the use of the securities immediately issued, or the proceeds thereof, all of the stock of the Lehigh Navigation Electric Company, a substantial majority of both classes of stock of the Lehigh Valley Transit Company and approximately all the preferred and common stocks of the companies formerly controlled by the Northern Central Company. The company is under the management of the Electric Bond & Share Company.

Mahoning & Shenango Railway & Light Company, Youngstown, Ohio.—The Mahoning & Shenango Railway & Light Company, all of whose common stock is owned by the Republic Railway & Light Company, was incorporated in Ohio on Aug. 20 with $21,000,000 of authorized capital stock. The capital stock of the new company remains unchanged from that of the previous company of the same name. It is divided into $10,000,000 of authorized preferred stock, of which $3,500,000 is outstanding, and $11,000,000 of common stock, of which $10,628,000 is issued. Companies controlled previously are now consolidated under the new company. Considerations of economy and a desire to centralize the management brought about the decision to reincorporate. The change is also in the interest of simplifying intercorporate relations. It has been approved by the Ohio Public Utilities Commission.

New York (N. Y.) Railways.—The holders of the $30,626,977 of adjustment income bonds of the New York Railways will receive no interest for the six months ended June 30 last, due to the losses incident to the strike of the employees last fall.

Ottumwa Railway & Light Company, Ottumwa, Iowa.—An issue of $118,900 of 7 per cent cumulative preferred stock is being offered to customers and employees by the Ottumwa Railway & Light Company. The stock is issued to pay in part for improvements and extensions necessary to serve increasing demands for power and lighting. Power house capacity will be increased by the addition of a 1600-hy. steam turbine, already erected; and a 14-mile transmission line is being built to serve adjacent communities on a wholesale basis.

Reading Transit & Light Company, Reading, Pa.—In connection with the organization changes at Reading, Bonbright & Company, New York, have purchased an issue of $2,300,000 of two-year, 6 per cent secured notes of the Reading Transit & Light Company, subject to the approval of the Public Service Commission of Pennsylvania, and an advance offering of these notes is being made. The purpose of the issue is to provide in part for the acquisition of all of the outstanding common stock of the Metropolitan Edison Company of Reading. These notes will be secured by the deposit with the trustee of $3,000,000 of Reading Transit & Light Company, general and refunding mortgage, thirty-year, 5 per cent bonds and all of the outstanding $3,000,000 common stock of the Metropolitan Edison Company.

Sandusky, Norwalk & Mansfield Electric Railway, Norwalk, Ohio.—The final briefs have been filed in the United

States District Court for the Northern District of Ohio in connection with the receivership of the Sandusky, Norwalk & Mansfield Electric Railway, and as soon as the court opens in September the judge will hand down his decision in the numerous cases pending and will set the date of sale for the property. It is expected now that this date will probably be fixed for some time during next October or November.

United Railways & Electric Company, Baltimore, Md.—The United Railways & Electric Company has adopted a financial plan to make provision for the purchase of new cars for various extensions and improvements to its lines and for betterments and improvements to its service during the next four years. The form which this financing will take is an issue of $3,000,000 of 6 per cent five-year convertible gold notes, which are to be sold at 97½ and accrued interest. Alexander Brown & Sons head the syndicate of bankers offering the issue. Associated with them are Hambleton & Company, Baltimore. The notes are to be offered "when as and if issued" and subject to the approval of the Public Service Commission and of the stockholders of the company. They will be convertible into the common stock of the company at $30 per share for the stock during the first two years, $32 per share during the third year, $34 per share during the fourth year, and at $36 per share during the fifth year of the life of the note issued. A meeting of the stockholders of the company will be held at Baltimore on Sept. 11 to consider and act upon the proposal for issuing notes. Stockholders of record of Aug. 31 will receive preference in the allotment of the notes. The notes will be dated Aug. 15, 1917, and will be due on Aug. 15, 1922. They are to be issued in denominations of $100, $500 and $1,000, registerable as to principal only.

United Railways Investment Company, San Francisco, Cal.—The United Railways Investment Company on Aug. 15 paid off the last $100,000 of its 6 per cent serial notes of 1908. With this payment it has retired out of earnings all of the $3,500,000 of notes issued to provide the United Railroads of San Francisco with money for rehabilitation following the San Francisco earthquake and fire. It is pointed out that this will mean that the company is relieved of paying $400,000 annually for the retirement of notes, a sum equal to 2½ per cent on the preferred stock of the Investment Company.

Electric Railway Monthly Earnings

CLEVELAND, PAINESVILLE & EASTERN RAILROAD, WILLOUGHBY, OHIO

Period	Operating Revenue	Operating Expenses	Operating Income	Fixed Charges	Net Income
1m., June, '17	$47,431	*$31,632	$15.799	$11,615	$4,184
1 " " '16	43,527	*22,419	21,108	11.467	9,641
6 " " '17	243.320	*152,559	90 761	70,569	20.192
6 " " '16	210,615	*121,461	89,154	68,163	20,991

GALVESTON-HOUSTON ELECTRIC COMPANY, GALVESTON, TEX.

Period	Operating Revenue	Operating Expenses	Operating Income	Fixed Charges	Net Income
1m., June, '17	$164.448	*$109.392	$55,056	$37,568	$17.488
1 " " '16	158.080	*95,275	62 805	36,583	26,222
12 " " '17	1,959,871	*1,286,176	673,695	442,230	231,465
12 " " '16	1,903,532	*1,207,628	695.904	436,459	259,445

HOUGHTON COUNTY TRACTION COMPANY, HOUGHTON, MICH.

Period	Operating Revenue	Operating Expenses	Operating Income	Fixed Charges	Net Income
1m., June, '17	$27.758	*$18,360	$9,398	$5,117	$4,281
1 " " '16	26.656	*15,862	10,794	5,266	5,528
12 " " '17	340.082	*199.437	140,645	62,237	78.408
12 " " '16	304,420	*169,739	134,681	65,606	69,075

LAKE SHORE ELECTRIC RAILWAY, CLEVELAND, OHIO

Period	Operating Revenue	Operating Expenses	Operating Income	Fixed Charges	Net Income
1m., June, '17	$153.396	*$100.011	$53,985	$34 207	$19,778
1 " " '16	139,003	*86,288	52 715	36,237	16 478
6 " " '17	813 922	*565.065	248,857	206,043	42,814
6 " " '16	722,320	*483,885	238,435	217,813	20,622

NORTHERN TEXAS ELECTRIC COMPANY, FORT WORTH, TEX.

Period	Operating Revenue	Operating Expenses	Operating Income	Fixed Charges	Net Income
1m., June, '17	$179.405	*$112.192	$67,213	$29,126	$38,087
1 " " '16	149 460	*97.610	51,850	28.692	23,158
12 " " '17	2 088,392	*1,227,416	860,976	349 248	511,728
12 " " '16	1,831,954	*1,117,769	714,185	339.682	374,503

SAVANNAH (GA.) ELECTRIC COMPANY

Period	Operating Revenue	Operating Expenses	Operating Income	Fixed Charges	Net Income
1m., June, '17	$79.183	*$51,578	$27,605	$24,040	$3,565
1 " " '16	68.110	*46.860	21 250	23,368	†2.118
12 " " '17	888,906	*587.338	301,568	286,324	15,244
12 " " '16	789,536	*531,537	257,999	257,999	†21,645

*Includes taxes. ‡Includes non-operating income.

Traffic and Transportation

Inquiring Into Shore Line Wreck

Evidence Places Blame Upon Crew of Westbound Car for Failing to Wait at North Branford Siding

The head-on collision on the Shore Line Electric Railway, Norwich, Conn., to which brief reference was made in the ELECTRIC RAILWAY JOURNAL of Aug. 18, page 288, occurred at a point about 1200 ft. west of what is known as North Branford siding. Between this siding and the point of the wreck is a station known as North Branford. The North Branford siding is a regular meeting point when the company is operating on half-hourly schedule, and the accident was the direct result of the failure on the part of the crew of the westbound car to stop on this siding. The east-bound car was practically on time. The watch of Motorman Morris, who was killed, stopped at 4 54 p. m. He was due at the siding at 4.55 and had only about 1200 ft. to go, while the westbound car was ahead of time.

At the point of the accident there is a slight curve and the vision is obstructed by an abutment carrying an overhead bridge of a steam road operated by the New Haven Trap Rock Company. Neither motorman involved in the accident could have seen the approaching car until it was within 400 or 500 ft. The facts brought out at the several hearings very clearly evidence the fact that there was no question of conflict of orders. The crews were running on regular schedule and at regular meets and the accident was the direct result of the failure on the part of the westbound crew to remain at the appointed meeting place. The North Branford switch and the switch at Quinnipiac Avenue, nearer New Haven, at which these regular half-hour meets occur, were the only switches between Guilford and New Haven locked open, forcing a car into them. All the other switches were locked closed.

RESPONSIBILITY RESTS ON TRAIN CREW

The defense of the westbound crew immediately after the accident was that they were asleep and did not know that they had passed the North Branford siding until the cars came together. In setting up this defense, however, they forgot two important facts, namely, that the North Branford siding is at the bottom of a long down grade on which a car coasting would probably have attained a speed of from 50 to 60 m.p.h. and that the lead of this switch is so short that the car would unquestionably have been derailed had it not been under control. As a matter of fact, a car would not safely make this switch at a speed of more than 15 to 20 m.p.h. so that it was evident that the motorman was awake when he passed through this switch. Moreover, it was clearly shown by the evidence of four people that the motorman stopped his car at North Branford, which is between the switch and the place of the accident, and took on a passenger. Another significant fact brought out was that the motorman managed to get out of his cab in the end of the car, go back to the center of the car and jump before the two cars came together.

It has not been possible to prove so conclusively that the conductor was awake. There was some testimony to the effect that he was dozing. Both men stated at first that their drowsy condition was due to excessive hours of labor. When confronted with the facts, however, they claimed it was due to physical ailments.

Nothing in the track or equipment was found to be defective and everything pointed to exonerate the company from any blame. There has been criticism of lack of the very latest devices in the way of block signals and also criticism of the dispatching system, but it is generally acknowledged in this case that precaution other than those provided would have had no effect upon the accident, as the motorman was apparently not alive to any of the things that would naturally remind him of his obligation at the North Branford switch.

Rerouting Complaint Dismissed

Pennsylvania Commission Refuses to Permit Changes in Routing Plans Made in Previous Readjustment

The complaint made by the Central Germantown Avenue Business Association, et al, against the Philadelphia (Pa.) Rapid Transit Company, requiring it to do considerable rerouting of its lines, was dismissed recently by the Public Service Commission of Pennsylvania. Following a comprehensive study of the railway transit problems in 1913 made by the Pennsylvania Railroad Commission, there was a readjustment and rearrangement of the service in Philadelphia and the complaint in this case was in reference to the rerouting on two of the lines, particularly in so far as the cars on these routes on northbound trips do not pass along portions of Germantown Avenue between Glenwood Avenue and York Street.

The commission held that since following the previous readjustment no service was abandoned nor the directions of the various routes materially changed and since on some streets the number of lines was increased as well as decreased, it cannot be said that the direct charter obligations of the company were being violated. It argued that if the changes made were of benefit and convenience to the public generally, although one locality derived from the change more advantage than another, they must be sustained. The evidence in the case, according to the commission's decision, was not sufficient to show that the company is not rendering such adequate service.

Commissioner Michael J. Ryan issued a dissenting opinion on the ground that the rerouting of lines in 1913 was done without the consent of the city of Philadelphia. He based his opinion on a provision of the State constitution which says that "no passenger railway shall be constructed within the limits of any city, borough or township without the consent of its local authorities," and took this to apply to a change in the plan of operation as well as the construction of a new line for the purpose of operating.

Service Interrupted on I. R. T.

Lack of Adequate Coal Supply Causes Suspension of Service—Public Service Commission Conducting Inquiry

All trains on the subway lines of the Interborough Rapid Transit Company, New York City, were held up for two hours on Saturday afternoon, Aug. 25, on account of the lack of power. A shortage of coal due to the lack of adequate reserve had been imminent for some time. When the failure to receive an expected barge of coal made it impossible to continue service the subway trains were stopped and transfers were issued to the elevated lines. The surface lines immediately took measures to supply additional service.

The Public Service Commission for the First District on Monday, Aug. 27, conducted an investigation to determine whether officials of the company had been guilty of violating the order of the commission requiring them to provide continuity of service unless prevented by unavoidable difficulties. E. J. Berwind, a director of the Interborough Rapid Transit Company and president of the Berwind-White Coal Company, which is under contract to furnish coal to the Interborough, testified at the hearing that the interruption of service was attributable to a clerical error in calculating the reserve at the Fifty-ninth Street station, and that he did not know that the supply was so low. It developed that officials of the Interborough had impressed upon Mr. Berwind the need for more coal, but did not enforce the demand. Mr. Berwind said that the government had demanded much of the coal intended for commercial purposes, and claimed he was unable to build up the reserve required by the Interborough to avert the danger of a shut-down.

The hearing was resumed on Aug. 28, when it was found that neither the government nor the Navy Department had interfered with coal that should have gone to the Interborough. Following the testimony Commissioner Hayward issued a statement which was in substance as follows:

"The evidence shows that Mr. Berwind had failed to give the Interborough the coal it demanded and had a right to demand under its contract, and that this failure was because the Berwind coal was being sold under other contracts to other people at a higher price than that called for by the Interborough contract, and hence at a greater profit to the Berwind-White Coal Company. That was the reason for keeping the Interborough on such a meager coal allowance that the result was finally disaster.

"The evidence convinces me further that because Edward J. Berwind was a director and member of the executive committee of the Interborough; because of his wealth, influence and position, the Interborough officials did not dare to enforce the fulfillment of his contract."

The commission issued a verbal statement ordering a 5000-ton coal reserve to be kept constantly on hand at the Fifty-ninth Street station which in emergency may be drawn upon for one day only and that upon depletion must be brought back to that amount within forty-eight hours. It also requires that during that period the commission must be notified every four hours of the state of the reserve until it is restored to the minimum required.

The hearing was adjourned until Sept. 4.

Seattle Fare Hearing

Case of Puget Sound Traction, Light & Power Company, Asking to Abolish Sale of 4-Cent Tickets, Is Taken Under Advisement

The application of the Puget Sound Traction, Light & Power Company, Seattle, for authority to eliminate the sale of 4-cent tickets, was heard by the Public Service Commission of Washington recently. W. H. McGrath, vice-president of the company, submitted a chart showing that the valuation of the property, not including power facilities, has increased from $1,002,301 to $14,851,197 in the last seventeen years, the latter valuation being obtained by a board of appraisers. The chart gave the net returns for the years from 1900 to 1915, showing a maximum of $739,901 in 1907. It showed deficits of $175,972 in 1915 and $125,206 in 1916. The average rate of return was slightly more than 4 per cent, the highest rate being 7.72 per cent in 1906. A deficit of 1.22 per cent was reported in 1915 and 0.85 per cent in 1916.

According to the chart, the company paid taxes amounting to $288,700 in 1915, and those for 1916 were estimated at $300,000. This estimate, it was shown, included $64,000, the 2 per cent city tax on gross earnings, which has not yet been paid and for which the city is suing the company. Mr. McGrath stated that seven-tenths of 1 per cent of the gross earnings was used to pay the salaries of the general manager and officials of the company, amounting to $22,069 in 1916.

A. L. Kempster, manager of the Seattle division, gave statistics on the tremendous increase in cost of materials and the advances in wages of trainmen and employees. He estimated that the increase in wages asked by the trainmen and now pending before a board of arbitration would absorb all the gain that might come to the company through the new tariff.

Guy A. Richardson, general superintendent of the company, estimated that the gross earnings of the company would be increased $150,000 annually by the elimination of the 4-cent tickets. He testified that the company is operating with a deficit of 0.55 cent per car-mile, but that with the 4-cent rate eliminated this would be reduced to 0.26 cent per car-mile. Mr. Richardson introduced statistics showing increases of from 12 to 633 per cent in costs of materials used in the operation of the road. The passenger earnings for the first six months of 1917 were $1,680,677.18 as against $1,470 451 for the corresponding period of 1916 or an increase of 14 per cent. J. B. Howe, general counsel for the company, stated that though the company had not refused to pay its 2 per cent tax on gross earnings to the city, it had tendered it under certain conditions, and would not pay it now until a decision had been reached by the court before which the suit of the city of Seattle is being tried.

In discussing the arbitration meetings to be held in the settlement of the recent strike, Superintendent Richardson testified that 200 more men would have to be employed should the demands of the employees be granted. The demands of the men call for a minimum wage of $75 a month.

The commission took the case under advisement. Both the city of Seattle and the traction company were given until Aug. 25 to submit briefs.

Hearing on One-Man Cars

Operation of One-Man Cars on Several Lines of Bay State Street Railway Is Considered by Massachusetts Commission

The Public Service Commission of Massachusetts held a hearing on Aug. 23, on the proposal of the Bay State Street Railway, Boston, to introduce the use of one-man cars on several of its lines now giving light service. H. W. Irwin, superintendent of car repairs for the company, testified as to the mechanical operation of the cars and General Manager R. S. Goff gave further details about the comparative costs of operating them and the effect on service to the public. Other officials of the company and A. Stuart Pratt, president of the Brockton & Plymouth Street Railway, also spoke in favor of the one-man cars. The opposition was led by P. F. Sheehan and Fred Crowley, representing the local employees' unions. Previous to the hearing, the company made, in part, the following statement:

"In dealing with the one-man or efficiency car and in dealing with everything else connected with street railways the first thing to be considered is the service to the public. There isn't any question at all but that there is a demand for street railway transportation of lighter units, more frequent headway and a faster schedule. In putting its one-man cars into service the Bay State Street Railway is only acting under the suggestion of the Public Service Commission supported by the opinion of experts who have studied the operation of these cars, in different parts of the country and who know, as the result of the most intensive study, that they are sure to result in the giving of much more satisfactory service."

In speaking of the opposition to the use of the one-man cars, P. F. Sullivan, president of the company, said that the principal objection to them is that their adoption may throw men out of employment. He said that if the company were prohibited from using these cars on some non-paying lines, as planned, it would discontinue operation on those lines. Mr. Sullivan stated further that due to the shortage of labor the company proposes to employ women wherever possible and he hoped the public would look with favor upon these changes.

Ohio Roads Ask Increase

Two companies operating interurban lines in Ohio have petitioned the Public Utilities Commission of that State for permission to increase the rate of fare from 2 cents to 2½ cents a mile. The roads concerned in the movement are the Western Ohio Railway, Lima, and the Cleveland, Southwestern & Columbus Railway, Cleveland. The companies contend that the 2-cent rate in effect in Ohio applies only to steam roads. The old rate, it is said, is not sufficient under present conditions to provide revenue for needed extensions and new equipment.

The petition of the Cleveland, Southwestern & Columbus Railway does not apply to rates within cities. Mileage books have not been considered as yet. Conditions regarding competitive points will be taken up later, the principal object at this time being to increase the basic passenger rate. About 85 per cent of the business of the interurban roads consists of passenger business, while on steam roads 85 per cent is freight business. At the present time this road is equipped to do a very small freight business.

The commission held a hearing on the application of the Western Ohio Railway and on Aug. 29 approved the new schedule. It proposed to suspend the new rate until a complete inquiry could be made, but the company opposed that course.

Jitneys to Operate in Wilkes-Barre.—The City Council of Wilkes-Barre, Pa., has received notice that fifty jitneys are to be put in operation in that city and throughout Wyoming Valley. Authority has been granted to Joseph Pugh of Kingston, who was in the jitney business before the Public Service Commission came into power. The commission decided it has no right to interfere with his operation of jitneys.

Accident on Chicago & North Shore.—As a result of the collision of two trains on the Chicago, North Shore & Milwaukee Railroad, Highwood, Ill., two persons were killed and a dozen others injured. The accident occurred at the Great Lakes Naval Training Station, where one train of two cars was unloading passengers when the other train approached from the rear. It is said that disobedience to orders on the part of the motorman of the second train was the cause of the accident.

St. Joseph Jitneys Abandon Service.—As a result of the enforced new city ordinance requiring jitney operators to furnish an indemnity bond in the sum of $3,000 for each car operated only two jitneys remain in St. Joseph, Mo., and these are operated by the St. Joseph Railway, Light, Heat & Power Company of that city. **The motor buses are** operated from Twenty-sixth Street and Frederick Avenue to the east city limits. **Transfers are issued free to Frederick Avenue patrons who pay the 5-cent fare, and 1 cent for transfers is charged those who use tickets.**

Women Conductors Wanted in Muskogee.—The Muskogee (Okla.) Electric Traction Company is advertising in local papers for young women between eighteen and twenty-five years of age for positions as conductors on the cars in Muskogee. The company has lost many of its men from the train service on account of the many enlistments. It expects, however, when it has filled the ranks with women employees to find the new conditions quite satisfactory. "Girls as conductors are coming just as sure as to-morrow's dawn" is a statement made recently by R. D. Long, general manager of the company, in discussing the situation.

Public Service Rescinds Free-Ride Order.—The Public Service Railway has withdrawn the free transportation privilege to members of the National Guard in uniform, which has been in effect since last April. When the men were called to the colors and assigned to guard duty, the company found it was necessary for them to travel back and forth in small units and the regimental commanders had no funds to pay car fares. It then agreed to carry all armed soldiers free. There being no longer need for the guardsmen to move from place to place on daily duty the company has given notice that soldiers are now expected to pay fares.

Jitney Ordinance Opposed.—An injunction has been granted by Judge Southall of the Circuit Court to representatives of fifty-two petitioners against the city of Petersburg, Va., restraining the enforcement of a jitney ordinance recently adopted by the City Council which, if enforced, would mean the death of 143 licensed jitneys and about sixty hacks now operating in the city. The petitioners direct attention to the inability of the electric railways to handle the local traffic and have intimated that, unless the injunction is sustained, they will insist upon the enforcement of the State law prohibiting railway companies from allowing passengers to stand in the aisles and on the running boards of cars.

Jitney Question Before Birmingham.—An appeal by employees of the Birmingham Railway, Light & Power Company, Birmingham, Ala., for an increase in wages, has been placed before the city officials in the form of a request that jitney competition be lessened. The company had turned over its books to a committee of the employees union to show that earnings did not justify the increase, but agreed to comply with the request for more wages if the jitneys could be suppressed. The committee then referred the matter to Commissioner Weatherly, saying, however, that if the company made no increase voluntarily the men would abide by their two-year contract. Mr. Weatherly said the jitney question must be considered from the viewpoint of the public, the jitney driver, the railway employees and the company. The matter will be taken up by the City Commission.

Personal Mention

Charles R. Morley has resigned as president and a director of the Stark Electric Railroad, Alliance, Ohio.

Morgan Jones, superintendent of the northern division of the Union Traction Company of Indiana, with offices in Tipton, has resigned.

H. K. Gamble, assistant superintendent of transportation of the Conestoga Traction Company, Lancaster, Pa., has been appointed acting superintendent, to succeed Samuel T. Charles, deceased.

W. Clapper, heretofore traffic manager of the Inter-Urban Railway, Des Moines, Iowa, has been appointed general manager of the company. Mr. Clapper will retain charge of the traffic department.

John J. Gannon, vice-president of the New Orleans Railway & Light Company, New Orleans, La., has resigned. He resigned also as chairman of the board of directors of the American Cities Company, New York, which controls the road.

T. C. Cherry, heretofore general manager of the Empire United Railways, Syracuse, N. Y., has become general manager for the receiver of the Rochester, Syracuse & Eastern Railroad, which was combined with the former company but is now operated separately.

R. R. Hayes, superintendent of the Western Ohio Railway, with headquarters at Wapakoneta, has resigned, effective Sept. 1, to become general manager of the Tiffin, Fostoria & Eastern Electric Railway at Tiffin, Ohio. No successor to Mr. Hayes has as yet been named.

Harry Reid, president of the Kentucky Utilities Company, Somerset, Ky., has been elected president of the United Gas & Electric Company of Jeffersonville and New Albany, Ind., to succeed Chester P. Wilson of Indianapolis. Both companies are subsidiaries of the Middle West Utilities Company.

E. A. MAHER, SR.

Edward A. Maher, Sr., president of the Third Avenue Railway, New York, N. Y., has tendered his resignation, to take effect Jan. 1, 1918. On May 1, 1917, Mr. Maher had completed twenty-five years of service with the company. Prior to that date he had concluded that at the end of his twenty-fifth year of service he would retire and had expressed his intention to F. W. Whitridge, then president of the company. The unexpected death of Mr. Whitridge changed these plans and Mr. Maher was elected to succeed him as president. Mr. Maher has had more than fifty years of constant employment and feels that he should be relieved of his duties and the responsibilities of his position. He was born in Albany, N. Y., in 1852, and was graduated from the State Normal School. He was elected Mayor of Albany in 1888, and upon the expiration of his term was made president and general manager of the Albany Electric Illuminating Company. In 1892 he became president of the Union Railway, New York. When the Third Avenue Railway acquired the Union Railway properties, Mr. Maher was retained as president and general manager of the Bronx and Westchester subsidiary company. He was appointed general manager of the Third Avenue Railway in 1908 and later was elected vice-president in addition. His son, E. A. Maher, Jr., later became assistant general manager of the company and succeeded Mr. Maher when he was elected president last February.

T. F. GROVER

T. F. Grover, general manager of the Terre Haute division of the Terre Haute, Indianapolis & Eastern Traction Company since June, 1907, as reported last week, has been appointed vice-president and general manager of the Chicago, South Bend & Northern Indiana Railway and the Indiana & Michigan Railway, with office at South Bend, Ind. Mr. Grover was born in New Jersey but has been connected with the electric light and electric railway industries in the Northwest since 1892. He was superintendent of the Milwaukee & Wauwatosa Electric Company as one of his early connections, and left this company in 1896 to become vice-president and superintendent of the Fond du Lac (Wis.) Electric Company. After securing a new electric light, railway and gas franchise in that city, he formed the Fond du Lac Railway & Light Company, which later acquired the property of the gas light company. In 1899 he built the electric railway system in Fond du Lac which was extended the following year to North Fond du Lac. In 1902 the Fond du Lac & Oshkosh Electric Railway was incorporated and Mr. Grover became its general manager and later its president. This company was subsequently absorbed by the Eastern Wisconsin Railway & Light Company, from which Mr. Grover retired in 1905. He next was engaged in consolidating the electric light, railway and gas properties in and about Trinidad, Col., and left this work to become general manager of the Terre Haute division of the T. H., I & E., and president of the Terre Haute & Western Railway. Mr. Grover will remain for a while in charge of the Terre Haute property, dividing his time between his old and his new duties.

A. M. Buck, who for the last six years has been in charge of the electric railway courses at the University of Illinois, has resigned to join John A. Beeler, consulting engineer, New York City. His work will consist largely of investigations dealing with the construction, operation and management of electric railway properties. At present he is assisting Mr. Beeler in an investigation of the operations of the Boston Elevated Railway, which is being done for the Public Service Commission of Massachusetts. Professor Buck has written a standard text-book, "The Electric Railway," and contributed a number of articles to the technical press. He was born in Washington, D. C., in 1881, and received his technical education at Sibley College, Cornell University. After receiving the degree of mechanical engineer in 1904, he was an instructor in electrical engineering at Cornell for one year, and later was successively assistant professor of electrical engineering at New Hampshire College and professor of electrical engineering at the Clarkson School of Technology. Prior to his connection at the University of Illinois, he was employed by the Delaware, Lackawanna & Western Railroad for a short period. Professor Buck is a member of the American Electric Railway Association, the American Institute of Electrical Engineers, and the Society for the Promotion of Engineering Education, and is a Fellow of the American Association for the Advancement of Science.

Obituary

N. M. Thygeson, general counsel of the Twin City Rapid Transit Company, which controls the Minneapolis Street Railway, the St. Paul City Railway and the Minneapolis & St. Paul Suburban Railroad, died on Aug. 23 at Palo Alto, Cal. Mr. Thygeson had been connected with the legal department of the Twin City lines for nearly thirty years and was prominent in legal circles of both cities. He obtained a leave of absence last spring and went to Palo Alto in the hope of regaining his health. He was held in high esteem by all his associates.

Construction News

Construction News Notes are classified under each heading alphabetically by States.

An asterisk (*) indicates a project not previously reported.

RECENT INCORPORATION

Mahoning & Shenango Railway & Light Company, Youngstown, Ohio.—Incorporated as a consolidation of the Youngstown & Sharon Railway, the Mahoning Valley Railway, the Youngstown Park & Falls Railway, the Mahoning Valley Southeastern Railway, Poland Street Railway and the Mahoning & Shenango Railway & Light Company. Capital stock, $21,000,000.

FRANCHISES

Richmond, Cal.—The Southern Pacific Company, which holds a franchise for an electric railway into Richmond from the terminus of its Albany suburban line, has asked the City Council for permission to operate a steam line on Cutting Boulevard from the main line Southern Pacific tracks at Pullman Avenue westward for 2 miles to Richmond Avenue. It is understood that after two years the company will electrify the line.

Santa Ana, Cal.—The Pacific Electric Railway has asked the Board of Supervisors for a franchise to construct an extension of its proposed Santa Ana-Tustin line to Irvine.

Walkerville, Mich.—A by-law will be submitted to the electors at an early date to grant the Sandwich, Windsor & Amherstburg Street Railway a franchise to construct new tracks from Walker Road along Ottawa Street and Lincoln Road, to connect with the belt line at Wyandotte Street.

Cincinnati, Ohio.—The Cincinnati, Newport & Covington Railway has submitted the formal bid of that company for the Green Line franchise to the City Council. As the city and company have agreed to the provisions of the franchise, the grant will be made by the City Council at a meeting to be held at an early date.

East Cleveland, Ohio—The new street railway franchise was approved by the City Council of East Cleveland on Aug. 20 to take the place of the one recently voted down by the electors. This was done at the demand of the people who have been using the Hayden Avenue line. The Cleveland Railway has threatened not to accept the new ordinance.

Erie, Pa.—The Buffalo & Lake Erie Traction Company will ask the City Council for franchises for its two interurban trolley lines operating in and out of Erie.

Reading, Pa.—The Reading Transit & Light Company has received a twenty-year franchise to construct a single-track railway along Canal Street, south of Chestnut Street.

Waco, Tex.—The Texas Electric Railway has received a franchise from the City Council to construct an extension on Lasker Street from Twenty-fifth Street to the city limits and an extension on Reuter Street from McIver Street to the city limits.

Richmond, Va.—The Board of Aldermen has granted permission to the Petersburg & Appomattox Railway to construct a new line along Bollingbrook Street from the eastern corporate limits of the city to Second Street. Work on the new line will be begun at once.

Tacoma, Wash.—The Puget Sound Traction, Light & Power Company has received a twenty-five-year franchise from the County Commissioners to erect transmission lines between Tacoma and Tapps.

TRACK AND ROADWAY

Pacific Electric Railway, Los Angeles, Cal.—A contract has been awarded by the Board of Public Works to W. M. Ledbetter for the construction of a reinforced concrete bridge for street traffic over the Pacific Electric tracks at West Boulevard and Sherman Way. The cost of the bridge will be about $24,957, to be shared equally by the city and the company.

***Jacksonville, Fla.**—The Jacksonville & Seashore Electric Association has been formed for the purpose of constructing an electric railway from Jacksonville to the beach resorts. M. B. Jennings was elected president; Judge H. B. Phillips, W. R. Rannie, Telfair Stockton, P. J. Mundy, E. W. Waybright, F. O. Miller and Sam Marshall, vice-presidents, and St. Elmo W. Acosta, secretary of the association.

Georgia Railway & Power Company, Atlanta, Ga.—Work will be begun at once by the Georgia Railway & Power Company on its proposed extension from Brookhaven to Camp Gordon.

St. Louis & East St. Louis Interurban Railway, East St. Louis, Ill.—Mayor Kiel of St. Louis has announced that the Municipal Bridge Commission will give assurance to the officials of the St. Louis & East St. Louis Interurban Railway Company that a permit will be issued to that road to operate cars on the Free Bridge. In a letter accompanying the application filed by the St. Louis & East St. Louis Railway, Joseph McCoy, attorney for the corporation, said it had ordered its equipment and was laying tracks in East St. Louis to connect with the bridge and would be ready for operation within thirty days. The company does not ask to use the bridge to the exclusion of other interurban roads. William P. Launtz, East St. Louis, is interested. [Aug. 4, '17.]

***Ridge Farm, Ill.**—It is reported that a new line will be built from Ridge Farm, Ill., to Clinton, Ind., connecting the lines of the Danville, Urbana & Champaign Railway and the Terre Haute, Indianapolis & Eastern Traction Company. The road, if built, will provide a continuous trolley line from St. Louis to Detroit and Buffalo.

Rockford & Interurban Railway, Rockford, Ill.—A report from the Rockford & Interurban Railway states that the company expects to build a 3-mile extension from Rockford to Camp Grant within the next few weeks. The line will be single track with frequent sidings.

Chicago, South Bend & Northern Indiana Railway, South Bend, Ind.—This company reports that work will be begun at once on the construction of approximately 13,500 ft. of double track on Eddy Street and Mishawaka Avenue, South Bend, using 6½-in., 125-lb. T-rail with continuous joints.

Bay State Street Railway, Boston, Mass.—Work has been begun by the Bay State Street Railway on the construction of new track on Derby Street from Lafayette to Liberty Street, to replace the Charter Street line which will be taken up.

Houghton County Traction Company, Houghton, Mich.—It is probable that this company's line will be extended during the coming year to Lake View Cemetery, west of Calumet.

City & Leeds Railway, Kansas City, Mo.—This company will construct a three-span bridge across Blue River in connection with its proposed line from Thirty-first Street to the city limits, via Leeds.

Public Service Railway, Newark, N. J.—This company has filed a certificate with the Secretary of State showing that it proposes to extend its lines in Bergen County. The plans call for the extension from the lines of the Palisades railroad to Palisades Avenue northwest of Sylvan Avenue in the borough of Englewood Cliffs.

New York Municipal Railway, Brooklyn, N. Y.—Commissioner Travis H. Whitney has announced that operation of the New York Municipal Railway from Brooklyn, through Canal Street and up Broadway to Fourteenth Street, New York, will be begun on Sept. 4.

Interborough Rapid Transit Company, New York, N. Y.—Bids will be received by the Public Service Commission for the First District of New York for constructing Shaft No. 2 of route 26 of the Queensboro subway, to be located on the northerly side of East Forty-second Street between First Avenue and East River.

Long Island Electric Railway, New York, N. Y.—Service on the Long Island Electric Railway, operating between Far Rockaway and Jamaica, will be discontinued on the line from Far Rockaway to Hook Creek after Sept. 15, when work will be begun upon the widening and improvement of the Nassau County section of the Rockaway Turnpike.

Youngstown & Suburban Railway, Youngstown, Ohio.—This company contemplates improvements to its system in Columbiana. An extension will also be built from Columbiana to East Palestine.

Pottstown & Phoenixville Railway, Pottstown, Pa.—Arrangements have been completed by the Pottstown & Phoenixville Railway for the sale of a new issue of first and refunding mortgage 5 per cent gold bonds, the proceeds of which are to be used to complete the line from Sanatoga to Spring City, including the bridge over the Schuylkill River.

Schuylkill Railway, Pottsville, Pa.—New ties are being laid along the line of the Schuylkill Railway in Pottsville.

Dallas (Tex.) Southwestern Traction Company.—In addition to this company's proposed line between Dallas and Cleburne, a shuttle line will be placed in operation between Eagle Ford and Irving. The line will give service to West Dallas, Cement City and Gates. [June 23, '17.]

Port Arthur (Tex.) Traction Company.—The Gulf Construction Company, Dayton, Ohio, has received a contract from the Port Arthur Traction Company to construct a 2-mile extension of its line on Beaumont Avenue from Proctor Street to Tenth Street and thence to DeQueen Boulevard.

Salt Lake & Ogden Railroad, Salt Lake City, Utah.—Directors of the Salt Lake & Ogden Railroad have ordered the name changed to the Bamberger Electric Railway, because the original name was easily confused with that of other roads entering Salt Lake City.

Newport News & Hampton Railway, Gas & Electric Company, Newport News, Va.—This company has been authorized to increase its capital stock from $2 375,000 to $4.000,000 to provide for extensions and improvements to its system.

Virginia Railway & Power Company, Petersburg, Va.—This company plans to build an extension to Camp Lee.

Seattle (Wash.) Municipal Railway.—The city of Seattle has purchased 123 tons of 60-lb. steel rails to be used in the extension of Division A into Ballard. The rails cost $65 a ton and will be paid for out of $25,000 borrowed from the light funds for the purpose. The light funds will also be used for extension from the new Ballard bridge to Leary Avenue and Market Street.

Puget Sound Electric Railway, Tacoma, Wash.—An extension of the Short Line from its present terminus at Meeker's Junction to the eastern city limits will be built by the Puget Sound Electric Railway.

Wisconsin Interurban System, Madison, Wis.—A contract has been let by the Wisconsin Interurban System to J. T. Adams, Columbus Savings & Trust Building, Columbus, for the construction of its proposed 250-mile line. The first unit will be built from Madison to Janesville via Stoughton. J. E. Jones, Portage, general manager. [Aug. 11, '17.]

Green Bay & Eastern Railway, Manitowoc, Wis.—This company has increased its capital stock from $50,000 to $3,000,000 and will soon let a contract to build its line from Manitowoc to Green Bay and thence to Sheboygan, 70 miles. Rudolph Stockinger, Manitowoc, secretary. [April 14, '17.]

SHOPS AND BUILDINGS

Detroit (Mich.) United Railway.—Planning for the future, the Detroit United Railway has purchased slightly less than 14 acres of land on the north side of Warren Avenue West, east of the Snyder road. The purpose of the purchase is to take care of the growing needs of carhouse and car-yard facilities for the lines on the west side now constructed and that are expected to be constructed. The present accommodations at the West Warren car yards have become too small for proper service and the new property, when occupied, will give ample room for many years to come.

Texas Electric Railway, Dallas, Tex.—Work will be begun at once on the construction of the new freight and express station for the Texas Electric Railway at Young, Jefferson, Wood and Houston Streets, Dallas.

POWER HOUSES AND SUBSTATIONS

Pacific Gas & Electric Company, Sacramento, Cal.—The Railroad Commission of California has authorized the San Jose Railroads and the Peninsular Railway to transfer to the Pacific Gas & Electric Company for $6,400, a transmission line, including poles, wires, etc., along the right-of-way of the two railroads from San Jose to Saratoga; also the stationary motor system of the railroads in Santa Clara County for $62,500. The companies are authorized to execute a contract for the sale of electric energy.

Denver (Col.) Tramway.—A new Curtis steam turbine has been installed by the Denver Tramway at its Platte Street power house to replace older electrical machinery and to give increased power capacity at greater economy. The older engines will, with one or two exceptions, be retained as a duplicate source of power for use in emergencies. The total cost of the new equipment, which was purchased from the General Electric Company, was $150,000.

Milford & Uxbridge Street Railway, Milford, Mass.—This company has decided to close down its electric power plant at the foot of Granite Street, Milford, which now furnishes nearly all of the motive power for the local system, and to purchase its power from the New England Power Company. The plant will be maintained for the balance of this year. The plant will not be dismantled, but will be kept intact for use in case of an emergency.

Union Street Railway, New Bedford, Mass.—Work will be begun at once on the construction of a new power plant for the Union Street Railway on the company's present wharf at the foot of Middle Street. The structure will be 80 ft. x 115 ft. and 70 ft. high, of brick, with a concrete chimney. It will be equipped with a 30-ton crane. The new station will about double the present equipment of the power plant. Contracts have been placed for Babcock & Wilcox boilers, which are to be fitted with Riley stokers. Contracts have also been placed for the electrical equipment. The plans and arrangement of the new station were prepared by the Harry M. Hope Engineering Company of Boston, which company will supervise the construction of the building and the installation of the equipment. It is stated that the new plant will cost about $1,000,000.

Binghamton (N. Y.) Railway.—Two new generators and equipment have been ordered by the Binghamton Railway from the General Electric Company, and it is expected that delivery will be made about Oct. 1. The cost of the new equipment is about $40,000.

Columbus, Delaware & Marion Electric Company, Columbus, Ohio.—Orders have been placed by the Columbus, Delaware & Marion Electric Company, the successor to the Columbus, Delaware & Marion Railway, for equipment and material for enlarging and rebuilding its distributing system in Marion, at a cost of about $35.000. The company is now installing a steam turbine, water cooling tower, boilers, etc., at its plant on Mill Street, to cost approximately $125,000. Improvements on the local plant and system, to cost about $125,000, are contemplated during 1918.

Republic Railway & Light Company, Youngstown, Ohio.—It is reported that right-of-way is being secured by the Republic Railway & Light Company for the erection of a high-tension power line through the southwest section of the city.

Youngstown & Suburban Railway, Youngstown, Ohio.—This company contemplates the erection of a substation at Columbiana. Electrical machinery, it is understood, has been purchased. Energy will be supplied from Salem, where a power house will be erected for the purpose, to be used instead of the one at West Point.

Rutland Railway, Light & Power Company, Rutland, Vt.—Plans are being made by the Rutland Railway, Light & Power Company for the early operation of its new substation at Castleton, which will be used for local service. The company has completed the construction of a new high-tension line from Rutland to Castleton.

Puget Sound Electric Railway, Tacoma, Wash.—The County Commissioners have granted the Puget Sound Electric Railway a franchise to erect an electric transmission line from the Dieringer power plant to Tacoma.

Manufactures and Markets

Discussions of Market and Trade Conditions for the Manufacturer, Salesman and Purchasing Agent
Rolling Stock Purchases Market Quotations Business Announcements

Metal Market Conditions

Government's Regulating Program Causes Slight Decrease in Prices—Production of Copper Must Be Increased

Conditions in the metal market for the past month have been dull. The fixing of prices for coal last week by the government has caused the belief that some radical readjustment of metal prices is bound to come. In anticipation of this price-fixing program, practically all of the metals, including copper, tin, lead, etc., have dropped off slightly during the last week. Basic materials, such as pig iron and steel billets, have decreased slightly, but steel plates show the greatest decrease, having declined $15 to $20 per ton. In case the government fixes maximum prices on raw materials that are considerably lower than present prices, it will not only tend to prevent further increases in fabricated products, but will probably force a reduction in the price of a number of manufactured articles. Quotations on steel and wire products remain unchanged in most instances as the manufacturers do not intend to revise prices until the significance of the government's action is known. These prices are purely nominal, and few sales have been made that would indicate what the future trend would be. The consensus of opinion in the trade is that 22½-cent copper may be named by the government, although 20-cent copper is not an improbability. It is thought that the price to the Allies will be the same as to this government. The price to be made to the public is largely a matter of conjecture.

Labor troubles during the last few months have caused a serious reduction in the output at the largest copper mines. This will undoubtedly cause hardships unless these mines are put in operation immediately and run at maximum capacity. In some cases, producers might hesitate to resume operations if the government set a low price for the product, unless the purchasers would guarantee a premium for delivery sufficient in amount to provide a return commensurate with the risk and demand.

Increase in Coal and Ashes-Handling Equipment Sales

Utility and Industrial Companies Placing Most of This Business—Manufacturer Who Obtains Government Business Is Fortunate

Large purchases of coal and ashes-handling equipment have been reported, the principal orders having been placed by general utility and industrial companies including munitions manufacturers. Some utility companies have obtained additional load from near-by manufacturers who have been unable to obtain coal, and in some few cases the railway and lighting companies have placed orders for additional equipment of this kind. The Rochester Railway & Light Company is one of these and has just completed the installation of a skip hoist for handling ashes.

Deliveries on coal and ashes-handling equipment are good. The manufacturers of this equipment are generally covered by contracts for raw materials, but the delivery of these products has been slow. One company which makes a specialty of overhead bins and chutes advises that it has sufficient stock of ¼-in. plates to last for months. This company has contracted six months ahead on every kind of raw material used and in addition has considerable stock of spare parts on hand. Structural shapes and plates of all kinds are giving manufacturers considerable trouble for future requirements as many difficulties are being met with in the delivery of plates. The market prices of bins and chutes at present is actually lower than the market prices of the plates from which they have been made. There is no telling how long this condition will exist. In general, coal and ashes-handling equipment has increased in price only 50 per cent, although structural shapes have increased 400 per cent and steel plates almost 1000 per cent.

STANDARD PARTS FOR EQUIPMENT HELP DELIVERIES

Practically all parts used in the assembly of equipment by the company in question are of standard design. This alone is responsible for the good deliveries that have been made. Spares are always available and repairs can be made quickly. Orders for standard equipment are being accepted right along but the company mentioned is not accepting orders for any special equipment. Those companies which have been favored with government orders are particularly fortunate because where the raw materials are lacking, pressure is brought to bear upon the producers by the government agents, with the result that so far little trouble has been encountered. Every attempt is being made to eliminate non-essentials in the production of coal and ashes-handling equipment. Long-standing records, unnecessary drawings and other data, which have outlived their usefulness, have been disposed of. In addition special studies have been made of methods to reduce the number of movements in putting work through the shop so that production can be increased to the maximum.

A Good Time to Clean Up the Back Yard

Obsolete Devices and Parts Designs May Find Ready Market Because of Immediate Delivery Possibilities

The very abnormal materials condition prevailing makes this a good time for the manufacturer to clean up the stock of old, obsolete designs of devices and repair parts which have been held in storage for years in some cases. This can be done now to the mutual advantage of both manufacturer and customer. There are many instances where the initiative of the manufacturer has created an improvement on a former design and then put the later type on the market and thus left himself with a more or less heavy stock of the obsolete design. This has been carried for many years, in some cases without any way to dispose of it. While the former design is less efficient and less desirable than its successor, yet it will serve the purpose reasonably well. This fact, taken in conjunction with the necessity the railways face in many instances of having to secure various items on prompt delivery, may very probably make them willing and glad to get a supply of the older design to help out in their immediate needs.

An instance of this kind recently came to our attention when a railway company ordered some trolley bases which the manufacturer was unable to supply for a considerable period ahead. In looking up the past sales to this railway the manufacturer discovered that a previous order had been for an older type of base which was now obsolete, but of which the manufacturer still had a small stock. A reply to the railway company stated this fact and that they could be shipped immediately, and the railway company wired back placing an order. The railway company was glad of the opportunity to get the older bases immediately, and it gave the manufacturer an opportunity to get rid of part of his old stock.

Almost every manufacturer has such a stock of obsolete devices or parts in the storeroom or in a pile in the back

yard. When the more modern design cannot be supplied, advantage should be taken of the opportunity to offer the older style to the railway companies, making very clear what the situation is. Such material as cannot be legitimately sold this way should be sold for scrap and the back yard cleaned up while the material market for scrap metal is so very high. One special work manufacturer recently cleaned up his back yard in this latter manner at a very significant profit.

Rising Cost of Railway Materials

Testimony at New York State Fare Hearing Shows Increase in Cost of Cars, Copper, Coal and Rails

The hearings before the Public Service Commission for the Second District of New York on the application of the twenty-eight electric railways for permission to increase passenger fares were reported in the ELECTRIC RAILWAY JOURNAL for July 28, Aug. 11 and Aug. 18. Further evidence of the ever-increasing cost of materials as brought out at the same hearing is given in the following paragraphs.

The testimony of W. H. Heulings, Jr., sales manager of The J. G. Brill Company, shows the enormous increase in the cost of cars since 1913. In this year the total number of cars of all classes purchased and built in railway shops was 5514, the largest number since 1907 with the exception of 1912, when the total reached 6001.

Mr. Heulings said that glass and canvas show an increase of 100 per cent and presented the following table showing the increase in cost of the component parts of cars:

	Per Cent Increase Over	
	1913	1916
Billets	135	79¼
Bars, shapes and plates	144	71½
Tubing	...	73⅓
Springs	141	42
Malleable iron	10	73½
Brake shoes	3	57
Bearings and center plates	56	30½
Journal boxes	33⅓	60
Cast bolsters	41½	90
Lumber	150	50
Bolts, nuts, etc	66	12⅔
Paint	30	21⅓
Fibers	28	50
Oil and waste	17	21
Axles	130	70

It was pointed out that although railways could evade buying new equipment for a time, there is a corresponding increase in the cost of supply parts to maintain present equipment.

The increase in the costs of all overhead supplies averaged about 100 per cent, according to the testimony of A. H. Englund, vice-president of the Electric Service Supplies Company of Philadelphia.

James A. Emery of Ford, Bacon & Davis testified to the following increases in coal, copper and rail costs:

	1916	1917
Girder rail	$36 a ton	$60 a ton
Bessemer T rail	28 a ton	38 a ton

At the present time, owing to the war, rails are difficult to get at any price.

	1914	1917
Lake copper	$0.13 per lb.	$0.30 to $0.36 per lb.

In coal, the recent increases have been very great:

	1915	1917
Lump coal	$1.15	$5.00
Mine run	1.05	5.00
Slack coal	.90	5.00

Order Wood Blocks Early

Electric railway companies and contractors engaged in paving operations requiring wood blocks are finding it to their advantage to place their orders as far ahead of actual requirements as possible. This is because the paving block manufacturers are experiencing serious delays both in getting wood for treatment and cars for shipment. Wood paving blocks are made from 4-in. x 8-in. timbers which are very much in demand for furthering the country's shipbuilding program. Consequently the government is commandeering all of this material available and particularly when it is loaded on cars ready for shipment.

There is a lot of wood-block paving under way on the lines of the Philadelphia Rapid Transit Company at present and one of the contractors engaged in the work took a chance on getting blocks in the ordinary time of delivery. As a result he had some very busy thoroughfares torn up and long stretches of concrete base ready for blocks that did not arrive. The public set up a howl and what threatened to be a most disagreeable situation was averted by the public-spirited action of a competing block manufacturer who was able to help out with blocks that happened to be available for the emergency.

New Export Business

Manufacturers of electric railway cars and car equipment are now getting business in South America because of the inability of European manufacturers to supply the demands. In fact the particular business now coming to this country was placed in Europe some time ago but the war prevented the fulfillment of the original orders. About 200 cars are involved.

Another interesting situation in connection with export trade has been brought about by the holding up of shipment of a large quantity of car equipment consigned to Belgium. This material was shipped by the manufacturer months ago but it is all being held up at "an Atlantic port" by the authorities.

While the ramifications of the Barber Asphalt Paving Company of Philadelphia for world-wide trade are great and the export business of the company figures very favorably in relation to its total output, recent orders of unusual magnitude indicate that the company is now getting a stronger hold on foreign trade, due to the inability of European companies to handle the business owing to the war.

As an instance of this development, we might cite an order for several thousand rolls of Genasco roofing received from a concern in Calcutta, India. The roofing is to be used for covering cars and buildings by various railway and tramway companies in India.

Another very large order booked last week called for roofing and miscellaneous asphalt products consigned to tramway interests in Hongkong, China.

NEW YORK METAL MARKET PRICES

	Aug. 22	Aug. 29
Prime Lake, cents per lb	26½	25½
Electrolytic, cents per lb	26½	25½
Copper wire base, cents per lb	36	36
Lead, cents per lb	10⅝	10½
Nickel, cents per lb	50	50
Spelter, cents per lb	8¾	8⅜
Tin, Straits, cents per lb	61¾	61½
Aluminum, 98 to 99 per cent, cents per lb	50	50

OLD METAL PRICES

	Aug. 22	Aug. 29
Heavy copper, cents per lb	24½	24¼
Light copper, cents per lb	21½	21½
Red brass, cents per lb	19½	19½
Yellow brass, cents per lb	16	16
Lead, heavy, cents per lb	8½	8¾
Zinc, cents per lb	6	6
Steel car axles, Chicago, per net ton	$41.00	$42.00
Old car wheels, Chicago, per gross ton	$30.00	$32.50
Steel rails (scrap), Chicago, per gross ton	$39.00	$41.00
Steel rails (relaying), Chicago, per gross ton	$55.00	$55.00
Machine shop turnings, Chicago, per net ton	$17.50	$18.00

CURRENT PRICES FOR MATERIALS

	Aug. 22	Aug. 29
Rubber-covered wire base, New York, cents per lb.	36	36
No. 0000 feeder cable (bare), New York, cents per lb.	36½	36½
No. 0000 feeder cable (stranded), New York, cents per lb.	33¾	33¾
No. 6 copper wire (insulated), New York, cents per lb.	33½	33½
No. 6 copper wire (bare), New York, cents per lb.	36	36
Rails, heavy, Bessemer, Pittsburgh	$38.00	$38.00
Rails, heavy, O. H. Pittsburgh, per gross ton	$40.00	$40.00
Wire nails, Pittsburgh, per 100 lb	$4.00	$4.00
Railroad spikes, 9/16 in., Pittsburgh, per 100 lb.	$7.00	$7.00
Steel bars, Pittsburgh, per 100 lb	$4.00	$4.50
Sheet iron, black (24 gage), Pittsburgh, per 100 lb.	$8.85	$8.85
Sheet iron, galvanized (24 gage), Pittsburgh, per 100 lb.	$10.05	$10.05
Galvanized barbed wire, Pittsburgh, cents per lb.	$4.85	$4.85
Galvanized wire, ordinary, Pittsburgh, cents per lb.	$4.65	$4.65
Cement (carload lots), New York, per bbl	$2.22	$2.22
Cement (carload lots), Chicago, per bbl	$2.31	$2.31
Cement (carload lots), Seattle, per bbl	$2.65	$2.65
Linseed oil (raw, 5 bbl. lots), New York, per gal.	$1.25	$1.25
Linseed oil (boiled, 5 bbl. lots), New York, per gal.	$1.26	$1.26
White lead (110 lb. keg), New York, cents per lb.	12¾	12¾
Turpentine (bbl. lots), New York, cents per gal.	42½	42½

ROLLING STOCK

South Carolina Public Service Company, Greensboro, N. C., has bought three convertible cars for the Salisbury-Spencer line.

Sarnia (Ont.) Street Railway Company, Ltd., expects to purchase one or two double-truck cars as soon as details can be arranged.

Georgia Railway & Power Company, Atlanta, Ga., will purchase six light-weight second-hand closed cars to be used as trailers. The cars will have a seating capacity of forty.

South Carolina Light, Power & Railways Company, Spartanburg, S. C., has purchased eight second-hand cars from the Wendell & MacDuffie Company for use in cantonment service.

Rockford & Interurban Railway, Rockford, Ill., will purchase eight or ten second-hand cars to equip a 3-mile single-track extension from Rockford to Camp Grant which will be built in the next five weeks.

Petersburg, Hopewell & City Point Railway Company, Petersburg, Va., is reported to be in the market for cars to be used in service in the cantonment at Camp Lee. It is estimated that 8 miles of track will be laid.

Chicago, North Shore & Milwaukee Railroad, Highwood, Ill., is reported to be preparing specifications for about thirty new passenger cars in view of possible purchase in the near future. These cars are badly needed not only on account of the large amount of traffic which comes to the road from the Great Lakes Naval Training Station and Fort Sheridan, but also because of a material growth in the Chicago-Milwaukee through traffic. This company has just ordered two 50-ton freight locomotives from the General Electric Company.

Seattle (Wash.) Municipal Street Railway is in the market for eight single-truck, double-end, safety motor passenger cars and equipment for Division A. Bids will be received by C. B. Bagley, secretary Board of Public Works, until 10 a. m., Sept. 28. Plans and specifications are on file in the office of the superintendent of public utilities, A. L. Valentine. Each bid must be accompanied by a satisfactory surety company bid bond, approved by the Mayor and the city comptroller as to sufficiency and the corporation counsel as to form, or a certified check, payable to the order of the city comptroller, for a sum not less than 5 per cent of the total amount of bid.

TRADE NOTES

Railway Specialties Corporation, New York, N. Y., has moved its office to larger quarters at 30 Church Street.

John Stephenson Company, Elizabeth, N. J., has sold its entire property, consisting of about 86 acres, to the Standard Aero Corporation, Plainfield, N. J.

V. L. Crawford, formerly of Hubbard & Company, is now in charge of sales of the B & K Manufacturing Company, manufacturer of pole line and bracket hardware, New Britain, Conn.

American Steel Foundries, Chicago, Ill., announces the appointment of W. S. Spieth as manager of the Davis Wheel department with office at Chicago, to succeed F. A. Lorenz, Jr., who resigned to go into another field.

Continental Car Company of America, Louisville, Ky., has taken over the plant, land and buildings of the Continental Car Company, and will manufacture dump, mine, plantation and industrial cars, motor truck bodies, and standard railroad flat cars.

Hamilton Watch Company, Lancaster, Pa., announces the appointment of Paul Gifford as advertising manager to succeed Robert E. Miller. Mr. Miller has been appointed secretary of the Hamilton Corporation, a subsidiary concern manufacturing measuring and recording instruments and specialties.

Thomas Finigan, president American Electric Railway Manufacturers' Association, and for the last year Pacific Coast representative of the American Brake Shoe & Foundry Company, has moved to Chicago to assume the duties of E. S. Moore, vice-president of the American Brake Shoe & Foundry Company. Mr. Moore will devote his time to Red Cross work during the period of the war.

Consul N. T. Johnson, Changsha, China, requests that catalogs describing and quoting prices on small motor-driven inspection cars, such as are used on railway lines by engineers for inspecting track or roadbed, be sent to the consulate. Information concerning small one-passenger or two-passenger cars is wanted. The cars should be driven by kerosene motors rather than gasolene, if possible.

Walter A. Zelnicker Supply Company, St. Louis, Mo., has just secured the services of J. C. Bryan, formerly with Manning, Maxwell & Moore, Inc., as Southwestern representative of the Ashcroft Manufacturing Company, the Consolidated Safety Valve Company, the Hayden & Derby Manufacturing Company and the Hancock Inspirator Company. Mr. Bryan will be associated with the equipment department.

American Car & Foundry Company has leased for five years a half of the seventeenth floor of the Hudson Terminal Building, 30 Church Street, New York, and will consolidate its New York and St. Louis offices there. At present the company has New York offices at 165 Broadway, but could not obtain sufficient space in that building to provide for the departments that will be moved to New York from St. Louis.

McCarthy Drill & Tool Corporation, Toledo, Ohio, with executive offices at 30 Church Street, New Cork City, has purchased the Toledo Drill & Tool Company, which has just moved into a new and enlarged fireproof two-story structure where they have arranged to turn out large quantities of highspeed drills, in addition to a full line of cutters and reamers. This corporation has added new machinery and equipment and is in a position to take on contracts and make prompt delivery for both millimeter and inch size of high-speed twist drills.

Electric Service Supplies Company, Philadelphia, Pa., will soon place in operation a big new plant for the production of floodlighting apparatus. The new building adjoins the present plant and is six stories in height and about 100 x 100 ft. in area. The company's headlight department will also be moved to the new building, thus giving a considerable amount of space to the present building for extending the productive capacity of other "Essco" specialties. The new building is similar in design to the present one, being of reinforced concrete with special provision for lighting and ventilation. The machinery equipment which has been planned with an eye to the very latest shop practice is about to be installed. In addition to enjoying a large share of the present activity in floodlighting apparatus the company is reaping a big business in its specialties in the one-man car boom. A contract just closed by the Chicago office of the company calls for 300 sets of "Essco" specialties for one-man cars.

NEW ADVERTISING LITERATURE

Peter Witt, Cleveland, Ohio.: Leaflet on the "Car Rider's Car," calling attention to the scarcity of labor and pointing out the feasibility of moving the fare box to the front of the car, adding safety devices and operating as a one-man car.

General Electric Company, Schenectady, N. Y.: Bulletin 47419 on small capacity industrial oil circuit breakers, type FP-10. This supersedes bulletin 47409. This company has also issued bulletin 45600A, superseding 45600, on vacuum tube lightning arresters.

General Vehicle Company, Long Island City, N. Y.: Bulletin giving a brief résumé of the possibilities of electrical industrial trucks. A brief description is also given of the standard 2000-lb. type truck, including satisfactory performance data under various conditions, interesting time studies, and increased practicability and efficiency. Many photographs of actual uses are given in this book.

NEW PUBLICATION

Electrical Data. Published by Underwriters' Laboratories, Chicago, Ill. Thirty-two pages. Paper.

This bulletin describes the new quarters for the Underwriters' Laboratories in New York, and contains minutes of the recent meeting of the Electrical Council of Underwriters' Laboratories, an article on the aging of code standard rubber insulating compound, and studies of a number of electrical fires.

Electric Railway Journal

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Oct. 9 the Day of the 1917 Conference

ALTHOUGH there is to be no convention this year, there are more problems upon which mutual advice and discussion would be helpful than ever before in the history of the industry. There is every reason why this should be the case. The war has upset the orderly arrangement of every kind of business, but probably none to a greater extent than that of the electric railways, because the rate which they have to charge for what they sell is on so inflexible a basis. It was proper in these times of national stress and anxiety to abandon the usual form of annual convention. Such a gathering would not seem to have accorded with the spirit of national economy and whole-hearted concentration upon the most expeditious prosecution of the war. But the one day's conference proposed will be of national benefit if it will help the railways more successfully to fulfill the obligations which they owe to the nation and to the communities which they directly serve. This is contemplated in the program published elsewhere in this issue. We trust that the attendance at the conference on Oct. 9 in New York will be large and that the results of the meeting will be of material assistance to an important industry, now greatly hampered in the service which it should render to the public.

Drawing Coal from New Sources of Supply

THE disturbance which has occurred in the production and distribution of coal has not only increased its cost tremendously, but is causing secondary expense of no small magnitude. An example of this is furnished by the case of the Milwaukee Electric Railway & Light Company, which has just spent $75,000 for temporary storage and handling facilities made necessary by a change in the source of supply. This situation brings to mind a statement made in a memorial recently addressed by the coal interests to Congress in connection with the discussion on federal regulation of their industry. The point of this was that the movement of coal through unusual channels and over unusual routes of transportation greatly increases its cost, even if the supply at the mines is ample. For instance, last year Michigan, northern Ohio and northern Indiana, which had habitually used Eastern coal, suddenly found their supply cut off. The East absorbed practically all of it, and in addition transportation between the two sections was greatly impeded. The Middle West had to go to Indiana and Illinois for coal, where the market conditions were not understood. Lack of confidence caused feverish competitive bidding and consequent high prices. It is to be presumed that such a condition will not obtain this year under federal regulation, but so vital is the coal supply in our industry that operators must keep a most watchful eye on the precious mineral from the mine to the power house bunker. They are, therefore, wise in providing for handling their fuel from any possible source of supply. But this costs money and furnishes still another argument for an increased income.

The Public Does Not Know It Unless You Explain

WHEN Roswell C. McCrea, professor of economics at Columbia University, testified before the Public Service Commission for the Second District of New York at Albany in the hearing on the application for 6-cent trolley fares that "prevailing tendencies as to wages suggest a continued rise," he spoke by the book. Current news items are verifying his prophecy every day. He indicated as causes pointing toward a further advance: the expansion of war-time industries, the low ebb of immigration, the operation of the new literacy test to immigrants and the efforts of foreign governments after the war to prevent emigration. James S. Thompson, vice-president of the American Brake Shoe & Foundry Company, testified at the same hearing that from studies made by him and his company he fully expected both wages and prices of products for electric railways to make material and early advances. Both the professor and the manufacturer spoke as true prophets. In a late issue of the ELECTRIC RAILWAY JOURNAL a series of news items appeared under these headlines: "Increase in Wages in Savannah," "Jersey Company Increases Wages," "Increase for Geneva Men," "Increase in Pay on Utah Lines," "Increase in Wages by Washington-Virginia Railway," "Richmond Bonus to Men Increased." This was the crop of one week. Similar items have become so commonplace that some electric railway men suppose that of course the public is aware of the constantly mounting wage bill. They were never more mistaken. It is a time-worn adage that no one worries very much about any one's troubles but his own. The public will not learn the facts unless told. And someone must keep telling them at every opportunity. If the steady increases in costs of materials could be known by all, and the combination of mounting costs of labor and supplies could be kept before the public constantly, the people would be found in a far more sympathetic mood when an increase in fares is proposed by the electric railways. And there is no one to tell them except the railways themselves.

Army Cantonments Present Traffic Possibilities

ADEQUATE transportation to serve the various cantonments during the construction period as well as after the arrival of the soldiers is one of the particular necessities of the government which the electric railways, in many cases, are in a position to provide. From 2000 to 7500 workmen are engaged in building each of these various military plants, which are usually located within close proximity of some electric line. Practically all of these men would ride back and forth to the near-by city each day if suitable transportation were available. Then there is the haulage of construction material and supplies and the movement of troops to and from the camps after they are completed. The steam roads have tried to monopolize this business, but with the material advantages which frequently occur for the electric railways, the latter should be persistent and diligent in securing that traffic, which should legitimately, from a cost basis, be given to them. Successful pursuit of this competition with the steam roads is not impossible, as the aggressiveness of a few traffic men in the electric railway industry has already proved. What is necessary is a special man detailed to co-operate with the military authorities, cater to them and be ready to supply their special transportation needs.

When the draft army shall have arrived at the various cantonments, each will represent a city of 20,000 to 30,000 inhabitants. A town of this size is ordinarily considered sufficient to support a small electric railway property of its own with a staff of operating officials to look after it. From this it would seem that a large military establishment would warrant considerable special attention on the part of the railway men in order to keep in close touch with the goings and comings of the army men. The traffic men should be alert to the transportation needs in advance and should have plenty of equipment in the way of terminals, cars and power in readiness for the service of the soldiers. Taking into consideration the traffic from the soldiers themselves, from visitors and from the supply of food and other necessities, a very considerable business for the local electric railway company should result.

Finally, it seems to us that more capital might be made of the presence of a cantonment or army division fort within reach of the car lines than has been made. The army officers have thus far welcomed visitors on the grounds, some during certain hours only, but others at any time. Sufficient advertising value is derived from the visits of citizens that it may be counted as a service to the government to induce greater visitation. This could be done by carrying a card on the cars running to the camps and posting notices of special events and carrying posters advertising them on the cars. Increased interest in the camp affairs would, of course, induce more car riding at the same time it created interest in the government service and stimulated enlistment.

By taking advantage of these exceptional opportunities for increased traffic which are coming to a number of properties, these properties at least will be able in a measure to offset the high costs of material and labor due to the war. The full measure of this business can only be secured by an aggressive attitude on the part of the railway officials. The assumption that the business is theirs anyway, and that it requires no special attention, will bring in only a small measure of the earnings possible.

Addressing Commissions Through Operating Officials

THE increased amount of public relations work thrown upon electric railway men during the last few years has inclined some operating officers to make disparaging remarks about the small amount of time left in these days for plain straight railroading. No doubt there have been many occasions where high officials have been obliged to give too much valuable time to matters of minor importance from the company standpoint at commission hearings, and sometimes it has greatly overburdened executives to have to put into frequent hearings and conferences energy which they prefer to devote to the more intimate problems of their properties. On the other hand, however, the commission hearing provides a plane of contact between the public and the management of an operating company which should yield results of the highest value in the direction of increased mutual understanding and respect. These are days in which progressive street railway managers are doing everything feasible to get into closer touch with their patrons, and it should never be forgotten that even a hearing upon a petition of very local importance may often prove well worth while as an occasion for getting together.

Sometimes a company's executives are tempted to leave too much to counsel at commission hearings bearing upon operating matters, remaining at their offices to handle the regular business. In a case where a commission was petitioned to grant authority to operate one-man cars, for instance, a lawyer with offices outside the company headquarters presented the facts. He outlined the districts where it is proposed to use these cars, touched upon their general design, and commented upon their safety features in a most creditable manner. None the less, we are inclined to believe that the better course would have been to have the superintendent of rolling stock and perhaps someone from the manager's office "stand up to be counted" in favor of the petition, presenting the same facts that were brought forward by counsel for the benefit of the commission, the representatives of the employees present and the public at large. So far as we are aware, no questions of law were involved, and if counsel had merely introduced the officials most concerned, leaving the actual discussion of the rolling-stock problem to them, the matter would have been handled by those most fitted to discuss it.

It is a good thing for the local public to see various company officials at hearings, and very often such occasions afford unusual opportunities for questions and answers which go far to clear up misunderstandings about service and other problems. Irksome as it is at times to have to sit through long drawn-out proceedings when heavy cares press upon one for immediate consideration at the office or on the system, it is none the less an opportunity in doing public relations work of the very best character. Here the public sees the men best posted on company affairs face to face, or at least their responsible assistants, and much good may come from such association.

Power Developments at Springfield Represent Several New Features

AN interesting power contract recently concluded between the Springfield (Mass.) Street Railway and the Turners Falls Power & Electric Company marks a radical change in the method of energy supply for traction service on a system long identified with direct current production and distribution. It is nothing new, of course, for a railway to buy power from a hydroelectric company, but in the Springfield case the arrangement is unusually advantageous. The growth of traffic makes new power facilities imperative; the existing main steam plant of the railway company has reached its economic limit of capacity development, and the erection of a new station for railway service alone would be very costly under present conditions. On the other hand, the Turners Falls company has recently completed a large hydroelectric plant near Turners Falls; it is now building a steam turbine station in Chicopee to serve as a relay plant in its rapidly growing system, and it is in an exceptional position to take on a load of the magnitude and character furnished by the Springfield company. Thus the contract exemplifies the best type of an agreement, viz., one in which both parties are benefited to a substantial extent, neither, apparently, getting any noticeable advantage over the other.

The agreement takes the work of power production entirely away from the railway company through the transfer of its present steam plants to the Turners Falls company. This is an unusual arrangement contrasted with the more common practice of holding the energy purchaser's plants in his possession and in reserve outside the direct control of the power company. Since the latter is an organization specializing in energy production on a wholesale basis, it is good engineering from the operating standpoint to require it to assume entire responsibility for the delivery of energy to the substation buses.

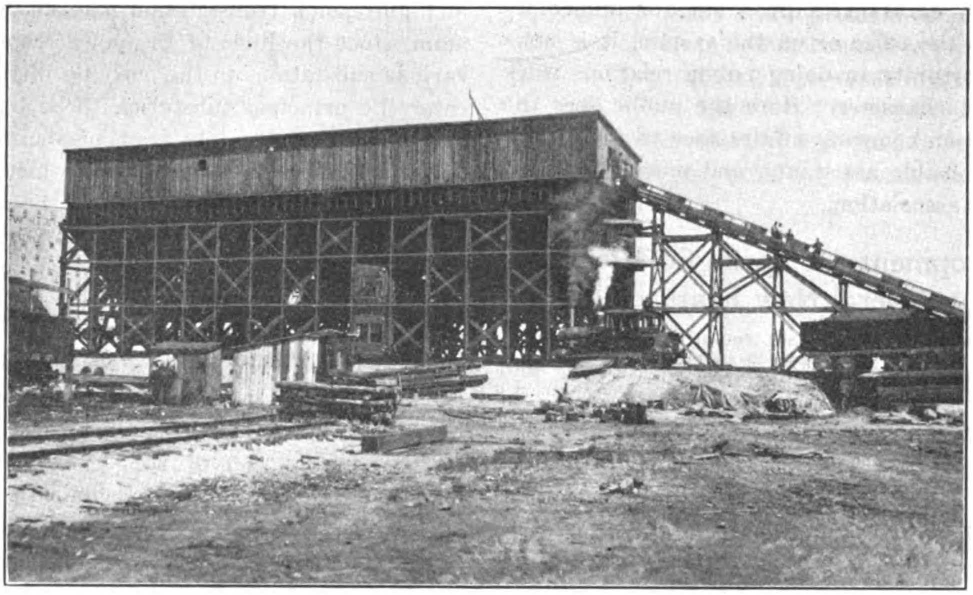
With energy supplied to the railway company from outside the system it follows that the suburban losses in high-tension transmission may be kept at the minimum, since the lines of the power company will reach various substations in the outlying districts before they enter the principal substation to be built at Margaret Street, Springfield. The transmission network is being developed along lines calculated to insure continuity of service, and the establishment of the new steam plant of the power company at Chicopee, in the Springfield district, will prove an excellent safeguard against interruptions due to line or station trouble farther up the Connecticut Valley. Finally, the interconnection arrangements between the Turners Falls company and the New England Power Company at a switching station in Leverett, Mass., provide further insurance against any protracted interruption of supply to the important customers of the hydroelectric organizations in the central Massachusetts district.

To the electric railway man one of the most interesting points about the Springfield power development is the proposed use of the three-wire system of overhead distribution on the city lines. The details of this work are not yet available, but the use of three-unit motor-generator sets with switching arrangements designed to permit operation of generators on either side of the system is certain to prove a flexible and economical combination. The direct-current line losses for a given traffic load should be enough less, also, to make a decided saving in the use of energy. It will be remembered that the decision of the Springfield Street Railway to try out this plan was announced in the issue of the ELECTRIC RAILWAY JOURNAL for Dec. 18, 1915, page 1228, and the engineering aspects of the situation were discussed editorially in the same issue. The principle is the same as that used on the Pacific Electric Railway as described in the Feb. 26, 1916, issue. The plan is to divide the overhead into alternately positive and negative sections, reducing to a minimum the return of current through the rails and earth. The use of 13,200-volt synchronous motors to drive the generator pairs is to be another desirable feature of the new service, very attractive at present costs of copper for interior as well as for exterior wiring. These features make for conservation of material, fuel and water; the contract saves the railway from a large capital investment added to its present outstanding securities, and provides a load with a very desirable power factor for the vendor of energy, many of whose customers' installations offer a far less desirable business.

Watch for our September 22 issue. It will be our

PRE-CONFERENCE NUMBER

and will be devoted largely to the operating advantages of the one-man, light-weight safety car. It will appear two weeks from to-day



MILWAUKEE COAL HANDLING—1500-TON COAL BUNKER ON KINNICKINNIC RIVER

Rearranging Facilities for Receiving Coal by Rail Instead of by Water

Market Conditions Necessitating Use of Central States Coal in Milwaukee Instead of Eastern Coal Brought About Need for New Storage Yard and Special Facilities for Transferring from the Storage to Barge—Plan Adopted Retains Former Equipment in Service, Keeping New Investment as Low as Possible

WITH the marked changes which have taken place during the last year in the coal market generally, The Milwaukee Electric Railway & Light Company has found it advantageous to use coal from the Central States instead of from the Eastern mines. To make this change in market, however, meant that it would be necessary to provide facilities for receiving this coal by rail instead of by water, as it had been handled from the East. To provide arrangements suited to this purpose at the same time avoiding scrapping of good equipment, and also to make it readily possible to change back to the old practice should market conditions warrant, was the particular problem before the company's engineers in taking care of the new conditions.

Formerly coal was received by way of the Great Lakes and stored in a local coal company's yard; thence it was moved to the power houses as needed on a self-unloading barge, 200 ft. long and 14 ft. deep with a 34-ft. beam. It has a longitudinal double-hopper hold, and is equipped with a conveyor underneath each hold. These conveyors carry the coal to two elevators which in turn discharge onto a 36-in. rubber belt traveling over a movable boom about 50 ft. long and capable of elevating the coal about 26 ft. This belt unloads the coal directly into the power-house bunkers at a rate of about 200 tons per hour. It is driven by a 20-hp. motor, and the barge conveyors are driven by a 65-hp. motor, both of which are supplied with direct current through special water-side connections at the power houses.

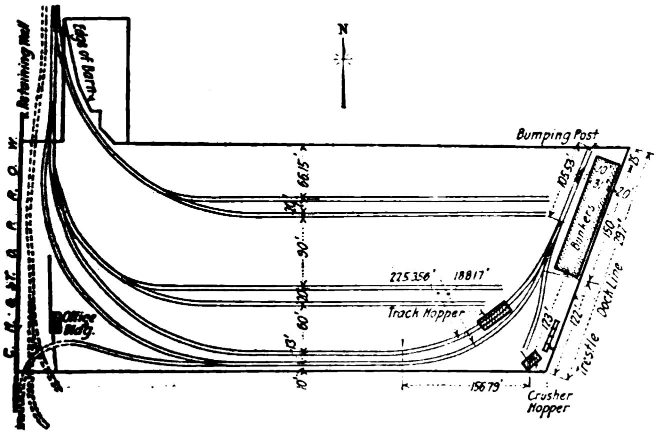
The first problem confronting the company in its plan to buy Middle States coal, was that of finding a water-side yard large enough to provide adequate storage space in addition to the space to be occupied by the necessary handling equipment. For this purpose it was decided to use the company's general storage yard on the Kinnickinnic River, 680 ft. x 280 ft., which was accordingly vacated. This yard lies with one of its short sides along the water front and is surrounded by property already occupied by industrial plants. For this reason it was impossible to enlarge the space already owned and the problem was to utilize efficiently the 190,400 sq. ft. of area available.

At the outset the capacity of the bunker was fixed at not less than 1500 tons, the capacity of the barge which the company would continue to use in the new arrangement. This bunker had to be located along the water line since it was necessary to distribute the coal fairly well along the hold of the barge and at the same time to allow 25 ft. at the north end of the property in order to keep the bow of the barge within the property line. The coal crusher was then located as far south as possible. From the point of delivery of the coal from the crusher, an imaginary line inclined 22½ deg. to horizontal, which is about the steepest practical incline up which coal can be carried on a belt conveyor, was extended upward to determine the location and height of the top of the bunker. The height of the bottom of the bunker was fixed by the elevation of the top of the barge when empty. With the upper and lower limits of the bunker and its capacity settled, and in view of the fact that a 45-deg. angle is required to assure a free sliding movement of coal down a chute, the necessary width of the bunker was calculated at 29 ft.

The bunker and conveyor equipment was laid out to occupy the space at the end of the property. The track serving the yard was placed as close to the bunker as possible, and this necessitated the use of the shortest radius curve (188 ft.) permitted for switching in Milwaukee. This fixed the location of the outgoing track under which the track hopper is located. The end track of the double "Y" is long enough to accommodate a locomotive and one car.

COURSE OF COAL THROUGH RECEIVING YARD

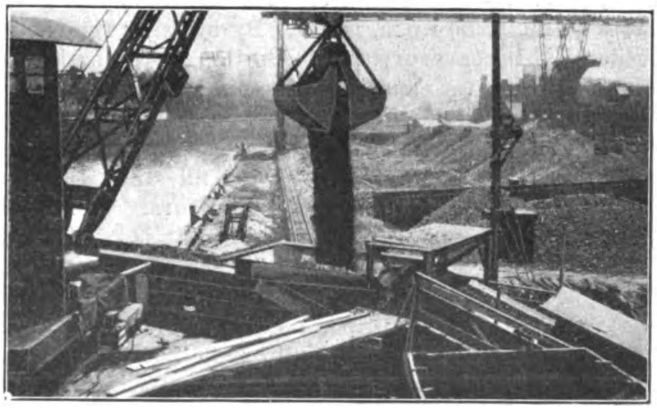
Coal received at the yard may either be unloaded by the two movable motor-driven locomotive cranes and stored in the yard, or it may be taken immediately to the 1500-ton bunker. This latter is possible because a clause in the company's coal contract provides for separation of the mine-run coal at the mine into screenings and lump coal. Under normal conditions, with this presorting of the coal, only the screened lump coal is stored, and the screenings are used immediately. This practice, of course, tends to reduce the liability of spontaneous combustion in the stored coal.



MILWAUKEE COAL HANDLING—GENERAL LAYOUT OF COAL-HANDLING FACILITIES IN NEW MILWAUKEE YARD

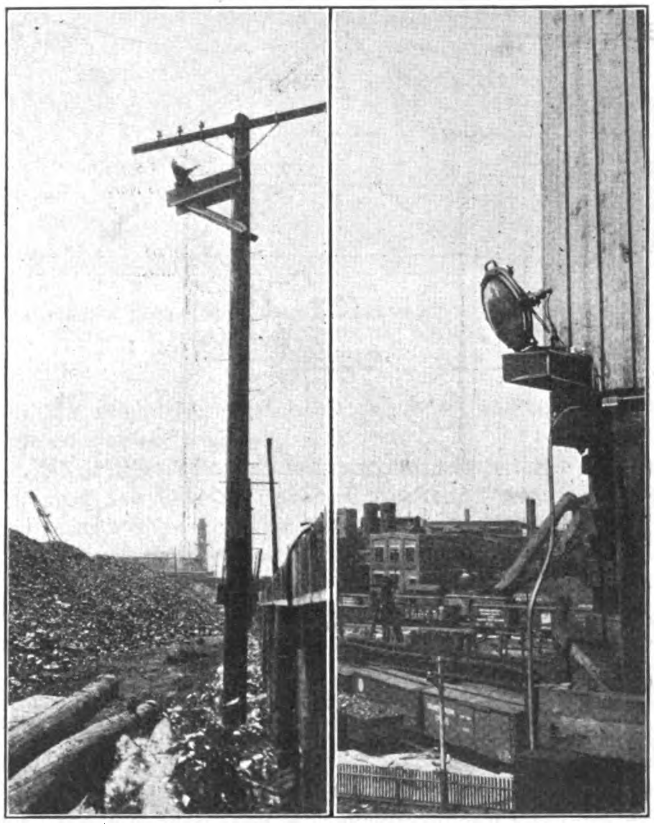
When coal is received in bottom-dump cars it is switched over the 41-ft. x 20-ft. track hopper shown in the general layout drawing, and from there is delivered to a belt conveyor by means of two shakers in the bottom of the hopper, driven through reduction gears by a 15-hp. squirrel-cage motor. This conveyor dumps into the hopper above the coal crusher. The shakers have a travel of about 4 in., which may be increased to about 10 in. for faster operation by shifting the eccentric settings. The motor driving these eccentrics runs at 720 r.p.m., and this speed is reduced through the gears to make twenty strokes per minute at the shakers. The belt between the track hopper and the crusher operates over rollers 67 ft. apart and rises at an angle of 19.5 deg. to the horizontal. This belt is 36 in. wide and is driven at the rate of 240 ft. per minute by a 15-hp. motor.

Coal coming to the yard in gondola cars without bottom dumps is switched to the short siding near the crusher and from there is handled into the crusher hopper by means of a locomotive crane. Coal may be delivered into the crusher hopper by both the belt conveyor from the track hopper and the locomotive crane at the same time. The hopper in the crusher was built with three sides sloping at 45 deg. and with one at 30 deg., in order that coal dropped into it from the belt conveyor would slide freely to the crusher, while that dropped from the 1½-yd. locomotive crane bucket would slide more slowly on the 30-deg. slope and thus prevent unnecessary overloading of the crusher.



MILWAUKEE COAL HANDLING—BELT CONVEYOR AND LOCOMOTIVE CRANE DUMPING COAL INTO CRUSHER HOPPER SIMULTANEOUSLY

A grillage underneath this hopper separates the screenings and by-passes them around the crusher, tending to prevent clogging of the machine. The fine coal leaving the crusher falls on a rubber belt, 30 in. wide and 150 ft. center to center, which ascends to the water-side bunker at an angle of 22½ deg. This belt is driven by a 25-hp., 1800-r.p.m., type-I motor at the rate of 325 ft. per minute and delivers the coal to a 30-in. flight conveyor running the full length of the bunker. The flight conveyor travels at the rate of 100

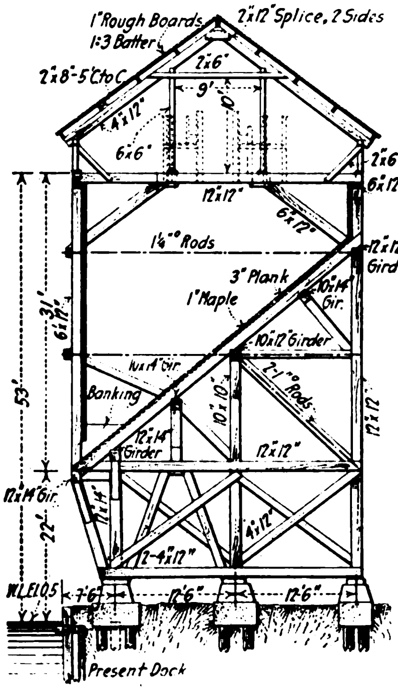


MILWAUKEE COAL HANDLING—EIGHT FLOODLIGHTING UNITS ILLUMINATE THE COAL PILES WHILE TWO OTHERS PLAY UPON THE CONVEYING MACHINERY FOR NIGHT OPERATION ft. per minute and is connected through reduction gears to a 20-hp., 1200-r.p.m. motor. By utilizing the return side of this conveyor to trim the top of the coal piled in the bunker, the capacity of the bin has been increased by about 150 tons. Under ordinary conditions the conveyor and crusher equipment will fill the 1500-ton bunker in eight hours.

The crushing outfit is of the single-roll, 36-in. x 36-in. type. It is belt-driven at 60 r.p.m. by a 100-hp. 720-r.p.m., slip-ring motor. At this speed it will handle 250 tons of coal per hour, reducing the Illinois or Indiana run-of-mine coal to a 1½-in. size lump. The slip-ring motor was selected for this service because of its excellent starting characteristics, and also because it permits of reversing the crusher at times to free the rolls. The single-roll type of crusher was used, because the company had previously made use of it at other plants and it had given satisfactory service with low maintenance costs, even when it was used with hard grades of coal.

METAL CHUTE FOR DISCHARGING COAL ONTO BARGES

Coal is delivered from the water side of the bunker by gravity into two sets of spouts and thence into the barge on the river. Spouts are also provided whereby it will be possible to deliver coal from the bunker into cars on the tracks below. These spouts will not ordinarily be used, but are provided as an emergency measure. In ordinary practice, the water-side spouts are set and the gage is opened by the barge crew from a gallery approximately at deck level. These spouts will deliver a complete load of 1500 tons to the barge in about ninety minutes.



MILWAUKEE COAL HANDLING—CROSS-SECTION OF 1500-TON BUNKER, SHOWING DETAILS OF FRAMING
(See photograph on page 384)

The floor of the bunker, which is laid at an angle of 45 deg., is constructed of a double layer of 1-in. hard maple lumber, in order to provide a smooth surface and to permit of easy repairs inside of the bunker. The entire bunker structure is supported on piles driven 65 ft. into the ground and capped with concrete. The structure measures 150 ft. long by 53¾ ft. high and 29 ft. wide. The substructure is a mill-type construction made up with 10-in. x 10-in. x 12-in. yellow pine members capped with ½-in. steel plates.

DETAILS OF SYSTEM FOR SWITCHING COAL ABOUT YARDS

For the switching of coal about the yards it was not thought advisable to use an electric locomotive since the trolley lines would interfere with the free action of the locomotive cranes. In the general considerations of machine and conveyor drive, it was the aim to provide liberal ratings so that greater tonnages could be handled in the future, if necessary, by speeding up the existing machines. Individual drives were used throughout to provide greatest flexibility of control and to limit and localize trouble. All yard motors except the crane motors operate from a 220-volt, three-phase, 60-cycle circuit, and are of General Electric make. The 1½-yd. bucket locomotive cranes were furnished by the Link Belt Company, and the 1½-yd. stationary crane by The Browning Company. These cranes are operated by 500-volt railway-type motors. The coal crusher was purchased from the Jeffries Manufacturing Company, and the conveyor belts from the B. F. Goodrich Rubber Company. The entire plant, exclusive of real estate, entailed a capital expenditure of $75,000. The design and construction of the coal-handling facilities was handled by the company's own forces under the direction of John Anderson, chief engineer of power plants.

Pennsylvania Railroad's Quota for Military Service

Up to Sept. 1, 2540 employees of the Pennsylvania Railroad, lines east of Pittsburgh, had entered the army and navy of the United States as volunteers, and were granted furloughs from the railroad service. Of this number, seventy-five have been appointed commissioned officers and thirty are student officers in various officers' training camps. The remainder, numbering 2442, are enlisted men in the army and navy. The commissioned officers include one colonel, one lieutenant-colonel, two majors, twenty-one captains, twenty-three first lieutenants, twenty-two second lieutenants, three ensigns and one pay clerk. In addition to the employees of the Pennsylvania Railroad who have entered the military and naval service as volunteers, many more are certain to be taken for the national army under the draft. The exact extent by which the working force of the railroad will be further reduced in this manner will not be definitely known until the final draft lists are compiled. However, it has been ascertained that there are in the service of the Pennsylvania Railroad, lines east of Pittsburgh, 60,000 men who are liable to military service under the selective draft law, and based upon the average proportion of the eligible men who will be taken in the first draft, approximately 3000 of these will be called.

Serving the Absent-Minded Patron

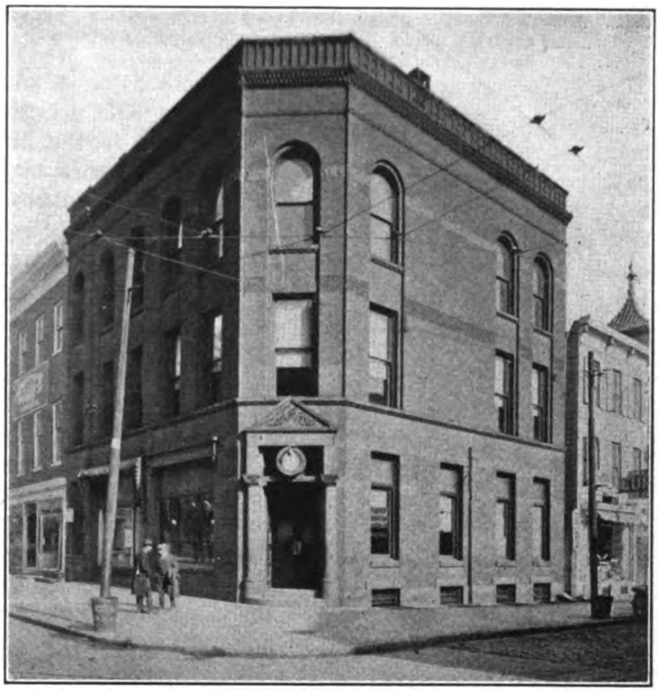
The United Railways & Electric Company of Baltimore Makes Use of a Simple Tag System for Identification of Property Left Upon Its Cars—About 50 per Cent of Turned-In Articles Are Claimed, and 65 per Cent of All Inquirers Find Their Property

THAT the car riders of Baltimore are subject to a full share of the absent-mindedness seemingly characteristic of all surface-car patrons is evidenced by the books of the lost-and-found department of the United Railways & Electric Company. Within the last few years thoughtless riders have left upon the company's cars articles ranging all the way from a keg of beer to a cage of canaries. At present the record performance in carelessness stands as a tie between two passengers, of whom one abandoned $5,000 in bank notes and checks upon a car and, when the property was promptly returned to him through the railway company's lost-article department, forced 50 cents into the calloused but expectant palm of the conductor who retrieved the bundle. The other entry tied for first place in the competition for absence of mind managed to leave his infant son on a street car and did not recognize his loss until the lack of noise about his home impressed the fact upon his mind. The baby, it must be remarked, was not actually handled by the railway company's lost-and-found department, because the dispatcher at the carhouse where the find was turned in lacked the necessary commissary facilities and handed the child over to the local police, from whom it was shortly recovered by the breathless father.

Under normal circumstances, however, all articles that are found upon Baltimore cars are passed through a department whose method of operation and system of records are characterized by an unusual degree of simplicity and freedom from red tape. That it is nevertheless effective in producing results is demonstrated by the fact that approximately 50 per cent of the articles of all classes that are turned in by trainmen are eventually returned to their owners, and this percentage is materially greater in the case of articles having more than a nominal value. Practically all articles of an appreciably costly character are claimed. At the same time, an average of 65 per cent of all surface-car patrons who appear at the department to inquire for lost articles have their property returned to them at once, this figure including the inquiries for missing property that are made without definite knowledge that the lost article has been left upon a car.

PROCEDURE IN HANDLING LOST ARTICLES

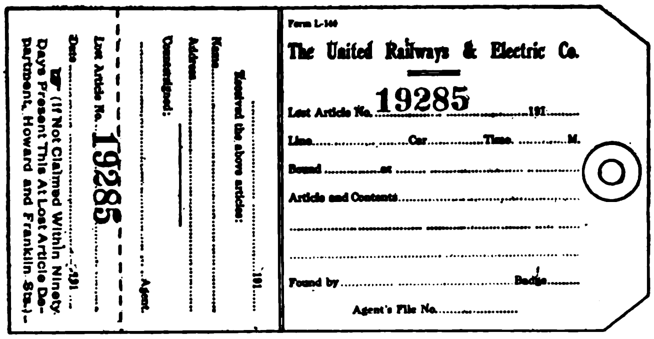
The procedure under which lost articles are handled is as follows: Anything that is found on a car is turned in by the conductor at the end of the trip to the dispatcher at the carhouse. The dispatcher then fills in and attaches to the article a tag which shows the line upon which the article was found, the number of the car and the number of the conductor or the name of the passenger who may have recovered the article and turned it over to the conductor. On the back of the card is stamped the name of the carhouse in which the tag is applied. This tag is stamped with a serial number, and to it is attached a coupon that may be torn from the body of the tag, the coupon containing the same serial number as the tag and also space for entering the date. The object of the coupon is to provide a means for identifying the finder of the lost article to whom it is eventually returned in case no claimant appears to identify the property. Therefore, after the filled-in tag has been tied to an article that is turned in, the dispatcher detaches the coupon and hands it to the conductor, who retains it.



BALTIMORE LOST-AND-FOUND DEPARTMENT—EXTERIOR VIEW OF CENTRALLY LOCATED BUILDING IN WHICH DEPARTMENT IS HOUSED

All articles that are left with the dispatcher in this manner are held at the carhouses until the following morning, when they are forwarded to the company's lost article department. This department is located at an easily accessible place, approximately at the center of the city's business district, in one of the railway company's buildings. The department occupies part of one floor, and the rest of the building is used for a waiting station and for an employees' club that provides a reading room as well as pool tables and other amusements for platform men when they are off duty.

A manifest containing a list of the articles that have been turned in is forwarded each morning by the dispatcher with the articles sent to the lost article department, and this manifest is signed upon receipt by the agent in the lost-article department and returned to the dispatcher after it has been copied. This copy is made in a record book that is kept by the agent at the lost-article department. The record book has large numbered sheets containing vertical columns for entering the agent's file number for storing the article, the date, the tag number, a description of the lost article, the car number, the line, the name of the finder and space for the date of return and the signature of the recipient in case the article is claimed. The original manifest which is returned by the agent to the dispatcher is entered by the dispatcher in a record book that is similar, except that it is somewhat condensed and is single-ruled horizontally, while the agent's record is double-ruled horizontally for the purpose of providing sufficient room for a moderately complete description of articles turned in.


Received the above articles: ....191..

Name..................

Address..................

Countersigned:

..................Agent.

Lost Article No. 19285

Date..................191..

☞ (If Not Claimed Within Ninety Days Present This At Lost Article Department, Howard and Franklin Sts.)

Form L-144

The United Railways & Electric Co.

Lost Article No. 19285 ....191....

Line.............Car.............Time.............M.

Bound.............at..................

Article and Contents..................

Found by..................Badge........

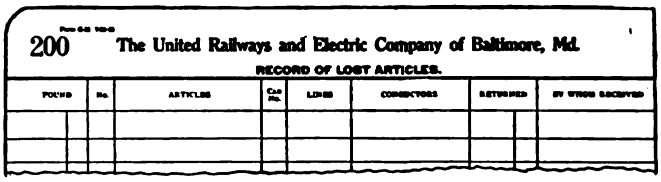
Agent's File No..................

BALTIMORE LOST-AND-FOUND DEPARTMENT—TAG WITH DETACHABLE COUPON THAT IS FASTENED TO LOST ARTICLES UPON RECEIPT

Articles are entered in the agent's record in order according to the dates on which they are found, and they are segregated only as to the respective lines from which they were turned in. They are not classified as to the character of the article. The latter information, however, is shown on the agent's record as previously mentioned, and in the rather rare event of a person not being sure as to the date when an article was lost or the line on which it may have been left, the agent runs over his records from the date of loss up to and including the date of inquiry, going through all of the entries in the column where the descriptions of the articles are entered. Its location in the storage racks of the department is shown by the file number given to it when it was first sent in.

RECOVERY OF PROPERTY BY PATRONS

After receipt of the lost articles that are sent in from the various carhouses each day, the agent in the lost-article department prepares a complete list of the newly-received articles and forwards it to the general offices of the company, where duplicate lists are made out and then sent to the local daily newspapers for publication.

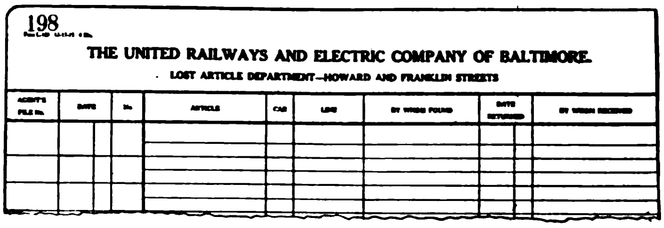

200

The United Railways and Electric Company of Baltimore, Md.

RECORD OF LOST ARTICLES.

Found	No.	Articles	Car No.	Lines	Conductors	Returned	By Whom Received

BALTIMORE LOST-AND-FOUND DEPARTMENT—RECORD FORM USED BY DISPATCHER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THE UNITED RAILWAYS AND ELECTRIC COMPANY OF BALTIMORE.

LOST ARTICLE DEPARTMENT—HOWARD AND FRANKLIN STREETS

Agent's File No.	Date	No.	Article	Car	Line	By Whom Found	Date Returned	By Whom Received

BALTIMORE LOST-AND-FOUND DEPARTMENT—RECORD FORM USED BY AGENT IN LOST-ARTICLE DEPARTMENT

Owners may recover lost articles by applying to the lost-and-found department agent, after furnishing a proper identification and signing the record book as well as the tag for a receipt. Unclaimed articles of small value are held for ninety days, after which time they are returned to the finder. Valuable articles, such as money, jewelry and the like, are sent to the office of the company's cashier and are held in this safe for one year, after which these articles also are returned to

BALTIMORE LOST-AND-FOUND DEPARTMENT—INTERIOR VIEW OF WAITING ROOM SHOWING RECEIVING COUNTER FOR LOST ARTICLES

BALTIMORE LOST-AND-FOUND DEPARTMENT — VIEW SHOWING NUMBERED RACKS IN WHICH LOST ARTICLES ARE STORED

the finder, who is, of course, expected to produce the coupon that was detached from the lost-article tag when the article was originally turned in. Articles that are unclaimed by the finders are delivered to the purchasing department of the company and sold.

Inquiries from persons living outside of the city of Baltimore concerning lost articles are handled through the general offices of the company, and if the articles in question are being held at the lost-article department, they are forwarded promptly to the owner. Many letters have been received by the railway company from such persons who have had their property forwarded to them by parcel post or express, and these invariably express appreciation of the efficient manner in which the company met their applications.

The direct expense of maintaining the department, owing to the simplicity of the system, is not large, and the indirect expense is moderate, although there is, of course, no direct return for any part of the expenditure. As a convenience to patrons, however, the management considers that the outlay is well worth while, and it has always been the policy of the company to make a special point of commending employees who turn in articles of value.

An Electric Railway Efficiency System

B. E. Tilton, General Manager New York State Railways, Syracuse and Utica Lines, Has a System of Watching the Efficiency of His Lines by Means of "Surprise Checks"

THE New York State Railways, Syracuse and Utica lines, employ a plan of checking the extent of adherence to essential rules somewhat similar in principle to the efficiency system of the Pennsylvania Railroad. The latter has an efficiency committee with the function of raising the standards of operation through tests and checks of the observance of the company's rules by employees. Records are kept of all tests, and the number of perfect scores divided by the number of tests is considered to be the efficiency. The record is now 99.98 per cent.

In the plan devised for the New York State Railways by B. E. Tilton, general manager, only failures are recorded. These are brought to light by means of "surprise checks" or tests made without the knowledge of the employees. The results of these checks and other matters of importance are discussed at departmental meetings.

Scope of Surprise Checks

The surprise checks were inaugurated in 1914 and cover transportation, maintenance of way, mechanical, and building and line departments. A glance at the "Manual of Surprise Checks," shown on page 390, will show the scope of the system. When it was first put in operation there was, of course, some criticism, as a few of the men felt that they were having someone "butt in" on their work. But it was soon made plain that the new system was not a plan for spying upon or criticising their work, but rather it was simply another way of making the departments of the company more efficient by checking up the work from a new angle. After this there was no further complaint.

The checks are all of non-technical matters; that is, just the common-sense rules about which there can be no argument as to the necessity for enforcing them. The tests can, therefore, be made by non-technical men, practically anybody whom the company wishes to assign to the work. A transportation department check is made every month, and checks on the other departments are made periodically or whenever considered advisable. The lists of failures are sent to the departments affected. The department head makes repairs of defects noted or administers discipline where needed, and reports back to the man in charge of the surprise checks as to the action taken. A summary of the checks is made up in the form of a report, an abstract from which is shown on page 391, which is submitted at each department meeting. Here there is an informal discussion with the general manager presiding.

Monthly Conference of Department Heads

The departmental meetings are held once a month, the following officials being present or at least members of this conference: General manager, general superintendent, superintendent of interurban lines, auditor, claim agents, master mechanics, electrical engineer, cashier, general express agent, superintendent of line and buildings, engineer maintenance of way, purchasing agent and general passenger agent. This conference covers the two cities of Syracuse and Utica, and for this reason there are two claim agents and two master mechanics present. Meetings are held alternately at Utica and Syracuse, at which C. R. Gowen, general passenger agent, acts as secretary and keeps a permanent record of the proceedings.

Besides receiving and discussing the surprise check

Partial Index of Subject Headings Discussed at Department Meetings

Accidents, reporting to commissioner of labor.
Advertising on windows.
Authorizations.
Budget.
Contracts, standard form of.
Coke for car heaters.
Car specifications.
Courtesy.
Compensation Law.
Derailments.
Examining employees.
Estimates for authorization.
Flat wheels.
Fare boxes.
Guard rails, extension of.
Holidays.
Instruction of shop and barnmen.
Insurance.
Line trouble, reporting of.
Loaning material.
Lost articles.
Mileage system.
Material for 1917.
News items to press.
Orders, inter-department.
Platforms, construction.
Records, mechanical department.
Requisitions for material from stock.
Rules — all departments except transportation department.
Stockroom for forms.
Shop efficiency.
Surprise tests.
Telephone system.
Traffic checks.
Water bills.
Work for other companies.

reports at each meeting the men at the departmental meetings discuss various questions of policy and possible economies. Indeed, the minutes of these meetings show a very wide range of discussion. Sometimes matters are set aside for a report at the next meeting, and in very important cases special rulings are made which then become rules of the company. An index of the first thirty-five meetings shows that 172 subjects were brought up and discussed. Of these 100 were discussed at more than one meeting. A few typical headings taken from the index are as shown in the list on page 389.

A particular economy that has been effected through the departmental meetings is a reduction in the number of blank forms. Each department head had been ordering his own forms, and it was found that 1144 different forms were being printed. After investigating the subject in several departmental meetings it was decided that all the forms should be ordered by the department head through the storekeeper, who should in turn order them through the general purchasing agent. Before any form is ordered, however, the approval of the auditor, who is chairman of the form committee, must be obtained. This prevents any possibility of a duplication in forms or an increase in the number. It was found by the auditor that in many cases one form could be used for similar work in several departments and in this way the number of forms was reduced from the 1144 previously mentioned to 430.

DERAILMENT REPORTS

Besides the surprise check reports another subject which is taken up at each meeting is derailments. The claim agents in Syracuse and Utica are in charge of the derailment reports. These are made out by the car crews and are sent to the claim agent, who on receiving them writes a letter to the mechanical, track and transportation departments, calling attention to the derailments and asking to be advised as to the cause. In case of a dispute the general superintendent decides the cause and advises the claim agent and the other departments affected. The department responsible has to remedy the fault. The claim agent then prepares a monthly report of derailments which shows the location, date, car number and the cause of each derailment.

These reports are summarized to show the points at which more than one derailment has occurred, and the cars derailed more than once, to indicate respectively the points where the track is defective and defective cars. Another summary is made in which the derailments are classified as to specific causes. Finally the number of derailments is compared with the number

Manual of Surprise Checks

Transportation Department

1. Safety stops at railroad crossings: Conductor shall look both ways for approaching trains before pulling the derail lever and giving the motorman proper signal to proceed. Motorman to ascertain whether or not passengers are boarding or alighting before starting. After second stop is made just before the crossing is reached, conductor to give proper signal to proceed from the center of the crossing, after ascertaining that there are no trains approaching.
2. Stopping cars at unsafe landing places, to wit: Where defects exist in pavement; stopping too close to excavations or obstructions; running by crosswalks and running by platform stops on suburban lines.
3. Keeping steps and platform sanded and free and clear from snow and ice.
4. Motorman reducing speed and sounding gong while passing standing car.
5. Motorman ringing bells at cross streets.
6. Passengers riding on rear platform or step of interurban cars when there is room inside of car.
7. Operation of doors on pay-as-you-enter cars when car is in motion.
8. Starting cars before passengers are on or off.
9. Starting and stopping of cars with a jerk.
10. Operating city cars in and out of sharp curves at greater speed than 6 m.p.h.
11. Crossing over switch points when passing another car.
12. Operating cars over special work at a speed greater than 6 m.p.h.
13. Safety stops other than at railway crossings.

Maintenance of Way Department

1. Condition of landing places, both permanent and those used during construction work. Platforms should be even and planking not broken or warped.
2. Condition of pavement at cross walks and at street intersections. Pavement should not be in such condition that there are depressions more than 2 in. in depth, or elevated obstructions, such as paving brick or paving stone, more than 1 in. in height above the surface of the pavement.
3. Planking on bridges and steam railroad crossings should be in their proper place and even with the surface of the street, and with no broken or defective planks.
4. Surplus material should be removed after completion of work.
5. Excavations at street intersections should be guarded in day time by barricade, and at night by barricade and red lights.

Mechanical Department

Condition of grab handles, steps, platform and floor slats, etc.:

a—Grab handle fasteners should be securely fastened with no screws projecting beyond the socket and free from splinters or projecting pieces of metal.

b—Tread of step should be securely fastened and free from projections such as loose edges, screw heads, bolt heads, etc. Step fasteners or brackets should be firmly attached to the car body.

c—Platforms should be free from projecting screw heads, bolt heads, warping boards and cracks of sufficient width to catch clothing of passengers while entering the car.

d—Floor slats should be securely fastened and free from projecting screw heads and broken slats.

e—Seats should be free from projecting tacks, screws and broken rattan.

f—Window fasteners should be securely fastened.

g—Curtains on open cars should be securely fastened.

Line and Building Department

1. Holes opened in streets for poles, bonds or cables are to be protected, and after work is completed, they are to be closed at once even with the surface of the street.
2. Guy wires in streets are to be of sufficient height to clear traffic.
3. Platforms should be so maintained that the surface is even; no cracked, broken, defective or warped planks should exist in floor.
4. Railings should be securely fastened.

occurring during the same months of the previous five years. A typical summary of derailments is shown in the table below.

The surprise checks and departmental meetings have been very effective in bringing the efficiency of the system up to a high standard by keeping the men alert and developing loyalty and team work. The records are also useful in meeting the inquiries or criticisms of the public and the regulative commissions. The surprise check tests show how closely the company is watching its own service, while the minutes of the meetings indicate how promptly defects are remedied and what is being done in effecting economies and solving the larger problems of the company.

NEW YORK STATE RAILWAYS—SYRACUSE LINES—SURPRISE CHECK REPORT

Check No.	Date	Car	Crew	Place	Incident	Action Taken
RAILROAD CROSSINGS						
37	12-14-14	670	918	Onondaga St. & D.L.& W	Signalled 10 feet from crossing.	Warned
42	12-14-14	610	990	Onondaga St.& D.L.& W.	Did not look in either direction.	Warned
78	1-11-15	937	1195	Salina & W.S.R.R.	Did not see if rear was clear.	Warned
SAFETY STOPS						
49	12-16-14	802	845	West Genesee & Wilbur	Used air instead of hand brakes.	Warned
71	12-23-14	666	999	W. Genesee & Milton	No safety stop made.	1 day on list
40	12-14-14	907	1015	Jefferson & Salina	Did not sound gong when passing standing car.	Warned
56	12-19-14	792	699	Park & Butternut	Passing standing car at 8 miles, gong not sounded.	1 day on list
OPERATING OVER SPECIAL WORK						
90	1-20-15	744	1265	Warren & E. Genesee	Operated 8 to 10 miles per hour	1 day on list
SNOW AND ICE						
44	12-15-14	650	1176	Warner Ave.	Snow and ice on steps. No sand used.	1 day on list.
EQUIPMENT						
48	12-16-14	642		Warner Ave.	Air valve covered with grease.	Cleaned
81	1-13-15	628		McAllister	Screw used for curtain fastener.	Replaced with proper fastener
TRACKS						
52	12-19-14			Townsend & James Sts. (out)	No landing place, account of snow.	Taken care of
74	1-11-15			West Genesee	Depressions in paving.	Filled up
114	2-18-15			Park Ave. & Leavenworth	Planking loose.	Taken care of
DOORS						
102	1-26-15	790	858	Clinton & Fayette	Closed doors after car started.	Warned
107	1-27-15	772	1244	Tallman & Salina	Opening and closing doors while car in motion.	Warned
MISCELLANEOUS						
38	12-14-14	902	1227	Jefferson & Salina	Starting car too quickly.	Warned
100	1-25-15	656	1264	Wilbur & Tompkins Sts.	Children hanging on draw bar.	Warned
117	2-23-15	610	1080	Park & Wolf	Boys riding on fender	Warned

NEW YORK STATE RAILWAYS—SYRACUSE LINES DERAILMENT REPORT

SUMMARY

Defective track, switch, etc.	11
Spreading rails	3
Snow and ice	2
Obstruction in switch or groove	2
Defective equipment	3
Broken axle	1
Derail lever dropped	2
Careless operation	3
Total	27

POINTS WHERE MORE THAN ONE DERAILMENT OCCURRED

Cortland and Griffin Streets	2
Salina and Taylor Streets	2
Highland and Graves Streets	2

CARS DERAILED MORE THAN ONCE

Number 1026	3
Number 3002	2
Number 784	2
Number 792	2

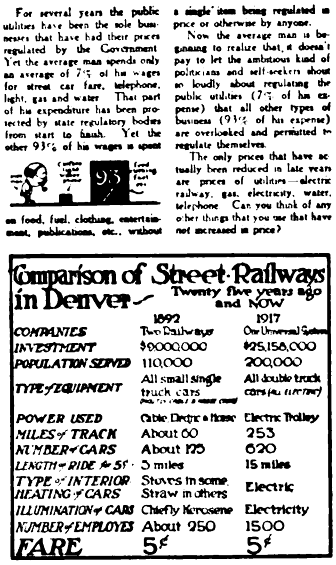
COMPARISON

	1912	1913	1914	1915	1916
December	31	14	26	20	27

Paving the Way for Fare Increase

Some Fare Increase to Relieve the Situation Is Necesary—Moulding of the Public Mind to Appreciate This Is the First Essential

A PARTICULARLY good presentation of facts in connection with the operation of utilities in general and the Denver Tramway Company in particular, which make imperative a fare increase of some nature, appears in a recent issue of *Tram-O-Grams*, the Denver company's publication for the public. Beginning in the usual way with some humorous chatter to win the interest of the reader, the editor, J. C. Davidson, soon gets down to the subject he has in mind for treatment—the inequitableness of retaining the present car fare at 5 cents. His immediate approach to the subject is by way of "turning loose a mild chortle of glee over the regulation of food and all the other flub-dubs man requires for his living." He goes on to say that no one can deny that wages and prices of many materials have necessarily increased since the war begun, but that "many of us have a pretty good hunch that some folks have been taking advantage of the proper and legitimate advances in some prices to boost their own prices solely for the sake of making huge profits."



For several years the public utilities have been the sole businesses that have had their prices regulated by the Government. Yet the average man spends only an average of 7% of his wages for street car fare, telephone, light, gas and water. That part of his expenditure has been protected by state regulatory bodies from start to finish. Yet the other 93% of his wages is spent on food, fuel, clothing, entertainment, publications, etc., without a single item being regulated in price or otherwise by anyone.

Now the average man is beginning to realize that it doesn't pay to let the ambitious kind of politicians and self-seekers shout so loudly about regulating the public utilities (7% of his expense) that all other types of business (93% of his expense) are overlooked and permitted to regulate themselves.

The only prices that have actually been reduced in late years are prices of utilities—electric railway, gas, electricity, water, telephone. Can you think of any other things that you use that have not increased in price?

Comparison of Street-Railways in Denver— Twenty five years ago and NOW

	1892	1917
COMPANIES	Two Railways	One Universal System
INVESTMENT	$9,000,000	$25,156,000
POPULATION SERVED	110,000	200,000
TYPE of EQUIPMENT	All small single truck cars [illegible]	All double truck cars (all electric)
POWER USED	Cable, Electric & Horse	Electric Trolley
MILES of TRACK	About 60	253
NUMBER of CARS	About 175	620
LENGTH of RIDE for 5¢	3 miles	15 miles
TYPE of INTERIOR HEATING of CARS	Stoves in some, Straw in others	Electric
ILLUMINATION of CARS	Chiefly Kerosene	Electricity
NUMBER of EMPLOYES	About 250	1500
FARE	5¢	5¢

"TRAM-O-GRAMS" QUOTES GOVERNMENTAL PRICE REGULATION TO PROVE NEED FOR HIGHER FARES

Then the regulation of these matters by the government is inaugurated and "trust Uncle Sam to weed out the sheep from the goats. 'Nobody asked you to do business at a sacrifice,' says Uncle, 'but boosting your prices exorbitantly when you don't need to, just because you can say "war" and put it across on the people, is quite another matter, and you've got to cut it out!' "

The discussion is continued on the two pages of *Tram-O-Grams* reproduced herewith to give the full significance to the manner which was used in presenting the subject to the Denver riders. This is only one of many similar articles which have appeared in *Tram-O-Grams* treating upon the subject of increased costs.

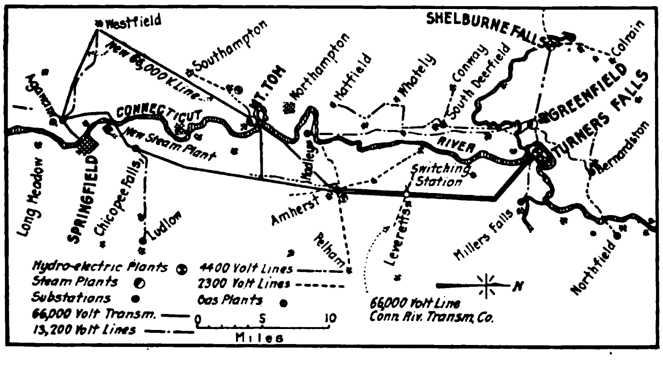
During the month of June, 27,000 gal. of milk were brought into Wheeling by means of the electric express service of the West Virginia Traction & Electric Company, or an average of 200 cans per day. The express cars make the 16-mile trip from the Pennsylvania State line at West Alexander three times daily.

Purchased Power for Springfield (Mass.) Street Railway

Outline of Arrangements for Operation of System by Hydroelectric and Auxiliary Steam Plants of Turners Falls Power & Electric Company—New Substation and Transmission Facilities Designed for Ultimate Use of Three-Wire Arrangement for Direct-Current Distribution

"BY our new contract with the Turners Falls Power & Electric Company," said President C. V. Wood of the Springfield (Mass.) Street Railway at a recent hearing before the Public Service Commission of Massachusetts, "we are saved making an investment of certainly $1,500,000 for additional power equipment required to meet the needs of our growing system." This contract is one of the most important thus far arranged in New England electric railway circles. In large measure it provides for the transfer of responsibility for power service to the Turners Falls company, since by its terms the existing plants of the railway company at Margaret Street, Springfield, and at Westfield, are to be purchased by the power company. Hence, the railway company's problem becomes in the main a question of distribution.

The Springfield company operates 180 miles of track in the cities of Springfield and Chicopee and various towns in the vicinity. The company serves a population of 225,000, operates 8,500,000 car-miles and carries 45,000,000 passengers annually. The present sources of power consist of two steam plants belonging to the company (at Margaret Street and Westfield) and three connections for purchasing power, one being with the New England Power Company at Palmer, one with the United Electric Light Company of Springfield, at Indian Orchard, and one with the Turners Falls company at Chicopee.



SPRINGFIELD POWER—MAP OF TRANSMISSION SYSTEM FOR POWER SUPPLY

The total load on the system is about 7000 kw., the rough division between the five sources being: Margaret Street, 4000 to 6000 kw.; Westfield, Palmer and Indian Orchard, 300 kw. each; and Chicopee, 500 kw. The annual energy consumption of the system is about 40,000,000 kw.-hr.

At the Margaret Street steam plant, the chief source of power, there is a total capacity of 7200 kw. in reciprocating engine-driven apparatus delivering energy in the form of 600-volt direct current to the usual feeder system. There are two 2000-kw. vertical units and four horizontal units of 800 kw. each. The Westfield plant has four horizontal engines of a total capacity of 800 kw.

PROVISION OF INCREASED POWER CAPACITY

Recent growth of traffic has necessitated the provision of a more adequate power supply, the equipment at Margaret Street being loaded up to its full capacity. Various methods were considered, including a plan for the rebuilding of Margaret Street station for a.c. power generation, with high-voltage transmission and distribution from substations owned by the railway company, but after much study it was decided to contract with the Turners Falls company for the supply of all power except that purchased from the New England Power Company at Palmer.

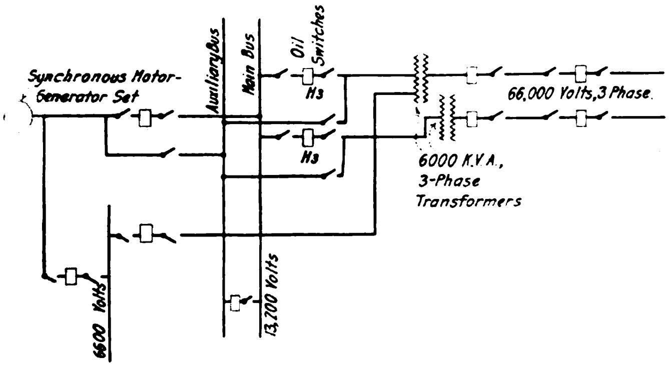
The contract provides for the supply of direct current at 600 volts at Margaret Street, Springfield, at Ludlow, Westfield and Agawam, in addition to that now supplied at Chicopee. The Turners Falls company's transmission system, from its main generating plant at Turners Falls, reaches all these points where substations are located, with the exception of Westfield, and negotiations are now under way for the necessary rights-of-way for its transmission lines to that point.

For the present the Margaret Street station will be held in reserve as an auxiliary steam plant and a substation will be built on the property for the railway company's service. This substation will be reached by a branch 66,000-volt, two-circuit steel tower line 5450 ft. long, crossing the meadows of the Westfield River near the west bank of the Connecticut River to a river crossing 1640 ft. long and thence to a tower in the yard of the plant. The crossing towers are to be 130 ft. high and specially designed with balconies under the insulators to facilitate repairs and replacements. Two three-phase, 6000-kva. water-cooled stepdown transformers are to be located outdoors near the base of the tower, and these will reduce the pressure to 13,200 volts for energy delivery to synchronous motor-generator sets which will be located within the substation building.

NEW SUBSTATION AND EQUIPMENT

The 66,000-volt oil and disconnecting switches are to be located under the tower, the legs of which will be fireproofed with concrete for a distance of 40 ft. above ground. Each incoming circuit passes through two sets of General Electric, KO-26, 66,000-volt oil switches and three sets of disconnecting switches before reaching the transformers. The disconnectors enable the entire substation or any high-tension oil switch to be isolated from the rest of the system, the oil switches being of the automatic type and controlled by overload relays. By means of a disconnecting switch-set mounted above the main oil switches and connected with each line by suitable taps the two incoming lines may be cross-connected for parallel operation.

From the transformers 13,200-volt secondary leads run to the interior substation buses supplying the motor-generators. One set of leads from each transformer is carried through a set of General Electric H-3 oil switches to a 13,200-volt main bus, the connections to the synchronous motors being made through a similar set of switches in each case. Disconnects are provided on each side of the 13,200-volt switches, so that these can readily be isolated for inspection and repairs. On the transformer side of each adjacent 13,200-volt switch group a tap is made for each leg of each circuit through a disconnecting switch to the auxiliary bus, and from the latter corresponding taps are run through disconnects to the motor-generator sets, as shown in the accompanying single-line wiring diagram of the a.c. side of the substation. This arrangement enables the motor-generators to be supplied from the transformers directly in case of oil switch trouble and without duplicate oil switch investment. The main and auxiliary buses are cross-connected through a 13,200-volt oil switch, providing for still greater flexibility in the supply of energy to the synchronous motors. There is also a starting bus for these units connected with the transformer equipment by leads tapped into the secondary winding and insuring a supply of energy at half-voltage for starting the motors. General Electric K-12 solenoid-operated oil switches are installed in the circuits from the transformers to the auxiliary bus and from the bus to the motors.

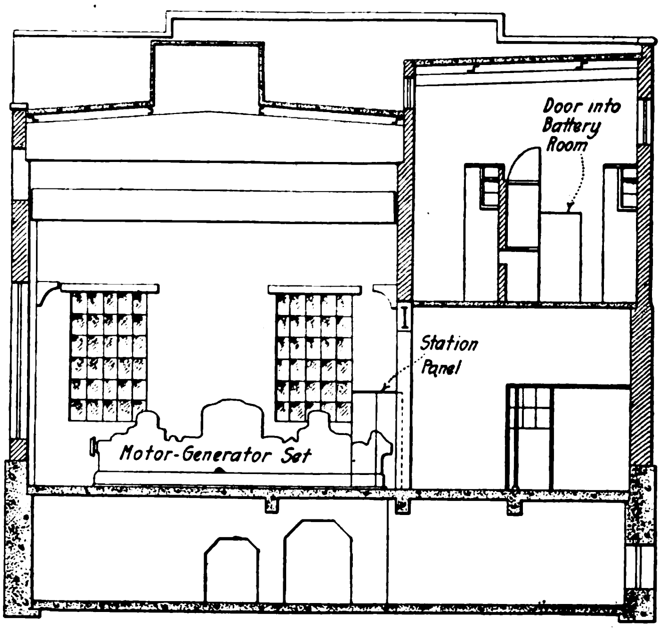


SPRINGFIELD POWER—SINGLE-LINE WIRING DIAGRAM FOR A.C. SIDE OF NEW SUBSTATION

The substation building, which is now under construction, is of brick and steel; fireproof throughout. It is 74 ft. long by 52 ft. wide, with basement, and the motor-generator room is carried up to the roof to a height of 46 ft. As the company is planning to change over its feeder and trolley system in the city of Springfield to three-wire distribution, necessitating the rebuilding of its present 600-volt switchboard, it has been arranged to combine the a.c. and d.c. switchboards into one, which will be located in the new substation. There will be thirty-three panels in this board, which will be of General Electric manufacture. Various interlocking and automatic features will be incorporated in the d.c. section of the switchboard to protect the motor-generators and other apparatus against short-circuiting and to insure the most flexible and reliable operating conditions.

The switchboard will be on the main floor and over it on another story will be the secondary a.c. switching and bus structure. A large door will be cut through the wall between the end of the motor-generator room and the steam plant. The present duct line of the railway company passes through the basement of the substation and will be connected direct to the new switchboard. The operating room, 72 ft. 6 in. x 49 ft. 3 in. in floor dimensions, will accommodate four General Electric motor-generator sets, three of which will be installed at present. Each unit will consist of a 2450-kva., 13,200-volt, 60-cycle synchronous motor of the three-phase type, direct-connected to two 750-kw., 600-volt, d.c. generators separately excited at 125 volts. The d.c. generators are arranged for operation on either side of the three-wire system by reversal of their polarity.

All transformers and oil switches in the substation will be piped for emergency draining, valves being located in the basement so that the discharge of oil can be started immediately without being obliged to approach any unit in trouble. Excellent provision has also been made for the supply of outdoor air for motor-generator ventilation through an intake about 30 ft. 8 in. x 3 ft. 6 in. at one side of the building, this being provided with a grill serving as a screen. On the gallery of the operating room are located all the 13,200-volt and 6600-volt oil switches and bus structures, each switch being mounted in a separate cell with liberal provision for inspection and repairs. The use of 13,200-volt energy in the operation of the motor-generator sets enabled a substantial saving to be effected in copper required for substation wiring, switch and bus construction.



SPRINGFIELD POWER—CROSS-SECTION OF NEW SUBSTATION IN SPRINGFIELD

ADDED CAPACITY FOR EXISTING SUBSTATIONS

The contract stipulates that there shall be provided at Agawam 1500 kw. in motor-generator sets. This will be installed in two units of 750 kw. each, with 13,200-volt synchronous motors, located in the present substation of the Agawam Electric Company, affiliated with the Turners Falls company. At Chicopee provision is made for the installation of 1500 kw. in not less than two units. The present capacity there is 1000 kw., which consists of two units of 500 kw. each, and it is planned to install a third of 750 kw. capacity. At Ludlow provision is made for a capacity of 1500 kw., but a subsequent agreement provides for the supplying of this portion of the business by the United Electric Light Company at its present connection at Indian Orchard under a sub-contract with the Turners Falls company. Two 750-kw. Westinghouse rotary converters are supplied by the United company. At Westfield the contract provides for 1000 kw. in not less than two machines. The plans and necessary rights for the Westfield substation have not as yet been secured, but it is planned to build a new substation in this town, to be supplied by a new two-circuit transmission line with Milliken towers at 66,000 volts, running from the end of the present 66,000-volt line at Mount Tom to Westfield and Agawam. From the point of view of service, the new arrangement with more adequate supplies of power at the outlying points of the system is expected to cut down losses and add to reliability.

In connection with the large load to be acquired as the result of the railway power contract, and other increases in power demand, the Turners Falls company is now erecting a steam relay plant in Chicopee. This plant is on the east bank of the Connecticut River just south of the mouth of the Chicopee River, and it will be equipped at present with a 15,000-kw. General Electric turbo-alternator, Edge Moor boilers, C. H. Wheeler condensing apparatus and Stephens-Adamson coal-handling machinery. The switchboard apparatus will be furnished by the General Electric Company and this manufacturer will also install two 6000-kva. transformers through which the plant will be tied to the transmission system. F. T. Ley & Company, Inc., of Springfield, Mass., is the contractor for the station, and also for the Margaret Street substation. Provision is being made for the addition of a second turbine of the same size as the first. This plant will act as a relay against periods of low water on the Connecticut River, and as it is near the southern end of the transmission line in the Springfield district it also serves as an additional safeguard for the street railway load.

TERMS OF CONTRACT

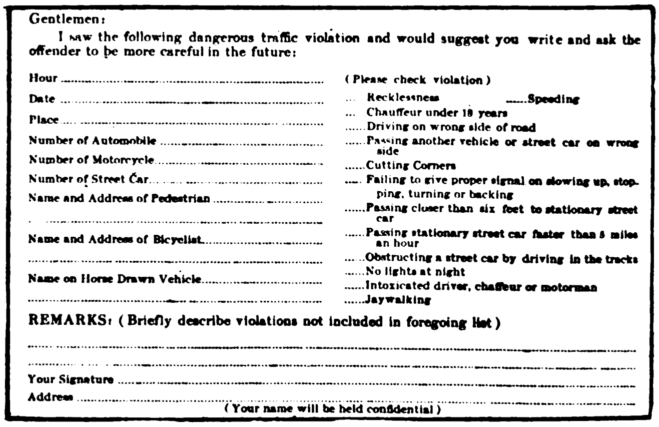
The contract covers a term of thirty years and thereafter until cancelled by either party on two years' notice, with a provision for readjustment of price every ten years, at the option of either party. The power company must purchase additional apparatus as may be necessary during the contract to provide adequate capacity as the load grows, with the provision that any apparatus required to be installed during the last ten years of the contract shall be purchased by the railway company at a fair price. The power company agrees to provide 10,250 kw. of capacity and the railway company agrees to take at least 25,000,000 kw.-hr. per year. The division between purchasing power and operating the railway becomes absolute, the railway purchasing all its power and owning no source of power itself.

This contract for the supply of a large electric railway system by a power company comes at a favorable time in the development of the two companies, both of which derive benefit therefrom. The railway company faced the expenditure of a large sum for a new plant, some more adequate power provision being absolutely necessary to maintain its service. It has now saved that outlay and can devote its resources to other parts of its business. The power company secures a large load of good load-factor and of a much more secure character than that offered by industrial power users.

C. V. Wood, president, and W. L. Harwood, engineer of power and equipment, represented the railway company in the negotiations. The power company has been represented by its president, Philip Cabot of Boston, and by George W. Lawrence of Greenfield, second vice-president and general manager. The power company's own organization is doing the engineering work required in the construction of the lines and the substations, together with the design of the new steam plant at Chicopee. F. L. Hunt is chief engineer, C. F. Mosher being superintendent of stations and H. D. Seavey superintendent of distribution.

Railway Employees Report Traffic Violations in Rochester, N. Y.

In order to reduce reckless driving on the streets of Rochester the New York State Railways of that city has placed in the hands of its men supplies of postal cards on which to report the cases of traffic violations which they witness. This card is shown in the accompanying illustration. After being made out the cards are sent to the complaint bureau of the safety council of the city Chamber of Commerce and from its office a letter is written to the owner of the machine calling his attention to the principal part of the ordinance which has been violated. Records are kept in such a way that when a second report against the same owner or driver is received a second letter of severer tone is sent. If a third report is received the case is reported to the chief of police who calls the offender to his office for an interview. On the fourth offense the offender is arrested and the case is taken up in the police court.



Gentlemen:

I saw the following dangerous traffic violation and would suggest you write and ask the offender to be more careful in the future:

Hour ....
Date ....
Place ....
Number of Automobile ....
Number of Motorcycle ....
Number of Street Car ....
Name and Address of Pedestrian ....
....
Name and Address of Bicyclist ....
....
Name on Horse Drawn Vehicle ....
....

(Please check violation)

...... Recklessness ......Speeding
...... Chauffeur under 18 years
......Driving on wrong side of road
......Passing another vehicle or street car on wrong side
......Cutting Corners
...... Failing to give proper signal on slowing up, stopping, turning or backing
......Passing closer than six feet to stationary street car
......Passing stationary street car faster than 5 miles an hour
......Obstructing a street car by driving in the tracks
......No lights at night
......Intoxicated driver, chaffeur or motorman
......Jaywalking

REMARKS: (Briefly describe violations not included in foregoing list)

....
....
Your Signature ....
Address ....
(Your name will be held confidential)

POSTAL CARD USED IN REPORTING TRAFFIC VIOLATIONS

Many of the cards have been filled out by the platform men and other employees. The larger number of these reported drivers of automobiles for passing within 6 ft. of a car step when passengers were boarding or alighting. The plan has apparently been productive of good results, as observations show that the number of traffic violations has been materially reduced since the plan has been put in operation.

Maintaining Interest in Safety Work

Competition Reinforced with the Personal Touch Can Be Made Effective in Keeping Safety Work Going

BY HAROLD W. CLAPP
General Superintendent Columbus Railway, Power & Light Company

THE thing of most vital importance in safety work will always be that of getting and holding the interest of the men to whom accidents may happen or by whom they may be caused.

In the early stages of the safety movement in any organization the bulletin boards can be made sufficiently attractive and instructive as to become the center of interest and main source of information on the subject. Then there comes a time when the safety supervisor, regardless of how freely he mingles with the men and talks their problems over with them and regardless of how adept he is in preparing literature, must devise other means of reaching them. They become tired of the same old story and want new ideas.

Our company operates a street railway in a city of 250,000 people. Toward the close of the year 1916, after having shown some very remarkable results in a two-year period in the prevention of public accidents, we thought we perceived signs of a slight failing in interest in safety work on the part of conductors and motormen. We were facing *the* problem. What would best reach them? Could we sufficiently improve our efforts to gain their attention through attractive literature? Would we accomplish anything by appealing to a sense of duty better performed and thus resulting in fewer accidents? After due consideration we started an accident contest under these conditions.

A SYSTEM OF GRADING WAS ADOPTED

Each accident as reported to the claim department was rated according to its merits after a prearranged schedule of assigning a certain number of demerits to each class of accidents. A maximum and minimum of demerits was set for each class, the minimum in all cases being 0 and the maximum in accordance with the comparative seriousness which it might be possible for each class to assume. For example, the rating committee used its discretion in charging from 0 to 25 demerits in the case of an automobile accident, or in the case of a leaving-car accident from 0 to 15, just as each case seemed to warrant. If a man was not at fault in an accident he was not charged with the demerits, etc. Demerits in each case were entered on the personal record of the man responsible.

The contest ran for the first six months of 1917. Each motorman who came through the contest period with a record clear of demerits received $7.50 and each conductor with a clear record received $6.50.

Based upon our accident records for previous years, we believed we would have at least 225 men out of our total of 680 come through with clear records and thought that the stimulus of the contest might increase this 15 per cent, making a total of 260 men.

At the close of the contest we discovered that 443 of the total of 680 had clear records for the contest period. Need it be asked whether the contest paid when our estimate of the results was increased 70 per cent above our expectation? We thought so much of the results of the six months' contest that we started another on July 1, to run for six months.

RESULTS OF THE COMPETITION

The contest did five things for us:

1. It continued the interest of the conductors and motormen—"the men on the job"—upon the high plane to which our efforts had brought it.

2. Taking into consideration the changed operating conditions which obtained as compared with previous years, the number of accidents was reduced and the expenditures for claims lessened.

3. The analysis and rating of all accidents gave us a line on the work of every man handling the cars. We found these records of value whenever it became necessary to decide whether a man should be retained.

4. The contest cost us approximately $2,500 in awards, a 45 per cent increase over our original estimate, but the good results produced returned several times that much to us.

5. When the names of the winners were posted at the close of the contest many protests were immediately registered. This was exactly what we were looking for and desired. The men could not see why some had come through winners after having had certain accidents while they had had apparently less serious ones and had lost out. The men were asked to make their protests in person to the general superintendent, the head of our operating department, who laid aside other work to hear them. The cases were thoroughly reviewed and every detail of the reasons for the demerits being assigned in their cases was clearly explained. During the discussions we found instances where incomplete accident reports made by some men were responsible for their losing the awards, and whenever we were thoroughly satisfied that such men were really not at fault we cleared their records and the awards were made to them.

Seventy-seven such cases were reviewed and the records of seventeen men were cleared. And here is the best part of it: While our men already knew that the superintendent was a man who could be reached and talked to at any time, this gave them further and conclusive proof of it, and we rather think that they were not at all hesitant in telling their fellow workmen about it.

If a safety campaign, whether it be of short or long duration, is to be successful, interest in it must be aroused and maintained, and to do that you must get the "personal touch" into it. We have found that this contest meets our needs in getting in personal contact with the men, and that it fits in well with our local conditions.

It is good, as far as it goes, to talk with the men through bulletins, rule books and other literature, but one must rub elbows with them to get the best results. Our men again found opportunity to realize that the "boss" was a "real fellow," but would they remember this as they went about their daily duties? Most certainly they would, for above all else men like to know that the man from whom they take orders is thoroughly in sympathy with them and willing to help them out of their difficulties. In other words, they want him to be just a plain, every-day man, one of themselves. He is not the loser thereby, but is very much the gainer.

For National Defense

An Important Service Which the Electric Railways Can Render to the Nation Is a Conservation of Materials and Man Power

BY J. M. BOSENBURY
Superintendent of Motive Power and Equipment, Illinois Traction System.

PRESIDENT WILSON'S proclamation of April 15, 1917, described the railways of the country as the arteries of the nation's life, and, correspondingly, the public generally have come to a realization that the railways, forming so important an element, may properly be directed to render services in this national extremity, in many ways heretofore considered inconsistent with public welfare. The press has already announced plans for curtailment of service, not only that the equipment and facilities thus conserved may be available for other purposes, but in order that in keeping with a proper patriotic spirit the luxuries of transportation may be eliminated, and every item of labor and expense connected therewith reserved for direction into other more necessary channels. Announcement of the withdrawal of passenger trains causes no stir—the traveler accepts his inconvenience as a part of his duty; the shipper accepts the direction of freight facilities, though involving unusual conditions, as a sacrifice to the nation's necessities. Everyone expects that important and unusual uses will be made of the steam railroads, but few have considered the electric railway as a great possibility in the promotion of national preparedness and effectiveness. To be sure, the electric railways, excepting in certain sections, will not be called upon to perform the service of an artery in the transportation of the nation's goods, and to this extent it may not appear important that their efficiency be preserved, but undeniably they render an indispensable service to each industrial community. This service has long since been a part of the daily lives of the persons upon whom the nation now depends. Therefore, in the national interest, it must be continued, if not upon the present basis, at least upon the most practicable basis consistent with the requirements of the army of industrial workers. In maintaining such a service, it is readily seen that use is made of two most essential elements of a formidable and effective nation, namely, mechanical power and man power; and, curiously enough, the electric railway organizations are facing the seemingly paradoxical situation where they are required to perfect service and still economize in, or lose, one or the other of the two fundamental elements.

Unquestionably a new era is at hand, and any subsequent movement must be considered purely from its effect upon the resources and efficiency of the nation. Accordingly, in the conservation of mechanical power, which means coal and labor, it is entirely in order to eliminate the luxuries of the service. This may be taken to mean the establishment of a service in keeping with the reasonable requirements of a community consistent with the conditions at hand, rather than in conformity with popular demand as heretofore voiced through commissions, legislatures and other public bodies; and any requirement incompatible with these principles must promptly be denounced as being derogatory to the best interests of the nation. Correspondingly, cars must be removed from service, headways must be lengthened, schedules must be altered, and, in fact, all elements now constituting a waste or luxury, depending upon the viewpoint, must be so arranged that each pound of coal or gallon of oil will produce most effective results. Both the coal and oil problems have already confronted electric railway operators in some sections, and there is no assurance that a scarcity in either will not, of itself, force curtailment of service. Whatever the result may be, insofar as it falls short of present practices, the discomforts will and must in this case, also, be accepted by the people as a part of their sacrifice.

CONSERVATION OF MAN POWER

It is in the distribution of man power where the electric railways are more directly concerned, not because it seems necessary to release men for service at the battle front, but because a great portion of the employees, the car men, are particularly well fitted, by experience and physical condition, for many forms of national use. Their physical examinations, on acceptance for car service, are well up to the military requirements, which is also the case with respect to age, and their experience with the public has given them a breadth of vision and understanding which fits them well for intelligent activity in many directions. Raids were made upon their ranks by the more prosperous industrials, even before the advent of military necessity, and plans have been developed to great length for substituting women in many instances. Consider the situation confronting the electric railway operator when the selective draft shall have secured its quota, and still further if another draft may be required.

In the final analysis, individual effort, so far as the nation's requirements are concerned, will be judged by the relative importance of the work performed. Certain of our men, and perhaps large numbers, are to go to the battle front to promote the cause to which the nation is committed. Can it be considered consistent, under such circumstances, that others equally fitted for such service, or other service of like importance, are directing their energies to greatest advantage while acting as conductors of street cars? Experience in European countries has indicated that once the situation became pressing, the men in electric railway service were quick to respond to the call, with the result that their places were promptly and efficiently filled by women.

Considerable headway has already been made in conservation so far as electric car operation is concerned, in that many railways have prepared, for purely economic reasons, to operate cars with one person instead of two, as formerly. Naturally, the economic necessity for such action has brought forth many improvements in operating functions and the system as a whole, has reduced the work to be performed to such a point that one man easily and efficiently accomplishes what was previously performed by two men. Now, the movement assumes much greater importance because, in the conservation of man power, the way is clear to delegate this work to women. The actual physical requirement for car operation in this day is not great, particularly if the car be properly equipped, and when the element of safety can be guaranteed, regardless of whether man or woman operates, it will be seen that should our part of the world's struggle become great, or, in fact, on anything near the proportion of other nations involved, the possibility of women operating our cars is not far distant.

The time is here to conserve the mechanical power, as indeed it always has been, but more particularly now, and should the extremity be reached when man power shall be in such demand as to create a scarcity, then plans made at this time will readily mature to practical possibilities. The electric railway, requiring, as it does, some of the same elements required by the nation, has, indeed, an important service to perform.

Autobus Operation Proves Very Costly

Run as Temporary Service Where Car Line Was Needed but Was Not Financially Possible—Expenses Were About Double the Income During Five Months' Operation

BY ROBERT M. FEUSTEL
President Fort Wayne & Northern Indiana Traction Company

FOR some years the Fort Wayne & Northern Indiana Traction Company has been besieged by patrons in the northwest section of Fort Wayne to build a new line to serve a territory lying between two existing electric railway lines but separated by about 1 mile. The patrons objected to the maximum ½-mile walk, and wanted a new line somewhere approximately midway between the two existing roads. There was a difference of opinion as to the proper location for such a new line. Finally, in the hope of appeasing the public, autobus service was inaugurated, first, to give temporary service until such time as the company could afford to build a new line into this territory, and, second, as an aid in determining the proper location for the line.

For this purpose, four sixteen-passenger Studebaker buses were purchased at a cost of $1,465 each. These cars are equipped with solid rubber tires on the rear wheels and with pneumatic tires on the front wheels. They are painted the standard lemon color adopted by the company for its electric railway equipment.

The route established for the bus line is entirely in the residential district, and its termini are at points on the two lines now serving this northwest section of the city, approximately 1½ miles from the ends of these lines. The entire route is over paved streets, and the only difficulties met in operation are two railroad crossings at grade and two 3-per cent grades of about 400 ft. length. These grades may offer some additional difficulty during the winter months, when it will probably be necessary to use chains and thus increase the rear tire wear. The length of a route operated is approximately 10,700 ft.

EXPERIENCE IN BUS OPERATION

The bus line was placed in operation on March 16, 1917, with a ten-minute schedule maintained for eighteen hours of the day. It requires only two buses to give this schedule, but due to numerous pull-outs for repairs, two additional buses are needed to maintain service. Stops are made at every street corner, as with our regular car service. The experience thus far would indicate that the frequency of stopping and starting the buses will be a very important factor in determining the life which can be obtained from this equipment. It is our opinion that stops should be made only at every other block.

TABLE SHOWING GROSS REVENUE AND BUS MILEAGE OF LINE

Period	Gross Revenue	Bus Mileage
March 16-31	$156	4,522
April	489	11,475
May	576	11,776
June	623	11,368
July	681	10,639
Total	$2,525	49,780

Average gross revenue per bus mile .... 5.072 cents

The tire expense for the solid tires on the rear wheels is very high, as shown in the accompanying table of expenses. The revenue assigned to the bus line has been the entire cash and tickets actually collected on the buses. The regular six-for-a-quarter electric railway ticket is good on this line, and transfers are issued to connecting railway lines and honored from the latter lines. The transferring appears to be about equal in both directions.

While the revenue has increased each month, it is very doubtful that the line can be made to pay individually for its full operation. A study of the revenues for the two lines with which the buses connect, for the past three years, indicates that the additional business created by virtue of the bus line acting as a feeder is not particularly large. The revenue for the electric lines serving this territory is higher per car-mile than the total revenue per car-mile for all our lines, including the autobus line, since the beginning of the bus operation.

The one-man operation on the buses is proving very satisfactory. Motormen from the city lines have been employed as chauffeurs at an advance of 2 cents per hour over the regular city rate. The location of the bus line has been changed once since the beginning of operation, as a means of determining the effect of different locations upon the volume of traffic. Some minor changes in the bus operation would probably be made if a permanent line were to be established in this territory. The experiment has been profitable as a means of determining the proper location for a new line. It has also developed the fact that as an independent line, even in a reasonably thickly-settled residential district, it could not be made to pay unless it were possible to reduce repair bills and increase the rates.

Following is a statement of the operating expenses for the period mentioned, and also the cost:

TABLE SHOWING OPERATING EXPENSES AND COST PER BUS MILE OF LINE

	March	April	May	June	July	Total	Cents per Bus Mile
Repair labor	31.85	38.51	62.84	115.49	66.61	315.30	0.623
Repairs	0	0	11.30	147.51	0	158.81	0.319
Misc. material	2.80	1.09	12.36	8.10	8.41	32.76	0.066
Front tires	0	87.68	81.23	0	0	168.91	0.339
Rear tires	0	0	0	239.40	314.98	554.38	1.114
Tire repairs	0	1.75	9.00	0	47.50	58.25	0.117
Lamps	0.25	1.50	3.01	3.58	0	8.34	0.017
Battery repairs	0	0	0	2.61	11.20	13.81	0.028
New battery	0	27.70	0	0	0	27.70	0.056
Gasoline and oils	99.17	340.57	274.42	270.85	244.01	1229.02	2.469
Registration fee	20.00	0	0	0	0	20.00	0.040
Chauffeurs' license	14.00	0	0	0	0	14.00	0.028
City license	40.00	0	0	0	0	40.00	0.080
Liability bonds	0	80.00	0	0	0	80.00	0.161
Depreciation at 5 per cent a month	146.53	293.06	293.06	293.06	293.06	1318.77	2.649
Operators' wages	149.29	337.25	361.57	337.57	350.10	1535.78	3.085
Total	503.89	1209.11	1108.79	1418.17	1335.87	5575.83	11.201

Car Aids in Publicity Work

The Function of the Car Pamphlet—How the Brooklyn Rapid Transit Company Uses This and Other Devices in Promoting Better Public Relations—The Occasional Use of Controversial Pamphlets Is Justified

'TIS a mistake, so the Brooklyn (N. Y.) Rapid Transit Company says, to depend entirely upon any one publicity device for the betterment of public relations. In this railway's experience the straight news story, secured through co-operation with a reporter; the formal statement, issued in an official way; the display advertisement, used for presenting statistical and argumentative facts; the car pamphlet, car cards and posters, etc.—all these have proved of value in reaching the mind of the public.

The use of the first three devices, or those representing the utilization of newspaper facilities, was described at length in the ELECTRIC RAILWAY JOURNAL of Aug. 25. It now remains, therefore, only to show how the car pamphlet and allied devices are used to supplement the publicity work through the general press.

FUNCTION OF THE CAR PAMPHLET

For electric railway lines in a metropolitan district, it is believed, the primary way to reach the public is through the newspapers. This is true because most of the leisure time of the average car rider is taken up with his indulgence in his chronic "newspaper habit."

Owing to the progressive crowding of newspaper space, however, there are certain subjects that are not susceptible of sufficiently expansive treatment in the daily press, if treated therein at all. To put these with emphasis before the average rider the car pamphlet is occasionally a most useful aid.

The city car rider can be reached in this manner, in spite of his newspaper preoccupation, for his bump of curiosity is large. Yet he is jealous of his time, and the car pamphlet can easily lose its attractiveness to him if he sees it too often or if it contains matter of trifling importance.

HOW THE B. R. T. USES CAR PAMPHLETS

Upon such an understanding of the function of the successful car pamphlet in city service, the Brooklyn company has based its work. It uses this device as a standard means of communicating with the public when it desires to reprint effective advertisements; when it wishes a longer discussion on some point than a news story could carry; when it desires to give wider publicity to some letter to a public official which has lost its news value for the press; when it sees a good opportunity to point out some safety or other lesson to the car rider, or to indorse some worthy public enterprise in which the car rider should be interested—in short, when the subject of the pamphlet is one which the newspapers have already covered or would not desire to cover.

These pamphlets (4⅛ in. x 7 in.), usually in the form of a four or six-page folder, are published once a week, or once a month, or perhaps not even that frequently—just as the occasion arises. The issue may be from 150,000 to 500,000 copies, but the average number is about 250,000. This means that about one person in every eight in Brooklyn takes a pamphlet out of the little box in the car. The illustration on the next page will give an idea of how the front of the pamphlets is arranged typographically to attract the car rider's eye.

WHAT SOME OF THE PAMPHLETS CONTAIN

To give a better idea of what the B. R. T. car pamphlets have contained, it may be said, for example, that during 1915 and 1916 the company issued eleven safety and accident pamphlets on topics such as the following:

"OPEN CAR SAFETY: We Can't Insure It Without Your Help."

"AS TO RESCUES: Sometimes Your Luck Saves You; Sometimes the Conductor or Motorman. Why Not Rescue Yourself in Advance by Being Careful?"

"SAVING TIME: Sometimes Caution Will Help You Do It Better Than Hurry."

"OUR MOTORMEN AND YOUR DRIVERS."

"SAFETY PROBLEMS ON THE ELEVATED ROADS: Carelessness and Recklessness Our Enemies There, as on the Surface Lines."

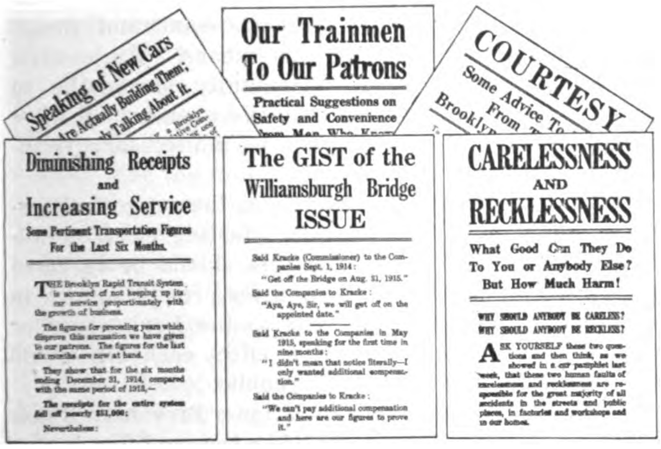
"THE PUBLIC SAFETY TAX: Costs the Railroad a Lot of Money—You Can Pay Yours by Giving a Little Thought—Why Not Start Now?"

The new rapid-transit construction in New York City has naturally afforded the company an opportunity to talk to its patrons regarding the progress of construction work, the delays imposed by controversy among city officials, the opening of new lines and the like. In June, 1915, the company described the operation of the new Sea Beach line, "the fastest and finest rapid transit railroad in the world." In March, 1916, a pamphlet showed how the "dividend" to city taxpayers the last year on one subway contract alone had been more than $4,000,000.

When the company introduced its new center-entrance surface cars, a real estate dealer wrote that they hurt the transportation business, for he had never seen "anybody but those from the Old Ladies' Home who wanted to travel in them." In this case an eight-page pamphlet welcomed the criticism, and not only disposed of the specified objections in a courteous and irrefutable manner, but also served to impress upon the riding public various advantageous features of the car that might have been overlooked. The frank discussion of the points raised, and the request for further criticisms or suggestions as to possible improvements in the car, helped materially to bring home to the car riders the desire of the company to please.

A little humor is always helpful. In one instance in mind, to point a moral, the company took advantage of an imaginative bill introduced by a facetious legislator at Albany. Of course, it was absurd to think that every farmer ought to "hire one more hired man than his work requires," and that all bulls, when moving on the highway or in unfenced areas, should be "equipped with a bell of not less than 50 lb. in weight, a steam whistle and an electric headlight of at least 1000 cp." It was not such a far step from this, however, to the statement that the electric railway business has had almost every known brand of regulation tried on it. It may well be supposed that many readers did a little wondering as to whether utility regulation is invariably distinguished for its sanity.

Two instances may be cited to show how the car pamphlet is used to support a worthy work. In July, 1916, the company reprinted an appeal made by Major Mitchell for the minimization of unsightly and unsanitary street conditions throughout the city. Shortly before this the company had issued a pamphlet explaining the work of the Anti-Litter League. This not only assisted a good cause but permitted the company to remind car riders that whether the cars vary in neatness when they leave the company's car houses and their condition afterward simply depends on the tidiness of the passengers. With a route known to be surpassingly dirty, the plain inference to the riders on that line could not but prove beneficial.



Speaking of New Cars

Are Actually Building Them;

Talking About It.

Our Trainmen To Our Patrons

Practical Suggestions on Safety and Convenience

COURTESY

Some Advice To

From

Brooklyn

Diminishing Receipts and Increasing Service

Some Pertinent Transportation Figures For the Last Six Months.

THE Brooklyn Rapid Transit System is accused of not keeping up its car service proportionately with the growth of business.

The figures for preceding years which disprove this accusation we have given to our patrons. The figures for the last six months are now at hand.

They show that for the six months ending December 31, 1914, compared with the same period of 1913,—

The receipts for the entire system fell off nearly $51,000;

Nevertheless:

The GIST of the Williamsburgh Bridge ISSUE

Said Kracke (Commissioner) to the Companies Sept. 1, 1914:

"Get off the Bridge on Aug. 31, 1915."

Said the Companies to Kracke:

"Aye, Aye, Sir, we will get off on the appointed date."

Said Kracke to the Companies in May 1915, speaking for the first time in nine months:

"I didn't mean that notice literally—I only wanted additional compensation."

Said the Companies to Kracke:

"We can't pay additional compensation and here are our figures to prove it."

CARELESSNESS AND RECKLESSNESS

What Good Can They Do To You or Anybody Else? But How Much Harm!

WHY SHOULD ANYBODY BE CARELESS?
WHY SHOULD ANYBODY BE RECKLESS?

ASK YOURSELF these two questions and then think, as we showed in a car pamphlet last week, that these two human faults of carelessness and recklessness are responsible for the great majority of all accidents in the streets and public places, in factories and workshops and in our homes.

SAMPLE CAR PAMPHLETS ISSUED BY BROOKLYN RAPID TRANSIT COMPANY

Another important use of the car pamphlet has been to bring the employees into closer touch with the public. One pamphlet, for instance, outlined to patrons practical suggestions for safety "from men who know," the operating employees. These covered points about boarding, alighting, conduct on the car and general matters. Such suggestions, secured as the result of an invitation to the employees' safety committees, helped the public better to understand the carmen's problems and also left a good taste in the mouth of the employees.

THE CONTROVERSIAL PAMPHLET

Besides the foregoing the company has put out pamphlets containing reprints of advertisements, official statements and newspaper editorials on company matters, as well as pertinent operating facts and figures. Lately, the car pamphlets have been used to show the public the increased costs of operation under present conditions. The one big class of pamphlet not thus far described, however, is the controversial one.

The use of this, it is felt, depends in general upon the community. In Brooklyn a persistent denunciation of utilities is deemed by a certain type of man to be the readiest way to political preferment. Sometimes such a man secures the ear of the party leader and obtains a position of influence. He keeps up the attacks; he makes good newspaper copy, but any reply of the company is smothered under fresh news, for the press lends itself better to attack than to defense.

To meet such cases as they occasionally arise, the company has found the car pamphlet of great utility. If a politician issues a false statement, he is called by name and his lack of veracity is proved. If an investigation is based upon a palpable distortion of facts, this is shown. Sometimes, when the newspapers have printed only an abstract of the direct testimony in a case, a presentation of the cross-examination is very illuminating to the public. In a case in point, relative to service, the comparative detailed testimony of an inexperienced commission employee and a company expert was instrumental in showing the baseless character of an indictment that had publicly been made against the company.

The company is firmly of the opinion that the controversial pamphlet has a curbing influence upon unjust attacks. It is realized, however, that this device should not be used all the time or even frequently, but should be regarded as a club in the closet—as a final resource in fighting newspaper publicity with publicity. The company does not desire to appear quarrelsome, for that would only prejudice its own case, but it believes in standing up for its rights like a real man. The thinking public understands this attitude.

CAR CARDS AND POSTERS

While the chief publicity appeal of the company is made through the press and the car pamphlet, the value of car cards and posters (and other posters displayed in stations and on company property) is not deprecated. If an idea can be presented graphically, or in twenty-five, ten or even two words, these devices are very useful.

Thus far, however, they have been used principally in safety work. They are also utilized in connection with good-will publicity—that is, in announcing or supporting worthy public objects, especially when there is some connection with the company.

RESULTS OF THE WORK

Among the B. R. T. car publicity devices, therefore, the pamphlet is of widest application. In times when the newspapers are fairly bursting with news, the car pamphlet, judiciously used, has secured and held sufficient of the car rider's attention to drive its message home. Often the company has received requests for extra copies from readers interested enough in the discussion to desire to make sure that the pamphlet is seen by friends who might not have taken any from the cars. All in all, the car pamphlet has been most efficacious in helping to establish better public relations in Brooklyn.

More than seven times the population of the United States was carried on the elevated and subway lines in New York City during the year ended June 30, 1917. The Interborough Rapid Transit Company carried 763,574,085 passengers, an increase of 79,821,971, or 11.67 per cent over the preceding year.

To Eliminate Fare Increase Delays

President Brush Recommends that Companies Have Right to Increase Fares Subject to Later Review by Commission

M. C. BRUSH, president Boston (Mass.) Elevated Railway, appeared before the legislative recess commission on street railway finances, at Boston on Sept. 6, and advocated granting operating companies authority to establish fare increases, subject to later review by the Public Service Commission, in place of the present plan of deferred rate increases dependent upon the consent of the board after investigation. Mr. Brush suggested that justice to the car rider, fairness to the investor, and ample provision for extensions and improvements might be provided by the following method:

The directors of an electric railway, after making a proper investigation and estimate of their business for the ensuing year, and finding or foreseeing net returns insufficient to yield such fair return as is necessary to obtain additional capital, should be authorized to establish and file with the Public Service Commission such a revised tariff as in their judgment is necessary. This should go into effect at the expiration of thirty days.

If the commission at any time thereafter should find, after such investigation as it deemed necessary, that the new tariffs were, in its opinion, in excess of those necessary to produce a return of 6 per cent, or such greater return as might be required to invite additional capital, it should so rule. At the same time it should point out in what respects the management was not prudent or efficient to a degree sufficient to effect substantially the net return and to warrant a modification of the tariff. The commission should also state what tariff it believed proper as the result of such suggested economies.

If a company against which such finding had been made deemed such reduction unfair it should have the right to appeal to the courts upon those points criticised by the commission, with a view to having a court decision as to whether or not the directors of the company had exercised reasonably good managerial judgment in the performance of their duties.

Any tariffs thus once established on which no order of the commission had been rendered should continue for a period of not less than one year from the date of establishment. Any tariffs fixed by the commission which the company had accepted, or which the company had not accepted but which had been upheld by the court, should continue for a period of at least one year from the time of such commission-accepted finding, or, in case of court decision, one year from date of such decision. In case of appeal to the courts, the fare established should continue until the decision.

By this means, when the management of the property had not been reasonably efficient, any tariffs which it might have established could be changed, provided the company accepted the decision of the commission. In its failure so to do, the tariffs could be changed at the time of the court decision provided the court rendered a decision supporting the commission in its finding.

Of course, said President Brush, there are cases in Massachusetts where lines or companies exist which never have earned, do not now and probably for years will not earn a fair return, or in some cases not even operating expenses. In some of the cases it is likely that an increase in fare sufficient to yield theoretically a reasonable net return, based on the present number of passengers, would in fact so reduce the number of passengers as to bring the earnings below their present amount. Under such circumstances the community affected should either permit the company to take up the lines and sell the material, if the stockholders so desired, or should subsidize the company, or take over, own and operate it.

Furthermore, in order to prevent excessive dividends, the company should be required after any increase in fare to make proper provision for depreciation, obsolescence, etc., and should be prohibited from paying a rate in excess of 6 per cent, unless a higher rate became necessary to invite additional capital. Any surplus which might be left over above a fair return should be put into a special fund to be used in lieu of capital for such purposes as the commission might approve. By so doing proper public authorities would have over a company a constant control that would prevent it from arbitrarily raising fares to pay unfair dividends. The payment of excessive dividends could and should be absolutely prevented by this means. An electric railway in an established community should be so safeguarded in all respects that the payment of more than reasonable dividends would be unnecessary to insure its stability.

Another element of importance in the suggested system would require that all bills affecting electric railways introduced in the Legislature should be referred to the Public Service Commission for prompt report, in order that it might make clear to the Legislature or legislative committees just what effect each bill would have upon the industry and the public.

In concluding his recommendations, President Brush stated that he was not suggesting the modification of any of the powers of the Public Service Commission except to provide for proper supervisional powers rather than practically administrative powers. The act which established the commission provides in regard to orders that "before making such order the commission shall consider . . . the financial ability of the carrier to comply with the requirement of the order." This provision of the present law is intended to give the investor some protection, but it has proved inadequate. The commission should not only consider the financial ability of the company to comply with an order, but it should also make a definite finding as to the financial consequences of such compliance, and should allow such readjustment in rates or service as might be necessary to cover the increased cost of complying with the order. Under this provision the commission could require any amount or kind of service, if it simultaneously made provision for covering its cost; but it should not be permitted to require service and deny to the company the means of meeting the added expense.

A number of second-class compartments without seats are now used in Paris according to the 1916 report of the Metropolitan, the Paris Underground Railway. These are provided for the special convenience of passengers with bulky parcels.

AMERICAN ASSOCIATION NEWS

Program for the 1917 Conference

Secretary Burritt of the American Electric Railway Association announced this week that the conference of the American Electric Railway Association, which will take the place of the convention usually held during the second week in October, will occupy one day only and will take place in New York on Oct. 9. It will be held in the United Engineering Societies Building, at 29 West Thirty-ninth Street. The subjects to be discussed follow:

General survey of electric railway problems.

Is the "war bonus" practicable as a means of wage adjustment in the electric railway industry?

Female substitutes for trainmen.

Pending applications for fare increases in New York State.

Topical discussion of various methods of increased fares.

a. Charge for transfers.
b. Increases in flat rates for present zones.
c. Shortening present single-fare zone.

The names of those who will present papers on these subjects have not yet been announced, as acceptances have not been received from all. It may be said, however, that the first paper, or that giving a general survey of present electric railway problems, will be presented by President L. S. Storrs and in a sense will take the place of the usual president's address.

The other papers will then outline the principal methods which have been suggested for meeting these problems.

The executive committee hopes there will be a large attendance from both railway and manufacturing members of the association. There will be no advance registration.

Coal Economy Urged for New England Power Plants

The power plant economy committee of the New England Coal Committee (a branch of the national defense organization) has issued a statement urging all users of coal to endeavor to secure the utmost economy in the burning of coal for power, light, and heat during the coming winter, and offers to send an inspector, at cost, to any plant to investigate and report upon the prospects of obtaining better economy as a war measure. The statement is signed, among others, by President M. C. Brush of the Boston Elevated Railway; President C. L. Edgar of the Edison Electric Illuminating Company of Boston; President Howard Coonley of the Walworth Manufacturing Company of Boston, and J. F. McNamara of the International Brotherhood of Stationary Firemen. The statement follows:

TO THE COAL USERS OF NEW ENGLAND

Owing to war conditions a most serious situation confronts the coal users of New England during the coming winter. In previous years two-thirds of New England's coal supply was shipped by water in large steamers and barges towed by tugs. Our Government requires every possible ship capable of crossing the ocean and every possible tug for mine sweeping and submarine-spotting. Our railroads cannot possibly do this extra work—we must help the Government by saving coal. It is not only an absolute necessity for our own protection, but a patriotic duty. In view of this emergency it is absolutely essential that the utmost economy be used in the burning of coal for power, light and heat, and the New England Coal Committee would urgently call this matter to your attention.

We do not advocate costly expenditure to make your boiler plants more economical, for, owing to the probable delay in furnishing all material for providing such improvements, the work could not be completed in time to be of use the coming winter. We do urge, however, that stricter attention than ever be paid to the upkeep and maintenance of existing plants, so that greater efficiency may be obtained therefrom.

The greatest enemies of efficiency in boiler plants come under two general heads—lack of cleanliness by allowing soot or scale to accumulate on boiler tubes and lack of repairs in allowing leaky brick work of boiler settings and leaky baffles, and without the expenditure of any great sum of money, marked increase in efficiency may be obtained by giving attention to these simple points.

Increased economy may also be practised by closer attention being given to the firing of coal and the number of boilers kept in operation for a given load. It is better economy in general to run fewer boilers at their full capacity than it is to keep in operation a larger number of boilers running underloaded.

We would urge upon all plants both large and small that accurate daily records be kept of the amount of coal burned and other operating conditions and that these records come under the direct attention of the responsible managers of the plants who should urge upon their engineers the absolute necessity of the most economical use of coal as a patriotic service.

We would also urge the hearty co-operation of the men who actually fire the coal. If unable to serve their country by enlisting in its military or navel forces, a few pounds of coal saved by each one every day during the coming winter will in the aggregate amount to enough to send many a ship loaded with supplies for our boys at the front.

Upon request, the New England Coal Committee will gladly send an inspector to investigate and report on conditions in any plant, charging only a fair price to cover the bare cost of services.

Another Case Presented at Albany

"Fare increase or bankruptcy" was the consensus of the argument presented at the hearing in Albany on Sept. 5 before Commissioner Carr, in the matter of the petition of the Orange County Traction Company, Newburgh, N. Y., for authority to increase its fares. In the testimony it was brought forth that the corporate deficit of the company grew from $10,400 on Dec. 31, 1916, to $14,578 on June 13, 1917.

Counsel stated that sheer necessity is compelling the petitioner to seek authority to increase its rates of fare in Newburgh from 5 to 6 cents and to 10 cents on its Orange Lake line. "We would be glad to avoid this increase if it were possible," he declared, "but we either must get the increase or else go into bankruptcy." He stated that, as far as he knows, there are no serious objections in the city of Newburgh to the proposed fare increase.

Fire and Accident Prevention Day

The National Fire Protection Association and the National Safety Council have selected Oct. 9 as fire and accident-prevention day. It is expected that local trade and other associations will co-operate with the national bodies in making the exercises of the day impressive and effective. Last year meetings, parades and other events aroused a great deal of interest among workmen and citizens. A handbook has been prepared to furnish suggestions for the celebration of the day. Copies can be secured from the office of the Council, Continental & Commercial Bank Building, Chicago, Ill.

EQUIPMENT and MAINTENANCE

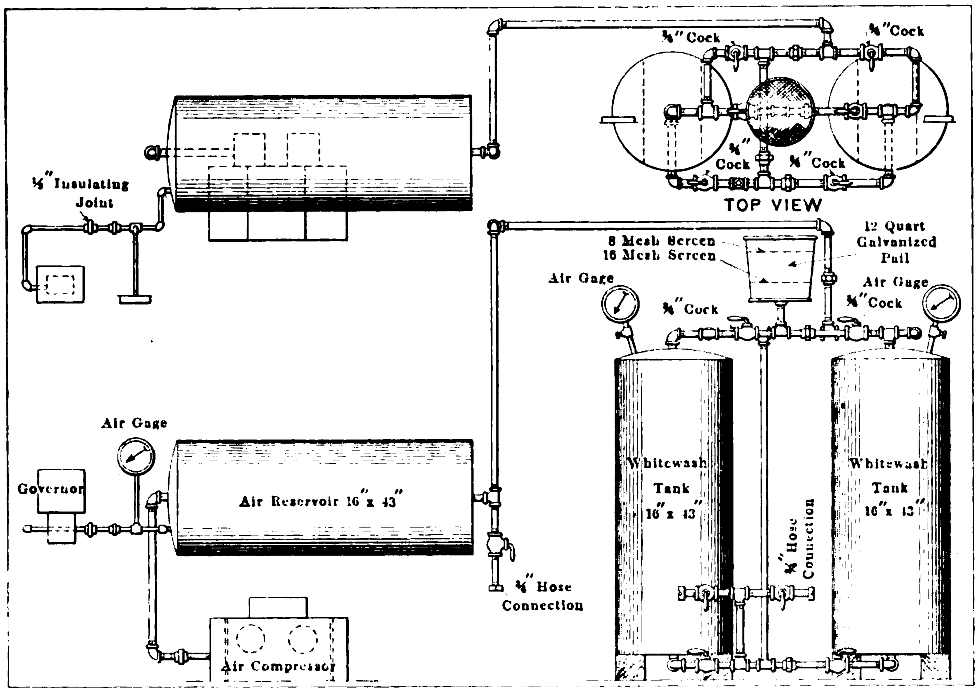
HAVE YOU A GOOD WAY
OF DOING A JOB?
—Pass It Along

These Articles Have Been Selected to Provoke Thought and Stimulate Discussion. All of the Technical Departments Are Represented

Whitewash Car Makes Quick Work of Painting Right-of-Way Fences

BY ARTHUR W. REDDERSEN
Superintendent Motive Power Fort Wayne & Northern Indiana Traction Company, Fort Wayne, Ind.

As a rapid means for whitewashing fences and cattle guards along the right-of-way, and shop interiors, etc., this company has equipped an old motor car with apparatus with which to do this work by spraying. Three old air tanks, one for an air-storage reservoir and the other two for whitewash tanks, were installed inside the car and supplied with air from an old AA-1 compressor. The whitewash is mixed in a barrel and poured into the two whitewash tanks. By means of an arrangement of the valves and piping, clearly shown in the accompanying drawing, air is admitted to a whitewash tank and the contents are forced out through the hose connection. The process is continuous, for while one tank is in operation the air is cut off the other, and it is filled with the whitewash solution. When the first one gets about dry, the supply to the spray nozzles is changed over to the other tank by simply closing one valve and opening another.



PIPING CONNECTIONS FOR WHITEWASH CAR

The air reservoir used with the outfit is a 16-in. x 43-in. steel tank, and the governor is set for cutting in and out at 80 lb. and 100 lb. respectively. A slight adjustment of the valve at the spray nozzle keeps the pressure about constant for uniform whitewashing. A special air connection at the bottom of each whitewash tank was provided for agitating the mixture, should it show a tendency to become thick at the bottom after standing a while. Also an air connection for blowing the dust off the surface to be whitewashed is provided. In many instances, the painters stand on a platform on top of the car and direct the whitewash spray from this point of vantage.

Higher Boiler Pressures and Temperatures

In discussing the subject of higher boiler pressures and temperatures recently, J. C. Rutherford, Chicago, Ill., called attention to the fact that since it is now quite common practice to maintain a vacuum within 1 in. of absolute, the simplest, and, in fact, the only other direction in which more energy may be obtained from the steam is to raise the steam pressure. A steam pressure of 200 lb. per square inch may be considered high for small stations, although it is commonly used in the larger ones, whereas 225 lb. per square inch is being used in some stations, with 350 lb. per square inch in possibly a few isolated and exceptional instances. It will probably be a long time before pressures in excess of 225 lb. per square inch will be considered for the small stations, partly from considerations of safety, and because of the necessary limitations in personnel and facilities, and partly because operating conditions are rarely such as to permit offsetting the higher cost of apparatus. The smaller stations might find it a more fruitful move to give attention to scientific firing and high vacuum, rather than to higher steam pressures. It is a very different matter with the large stations, however, with their much heavier loads, load factors, and better facilities for repair, maintenance and supervision.

No doubt the standard pressure may be said to be 200 lb. per square inch in the majority of stations, at 200 deg. Fahr. superheat, equivalent to a temperature of 600 deg. Fahr. Higher pressures require higher strength of structures withstanding them—boiler, pipes, and fittings, economizers, turbine parts, etc.—but higher heat losses are also to be expected. While in time doubtless design and the treatment of metal will solve the mechanical problems, a stage must be reached when the greater heat losses and mechanical difficulties will cancel the gain in over-all efficiency.

Effective Way of Removing Concrete Paving Foundations

Charles H. Clark, engineer maintenance of way Cleveland Railway, has recently made use of a scheme which proved to be very effective for breaking up the concrete paving foundation in paved streets where a new line was to be built. The shovel was taken off an electrically driven Thew automatic shovel, and a 3200-lb. weight was arranged to be lifted and dropped by means of the shovel mechanism. In operation this weight is lifted about 8 ft. high and dropped on the concrete surface after the brick has been removed. The shovel is moved forward under its own power at the rate of about 3 ft. a minute, and by this means a strip of concrete 8 ft. wide is completely broken up at that rate. This was the record made in connection with the building of a new line on East 156th Street. Mr. Clark states that the machine equipped with this weight will take the place of about thirty men engaged in breaking up the concrete manually.

No trouble was experienced from the weight showing a tendency to swing, and the work placed no particular strain on the shovel. The machine carrying this weight was followed up by another Thew shovel which picked up the broken concrete and dumped it into wagons. On another job on St. Clair Street this weight and machine were used for breaking out the concrete between ties on old track. The ties were located at 4-ft. centers, leaving room enough between them for dropping the weight.

Sheet-Metal Devices Made in Railway Shop

BY F. L. HINMAN

Master Mechanic New York State Railways, Syracuse, N. Y.

Coal and sand boxes for cars, sign holders, car record boxes, ash cans and such sheet-metal articles are made in this company's shops. A machine known as a cornice break, usually found in tin shops, but not commonly used by electric railways, has been found particularly useful in the shaping of sheet steel and galvanized metal parts. The accompanying drawings show how the details have worked out in two typical cases.

A cutting pattern of a car record box is shown in Fig. 1. A comparatively heavy steel template made

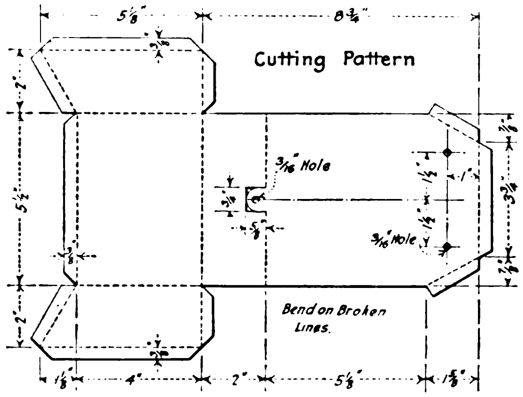


FIG. 1.—CUTTING PATTERN FOR CAR RECORD BOX

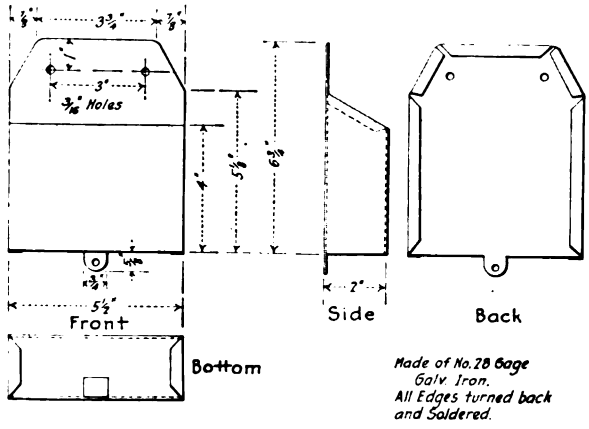
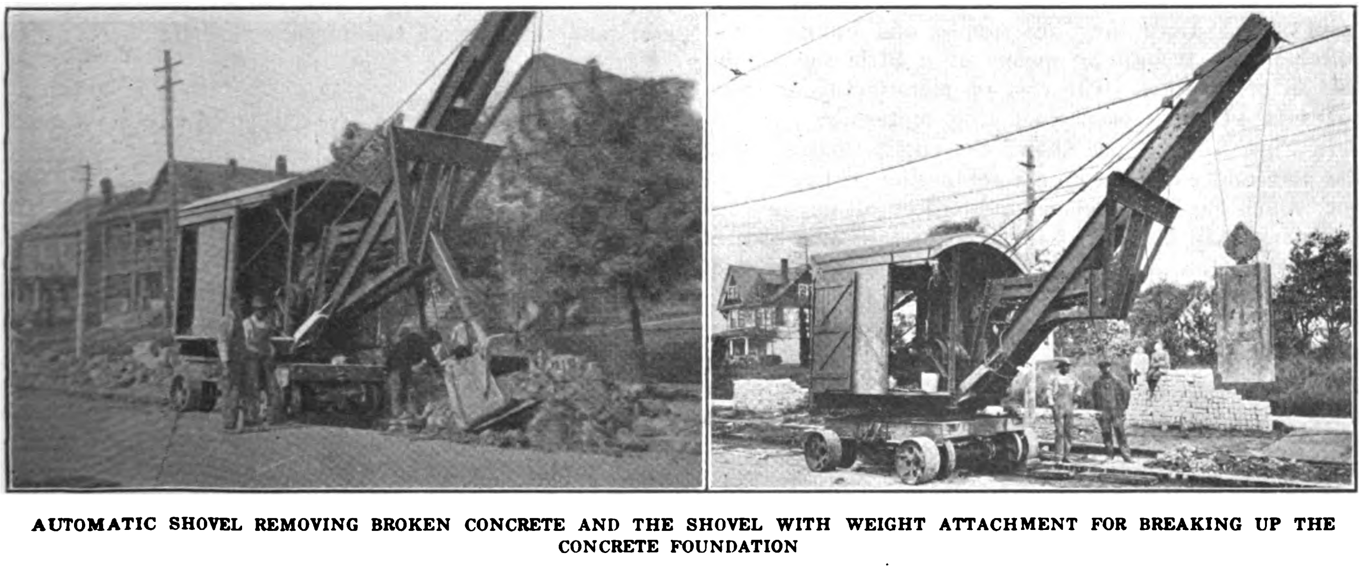

3¾"
3"
3/16" Holes
5½"
Front
Side
Back
Bottom
2"
Made of No. 28 Gage Galv. Iron.
All Edges turned back and Soldered.

FIG. 2.—DETAILS OF BOX AFTER BENDS HAVE BEEN MADE



AUTOMATIC SHOVEL REMOVING BROKEN CONCRETE AND THE SHOVEL WITH WEIGHT ATTACHMENT FOR BREAKING UP THE CONCRETE FOUNDATION

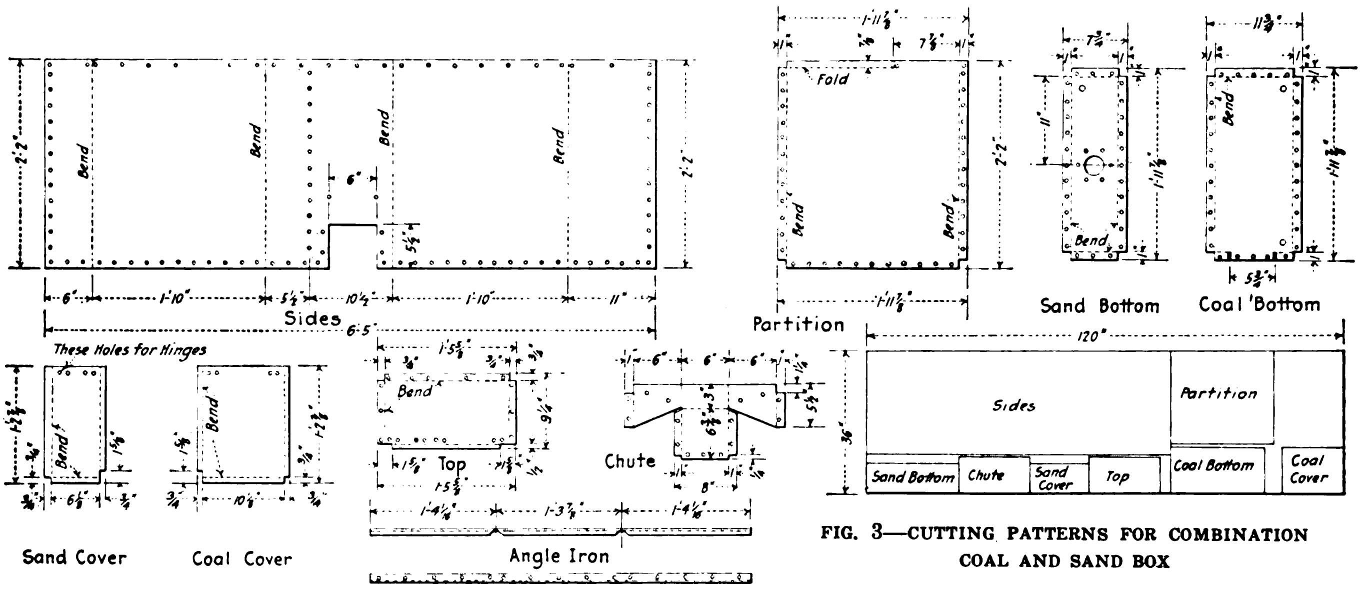

Sides 6-5"
Bend
Bend
Bend
Bend
2'-2"
6"
1'-10"
5¼"
10¼"
1'-10"
11"
These Holes for Hinges
Partition
Fold
1'-11¼"
7¼"
Sand Bottom
Coal Bottom
Sand Cover
Coal Cover
Top
Chute
Angle Iron
4'
120"
36"
Sides
Partition
Sand Bottom
Chute
Sand Cover
Top
Coal Bottom
Coal Cover

FIG. 3—CUTTING PATTERNS FOR COMBINATION COAL AND SAND BOX

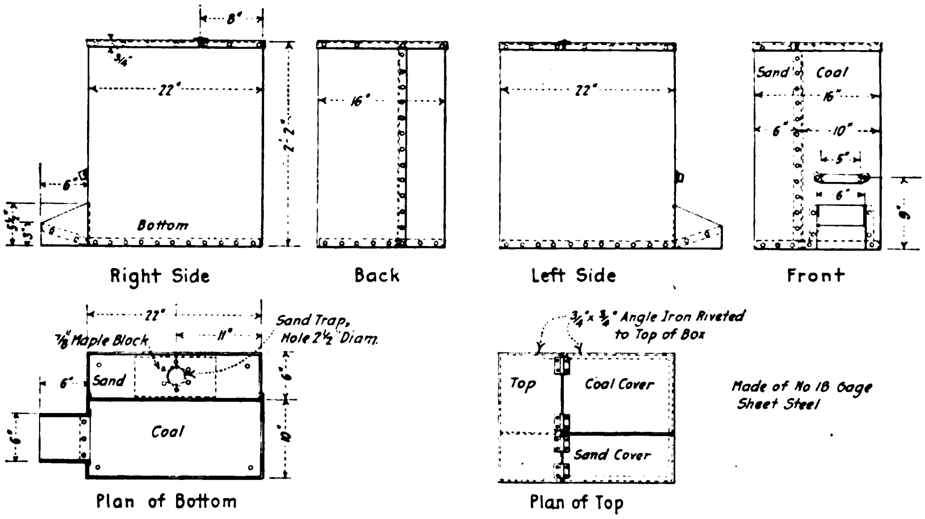

Right Side
Back
Left Side
Front
Bottom
22"
16"
22"
2'-2"
Sand
Coal
Plan of Bottom
Sand Trap, Hole 2½" Diam.
⅞" Maple Block
Sand
Coal
Plan of Top
¾" x ⅛" Angle Iron Riveted to Top of Box
Top
Coal Cover
Sand Cover
Made of No 18 Gage Sheet Steel

FIG. 4.—DETAILS OF COAL AND SAND BOX AFTER BENDS HAVE BEEN MADE

in accordance with this drawing is laid on the piece of galvanized iron or tin to be used, the outline is marked with a scratch-awl and the metal is cut along this outline. The holes are then punched and the bends are made with the cornice break machine. The box after being bent into shape is shown in Fig. 2. The joints are next lightly soldered and the boxes are sent to the paint shop. Here they are dipped and hung over a suitable drip trough by means of a little tab at the bottom of the box. The cost of manufacturing these boxes is 17 cents each, including materials.

In Figs. 3 and 4 are shown the cutting pattern and the plan and elevation of a combination coal and sand box, which has now become standard on all pay-as-you-enter cars. In laying out these boxes the same plan is followed as for the car record boxes; that is, the steel template which contains all the holes required in the finished product is used and the holes are punched before the bends are made. All holes are punched 7/32-in. in diameter, which permits the use of 3/16-in. stove bolts. Having all the holes the same size saves the time necessary to change the punches and dies for holes of different sizes.

In designing the cover of this box we took into consideration the desirability of constructing it in such a manner as to prevent coal from being spilled into the sand box or sand into the coal box. Another feature is the coal shovel holder shown immediately above the chute on the front of the box. These boxes are manufactured by us in lots of twenty-five at a cost of $11.30 each, delivered in the storeroom, and they have proved themselves to be more economical in first cost and maintenance than the wooden coal boxes which were formerly used. The sand box used prior to the installation of the combination box was located under the front platform, and in wet weather it was almost impossible to keep the sand in the box dry enough to flow through the air-operated sand trap. The new box is located above the platform floor and in this location it is always dry and ready for use. This in itself is a very valuable factor in favor of the adoption of this box.

The detail drawings and templates used in the manufacture of both the car record box and the combination coal and sand box were worked out by L. C. Allen, assistant foreman of the carpenter shop.

Phasing Out Lines by Means of Static Voltmeter

A static voltmeter is a handy apparatus for phasing out high-voltage lines of 50,000 volts and under. On an electric railway in the South two 22,000-volt lines connected to the same bus at a substation were to be connected together by a 10-mile branch line running between substations on each line. The substations are about 15 miles from the main distributing point. The branch line was closed at one end and the corresponding phases were tested at the other end, the lines of the same potential showing zero voltage. One terminal of the voltmeter was connected to one wire of the branch line by means of a wire fastened to a switch stick.

The other side of the voltmeter was connected by a switch stick to the different wires on the main line until the correct one was shown by the voltmeter reading zero.

Three tubular condensers were connected in series, and the voltmeter was connected across the middle condenser. The condensers and voltmeter were suspended from a switch stick near the ground, and two lines were strung between suspension insulators from the tower to supports on the ground. Taps were made from these lines to the meter and the wires, fastened to switch sticks, were tapped to them on the tower. This made it safe and easy for the linemen.

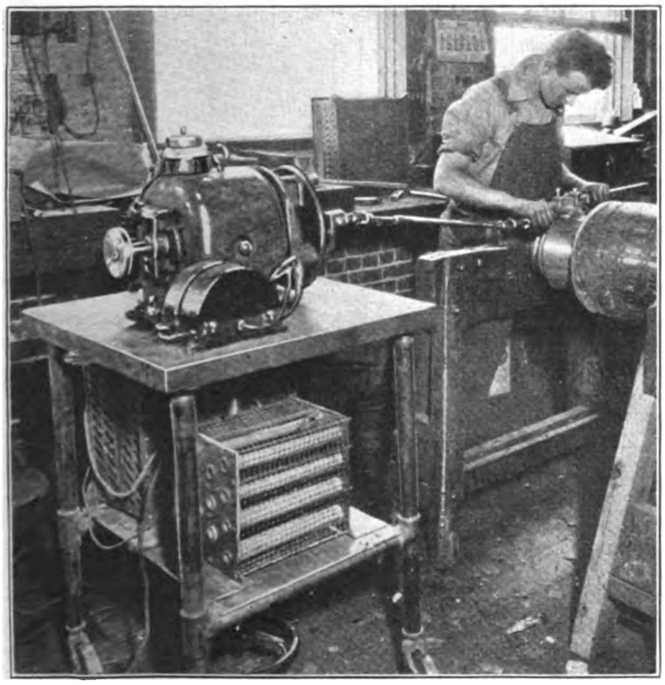
Slotter with Unusual Features

In Spokane Shops a Portable, Self-Contained Armature Slotter Which Is Adjustable for Large Variations in Armature Sizes Is Used

BY MAX PASSLER
Armature Foreman Spokane & Inland Empire Railroad, Spokane, Wash.

In this company's shops the service demanded of an armature slotter is a little unusual. There is a great variation in the sizes of armatures which have to be slotted, and we wanted a slotter which could be brought to the armature instead of having to bring the armatures to a stationary slotting machine. To meet these requirements of portability and a large range of adjustment, the writer designed the apparatus illustrated.

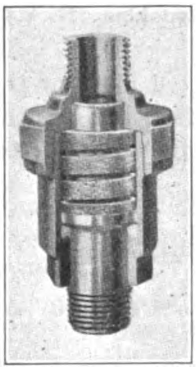
The motor, starting switches, etc., are all mounted on a table, the wheel supports of which make it easy to move around the shop. The table top is adjustable in height, being raised and lowered by means of a threaded post running through the lower shelf and provided with a hand wheel. The four corner posts of the table top are telescoped with the pipe supports which form the table legs. The rod between the saw and the motor is provided with a loose sleeve and two universal joints, so that the operator can cut several slots without turning the armature.



PORTABLE ARMATURE SLOTTER IN SPOKANE SHOPS

Most of the parts which compose the outfit were picked up around the shop. The motor is a $2\frac{1}{2}$-hp. Westinghouse series crane motor converted for shunt operation by means of the resistance shown on the lower shelf of the table. The driving rod is made chiefly of parts taken from old Ohmer cash registers.

Swivel Joint Made Without Packing



SWIVEL JOINT USING CAST-IRON SPRING

There has been placed on the market a swivel joint which uses a cast-iron spring similar in principle to a piston ring permanently to seat the joint. It follows that with this joint no packing is required. The joint is especially adapted for use in steam, air, gas and ammonia lines, and it combines the advantage of the strength of cast iron with the flexibility which is obtained by the swiveling feature. The device is known as the "Knudsen" packless swivel joint and is manufactured by the Universal Valve Company, Burlington, Wis.

Stone for Polishing Commutators

To take the place of sandpaper in polishing commutators, the Handy Supply Company, Cleveland, Ohio, has produced a composition stone which will give an even polish on the commutator. It is claimed that this stone will not wear away rapidly, pick up copper, or groove the commutator or slip rings to which it is applied. In use, the stone soon becomes rounded to fit the commutator, and by bridging over flat spots or other depressions it enables the operator to keep a true commutator, with the surface of every bar properly rounded. As the stones have two cutting faces, one can be used for commutators of two different diameters, and will usually last several years.

COMMUTATOR POLISHING STONE

The stone can be applied to a motor or generator running under full load. One end of the stone is rested against the brush-holder stud, care being taken not to let the end of the stone become wedged under the stud. Handles are made to facilitate using the stone on commutators that are not readily accessible.

W. H. Boyce, superintendent Beaver Valley Traction Company, states that his linemen used to lose from twenty-five to forty minutes per hour when using a tower car for overhead maintenance work, while on the same kind of work, and using an automobile tower truck, only six to ten minutes per hour are lost.

Cost Data on Special Work Renewals—III

By M. BERNARD

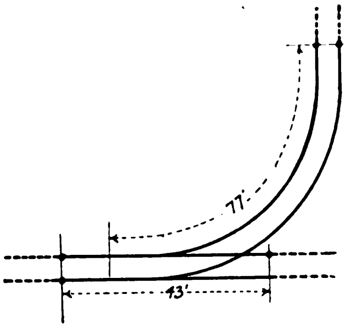
Assistant Engineer Way & Structures Department.
Brooklyn (N. Y.) Rapid Transit System

This is the third plate of the series of Cost Data on Special Work renewals. The first and second plates were published in the issues for July 21, page 108, and Aug. 18, page 279.

Fig. 7—Single Track Branch-Off (90 Deg.)

Length—120 ft. single track

Construction removed—9-in. girder rail*—8-in. granite on sand
New construction—9-in. girder rail*—8-in. granite on concrete

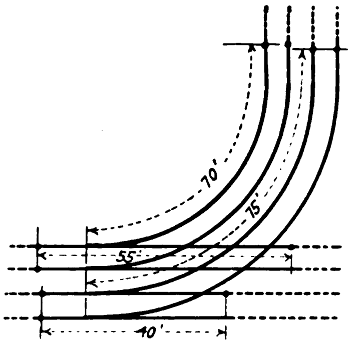


	Light Traffic	Average Traffic	Heavy Traffic
Labor	$230.00	$280.00	$340.00
Handling	65.00	75.00	85.00
Miscellaneous	35.00	40.00	45.00
Total (except materials)	$330.00	$395.00	$470.00
Cost per single track foot	2.75	3.29	3.92

Fig. 8—Double Track Branch-Off (90 Deg.)

Length—240 ft. single track

Construction removed—9-in. girder rail*—8-in. granite on sand
New construction—9-in. girder rail*—8-in. granite on concrete

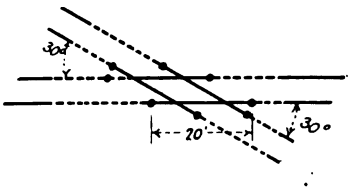


	Light Traffic	Average Traffic	Heavy Traffic
Labor	$430.00	$510.00	$650.00
Handling	135.00	150.00	185.00
Miscellaneous	65.00	80.00	100.00
Total (except materials)	$630.00	$740.00	$935.00
Cost per single track foot	2.63	3.08	3.90

Fig. 9—Single Track Crossing Single Track (30 Deg.)

Length—40 ft. single track

Construction removed—9-in. girder rail*—8-in. granite on sand
New construction—9-in. girder rail*—8-in. granite on concrete

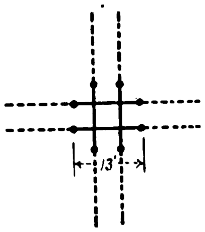


	Light Traffic	Average Traffic	Heavy Traffic
Labor	$105.00	$130.00	$147.00
Handling	32.00	35.00	41.00
Miscellaneous	20.00	25.00	30.00
Total (except materials)	$157.00	$190.00	$218.00
Cost per single track foot	3.93	4.75	5.45

Fig. 10—Single Track Crossing Single Track (90 Deg.)

Length—26 ft. single track

Construction removed—9-in. girder rail*—8-in. granite on sand
New construction—9-in. girder rail*—8-in. granite on concrete



	Light Traffic	Average Traffic	Heavy Traffic
Labor	$70.00	$85.00	$98.00
Handling	22.00	24.00	32.00
Miscellaneous	12.00	15.00	17.00
Total (except materials)	$104.00	$124.00	$147.00
Cost per single track foot	4.00	4.77	5.65

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*Hard-center construction. *Explanation:* By "light traffic" is meant either the divergence of cars during progress of work, or a traffic of not more than 150 cars per day of twenty-four hours. "Average traffic" denotes the passage of about 325 cars per day of twenty-four hours, and "heavy traffic" that of 750 or more.

By "labor" is meant the labor cost of tearing out the old paving and special work and installing the new at the location where the work is done. "Handling" signifies the cost of loading the necessary materials at the various storage yards as well as the unloading of same at the place of renewal. It also includes the cost of transportation and the cost of removal of old or left-over material. Since the transportation is done by a subsidiary company, which adds profit and overhead expense to the net cost, this item may differ considerably from that obtained on other railways. Under "miscellaneous" are included the expense of city inspectors, expense incurred when portable crossovers are used for divergence of cars during renewal, watchmen's wages, and incidental engineering expense. The total of these three items—labor, handling and miscelaneous—therefore includes everything except the cost of materials.

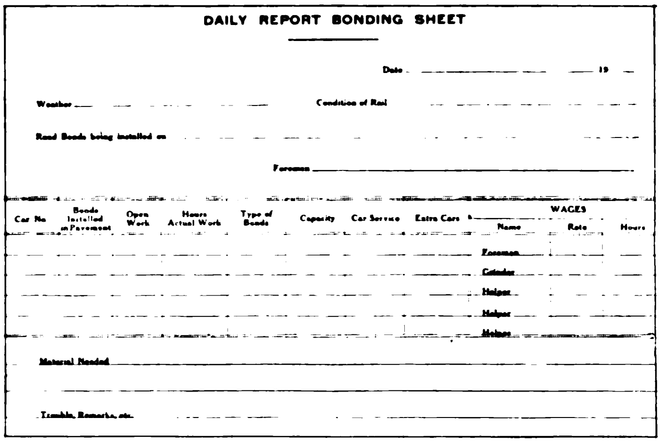
On account of the unsettled labor conditions prevailing since the beginning of the war, the costs given are based on pre-war wages, the average track labor on which these costs are based is 20 cents per hour, including the foreman's wages.

Use of Portable Bond Welder

About June 1 the Cleveland, Southwestern & Columbus Railway began the installation of 9000 rail bonds to take care of normal replacements. This meant, of course, that the work must be done on live track and at irregularly spaced locations. In deciding upon the choice of bond for this job, the company determined to continue the use of the Erico welded bond, which had been giving excellent service since 1905; but owing to the nature of the work, it was desirable to have something more flexible than the bonding car used for straight bonding. For this reason, it was glad to pioneer with the new Erico portable welder, first described in the ELECTRIC RAILWAY JOURNAL for Feb. 3, 1917, page 218, and shown in actual service in the accompanying views taken on this railway.

At present two equipments are in use on this property. Each is served by one welder and one helper, while a single grinder prepares the rail for both. A boy runs whatever errands are necessary and a flagman is stationed at a suitable distance to warn both workmen and traffic. The welders usually work about 300 ft. apart. In actual operation, all of the apparatus can be removed so quickly from the track that a train service, comprising twenty-five to thirty limiteds besides locals and freights, can be carried on without stops and with comparatively few slow-downs. The portability of the apparatus makes it possible to carry on the work in the day time at the most difficult locations instead of going to the expense of night labor.

These portable welders are extremely simple. Each is made up of a small larry on which the rheostat and the supplies are carried and a welding furnace which contains an electrode and the graphite plate in connection therewith. On the Cleveland, Southwestern job, the helper is used by the welder mainly for opening and closing the rheostat switch and for removing this outfit from the track. The welder can open the switch himself by pulling a string if he so desires. The helper is also used in laying out bonds, preparing graphite plates and the like.



DAILY REPORT BONDING SHEET

Date ____________ 19__

Weather ____________ Condition of Rail ____________

Rail Bonds being installed on ____________

Foreman ____________

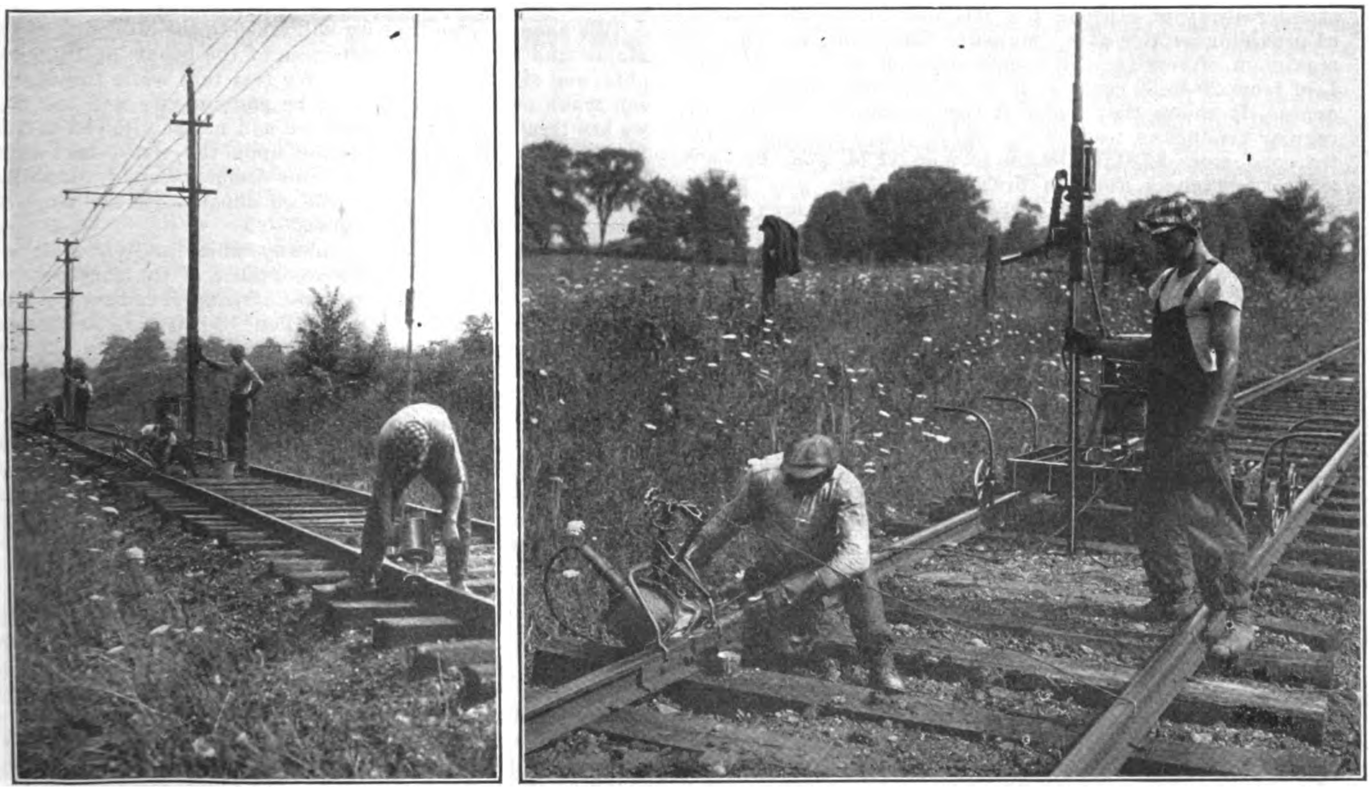
Car No.	Bonds Installed in Pavement	Open Work	Hours Actual Work	Type of Bonds	Capacity	Car Service	Extra Cars	WAGES		
								Name	Rate	Hours
								Foreman		
								Grinder		
								Helper		
								Helper		
								Helper		

Material Needed ____________

Trouble, Remarks, etc. ____________

FORM FOR DAILY REPORT OF BONDING

A number of time studies made of welding by this method showed that the average time of applying an Erico E. T. No. 0000 5¼-in. bond, from the time of clamping the welding furnace to the rail to its removal from the rail, varies from two to two and one-half minutes depending upon such factors as the experience of the welder and the newness of the graphite plates. The older the plates the quicker the weld. As the bonding places are scattered, maximum output is not possible. However, the two gangs have installed a total of 175 to 200 bonds in a ten-hour day, of which period only eight hours were devoted to actual welding operations. On this basis the labor cost per bond averages 10 cents. Thirteen bonds have been welded with one machine in an hour under straightaway conditions.



TWO WELDING GANGS AND GRINDER AT WORK AND NEAR VIEW OF PORTABLE LARRY CARRYING RHEOSTAT AND SUPPLIES

News of Electric Railways

Traffic and Transportation

Financial and Corporate **Personal Mention** **Construction News**

Preparing for Puget Sound Arbitration

Hearings to Begin on September 10—Men Present Demands—Answer of Companies Has Been Filed

Arbitration of the demands of the trainmen in the employ of the Puget Sound Traction, Light & Power Company and the Tacoma Railway & Power Company will begin on Sept. 10.

The men ask for an eight-hour day, the elimination of swing runs, pay for extra men awaiting runs, a general wage increase and the elimination of uniforms for motormen. The claims are general in their terms, except that in which the eight-hour day is demanded. Extra men, they say, should not be required to report at different periods of the day without pay for the lost time which intervenes. It is asked that swing runs be eliminated by granting pay for the time lost between taking out the different cars to which they have been assigned. Dress uniforms for motormen are declared to be a useless expense, and the demand is made that the company provide overall uniforms at its own expense for all motormen. The men contend that the wages paid are insufficient to provide adequately for the support of a family. The wage request is for an amount sufficient to enable the employee to comply with his duty and obligations to society and the State; to maintain himself and his family in accordance with a proper standard of living, providing for home, food, clothing, sickness, church and fraternal dues, insurance, reading matter, music, amusements and a savings account against the infirmities of old age and possible incapacity.

THE CASE OF THE COMPANIES

In reply the companies declare that the fluctuations of service compel the swing runs and that they are universal street railway practice as the only solution of the problem of providing service at a time when the public demands the maximum of service. The wage schedule effective on July 1, of from 29 to 36 cents an hour, the company holds is adequate. It shows that under it the average pay a day for regular conductors was $3.41; regular motormen $3.53; extra conductors $2.81; extra motormen $2.74, and the half-month pay check for the first half of July was $51.23, $53.05, $42.19 and $41.14, respectively, for the men previously mentioned, or from $82.28 to $106.10 per month. In addition trainmen and their families receive free transportation. It is contended that this scale of wages exceeds that paid in most similar cities for like service, and that it is adequate to enable the men to continue to keep up a proper standard of living.

The answer sets forth that "the statutes of the State of Washington contemplate and recognize as reasonable and proper a day of ten hours' work for motormen and conductors" and points out that the people of the State rejected, by a vote of nearly two to one, Initiative Measure No. 13, which undertook to establish a general eight-hour day. Both companies say that on account of the scarcity of labor, due to the demands of the war, the patriotic duty of everyone should under existing conditions urge greater service and longer hours of work. To reduce the number of working hours below that now followed in the schedules would render it difficult, if not impossible, to secure competent men, would greatly and seriously embarrass the answering companies in the operation of their cars in Seattle and Tacoma, and would increase the cost of operation to such an extent that the companies would not be able to continue, either in Seattle or Tacoma. The wages must not be more than the traffic will bear. To pay more than the traffic will bear would annihilate the industry itself.

The answering companies point out that the suggestion that the Public Service Commission has the power to relieve the companies if the rate of return is insufficient is true only in a limited sense, as under the laws of 1911 the limit of charge for a continuous ride is fixed at 5 cents. For that reason it would be impossible for the companies to attempt to operate under anything like an eight-hour day. The practice of requiring the extra men to report at various times is customary and reasonable. The guarantee of $65 a month "insures such extra men that amount, even should they not be required to do any work whatsoever besides reporting." Uniforms for motormen are required because "cleanliness and neatness are necessary to good service." Moreover, the uniform inspires the traveling public with confidence.

Construction Contracts Rejected

Two Out of Three Contractors for Philadelphia Rapid Transit Work Find It Impossible to Carry Out Work

Following a conference of contractors for the new rapid transit lines in Philadelphia, Pa., held on Sept. 4, the Keystone State Construction Company accepted Broad Street subway and delivery loop contracts, totaling more than $10,000,000. The Philadelphia Subway Contracting Company, controlled by Senator Edwin H. Vare, announced at first that it had declined a contract of $2,900,000, but later Senator Vare stated the matter still was under consideration. The firm of Smith, Hauser & MacIsaacs, New York, rejected a $2.225,000 contract. All of the above contractors submitted bids for the work last February, and it has been stated from time to time that they would be unable to carry out these bids after a lapse of six months, owing to the constantly increasing costs of labor and material.

Senator McNichol, in announcing that his firm would accept the contracts which had been awarded to it, said:

"We have decided that we will trust to the integrity of the Mayor and to the fair-mindedness of the people of Philadelphia, and sign the contracts. We feel that while the Mayor can make no concessions, both he and the city will see that we are treated fairly and that we will not be allowed to suffer in placing our organization upon the work, for which both the materials and labor now seem extremely doubtful. We hope for the best and will go ahead with the work as soon as the contracts are signed."

The four sections of the subway which are virtually assured of construction by the acceptance of the contracts by the Keystone State Construction Company are: Broad Street subway, South Street to South Penn Square; Broad Street subway, Buttonwood to Stiles Street; delivery loop in Arch Street, from Broad Street to Eighth Street, and the delivery loop in Locust Street, from Broad Street to Eighth. The contract rejected by Smith, Hauser & MacIsaacs covered a section of the delivery loop running along Eighth Street from Arch to Locust Street. The one under consideration by the Philadelphia Subway Contracting Company completes the section of the Broad Street subway from Filbert to Buttonwood Street.

Mayor Smith is reported to have said:

"I do not think that the refusal of two of the contractors to accept the awards will result in any serious delay. My present idea is to advertise for bids, not for the two refused contracts as a whole, but for such portions of the work as can be done at present without too great expense. Director of Transit Twining and I decided that if the contracts were not filed the work would be divided up and contracts given for smaller portions of the subway work. The work which will be carried on first will be that which does not require the use of steel, the price of which has jumped considerably on account of the war."

Preparing for P. R. T. Lease Hearing

Ford, Bacon & Davis Report on Proposed New Philadelphia Rapid Transit Lease—Contract Attacked by A. Merritt Taylor

For several weeks those interested in the proposal for the operation of the city-built high-speed lines in Philadelphia by the Philadelphia Rapid Transit Company were aligning their forces for the first public hearing on Sept. 7. The draft of the lease was formally presented to Councils on Aug. 17. The general terms of the proposal were reviewed in the issue of the ELECTRIC RAILWAY JOURNAL for Aug. 18, page 273.

INDEPENDENT OPINION ON PROPOSED LEASE

In order to obtain an independent opinion as to the merits of the lease ordinance, Ford, Bacon & Davis, New York, were engaged on Aug. 3 to go over the draft. According to Mr. Twining, director of the Department of City Transit of Philadelphia, they were retained "to see that proper provisions have been made for protecting all the city's interests and also to examine it for any defects and to furnish the opinion of the firm as to the fairness and desirability of the lease from the city's and the company's standpoint." Ford, Bacon & Davis are familiar with the transit situation in Philadelphia, having taken an important part in the preparation of the original drafts submitted to the company in 1914 and 1915. They did not, however, assist in the preparation of the present draft. In concluding their report, made public on Sept. 5 by Mr. Twining, Ford, Bacon & Davis say they "believe that the present proposal constitutes a businesslike basis of contract, fair alike to the company and the city, and permitting during the long period of the lease reasonable adjustments of operating conditions, practicable regulation of rates of fare and comprehensive development and extension of both rapid transit and surface lines." In their opinion there have been secured for the city in the present proposal three fundamental and controlling advantages which eliminate the principal objections to the 1916 proposal. They recite these as follows:

First. Priority of income return on city's investment over dividends on company's stock.

Second. Avoidance of city guarantee of dividends on company's stock.

Third. Establishment of city's investment on a firm financial basis of assured income, thereby releasing the city bonds from the debt limit and thus enabling further transit or port development.

MR. TAYLOR ATTACKS LEASE

On Sept. 4 A. Merritt Taylor, former director of the Department of City Transit of Philadelphia, issued a statement attacking the terms proposed. He said that immediately after publishing the result of his partial and hasty analysis of the lease on Aug. 20 he proceeded to study the document with the utmost deliberation and care. As a result all of his former findings were confirmed and "a still more serious and amazing situation is now revealed." He charged that "under the scandalously obscure terms of the Smith lease" the city would be firmly bound to buy the property, leaseholds and franchises of the Philadelphia Rapid Transit Company and that the stockholders of that company would be paid approximately $60 a share for their stock; that the Smith lease would guarantee and firmly bind the street railway passengers in Philadelphia to pay to the stockholders of the company a 6 per cent cumulative dividend and more than $50 a share for the 600,000 shares of capital stock of the company now outstanding, and that the lease would firmly bind the street railway passengers to pay the city's full interest charge on its debt to be incurred for transit development and to repay to the city the entire cost of its high-speed system. Mr. Taylor said this last cost Mr. Twining had this year estimated to be about $90,000,000. In a plea made to the street railway passengers at the end of his statement Mr. Taylor said in part:

"The pirates have trained their guns on you and on the city of Philadelphia. The battle is on. It is up to you to stand up with me and fight for your rights."

Line to Cantonment Completed

Service Begun by Louisville Railway on Extension of Line to Camp Zachary Taylor, Two Miles South of Louisville

The Louisville (Ky.) Railway has completed, at a cost of $100,000, the extensions and additions to its lines by which it will serve Camp Zachary Taylor, the new National Army cantonment located 2 miles south of the city. Service over the line was begun on Aug. 29. At this time, only a small proportion of the 40,000 or more soldiers who will be assembled at the camp this fall had reached the scene. The Louisville Railway has not worked out complete plans for service, but a 5-cent fare will prevail.

Camp Taylor at Louisville lies along the Preston Street road for a considerable distance, and the site is passed by the Okalona line of the Louisville & Interurban Railway. New construction, which began on July 15, involved the purchase of additional right-of-way for a distance of a mile and a half; construction of the second line for a 2-mile double-track way and construction of a second piece of double tracking that extends for four-fifths of a mile into the camp itself. In all instances construction is standard and permanent. Overhead construction is of span wire type to the point where the double track enters the camp. From there on center pole construction is used.

DOUBLE TRACK INTO THE CAMP

The old loop at the edge of the city limits on the Preston, Main and Eighteenth Street line of the company has been done away with and a loop constructed at Coke's station, 2 miles out. and an existing station on the Preston Street road interurban. The double track into the camp passes this loop, and at the terminus of the inner camp line there is a second loop. The company is now erecting shelters at Coke's station and at Dumesnil station, the name given to the terminus of the camp extension. A portable substation has been established near the Coke's station loop.

For a distance of 650 ft., where the electric line passes under an overpass of the Southern Railway, there is only a single track. It is believed by Samuel Riddle, superintendent of transportation, and other officials of the Louisville Railway, that this strip of single track will not slow up service appreciably. The only way this pass could have been avoided would have been by reconstruction of the overpass to the extent of setting back the abutment, a proceeding that would have been exceedingly costly. Nachod signals will be installed at this pass to facilitate operations.

All of the regular service on the Preston Street line will be extended to the loop at Coke's station. It may be that alternate cars will continue on into the camp and take the loop at Dumesnil station. A ten-minute service will be tried at first. If this is insufficient additional motor cars will be added, running from Sixth and Main Streets to the camp and back, thus providing a five-minute service with the downtown section. Trailers will be added to the short-line cars if they prove to be needed and, if still more service is desirable, the short line will be put on a two and one-half minute basis from the Sixth and Main Street loop. On special occasions all available equipment, sufficient heretofore for any extraordinary demands, will be put into service.

Transfers to and from the line to the camp will be given to all of the cross-town lines, just as heretofore on the Preston Street line. The Preston Street interurban will continue using the line without change as to fare schedule. To ride into the central interurban station from the camp the fare will be 10 cents without transfers. In addition to the passenger traffic the same trackage will serve for the baggage and freight lines of the Louisville & Interurban. The running time from Sixth and Main Streets to the Coke's station loop will be thirty minutes, five minutes longer to the loop at Dumesnil station inside the camp. The haul from Sixth and Main Streets to Coke's station is approximately 6 miles.

Problems of operation will be met as they develop. Mr. Riddle does not expect that any difficulties will arise that cannot be adequately met. Army officers at the camp are showing every disposition to co-operate with the officials of the railway.

Agreement to Arbitrate in Knoxville

Working conditions, hours of service and wages of the employees of the Knoxville Railway & Light Company, Knoxville, Tenn., will be discussed at a meeting of officials of the company and officers of the Knoxville division, No. 767, of the Amalgamated Association of Street & Electric Railway Employees of America on or about Sept. 24. These are the main provisions of an agreement which has just been made between the parties and follows the organization of a union of the company employees in Knoxville and a week or so of informal negotiations.

The agreement to submit matters to arbitration bears the signatures of J. S. Pevear, vice-president of the American Cities Company, and J. B. Lawson, national organizer for the union. It provides for the meeting on or about the date named, but to be held at least before Oct. 1, and that such contract as may be decided on is to be retroactive to Sept. 1. If at this set conference any points arise which cannot be agreed on, arbitration will be resorted to, the company and the union each to select a member and these to select a third. If they fail so to do in two days the federal judge having jurisdiction in Knox County, Tenn., is to name the third arbitrator. The agreement which has been reached provides that the conference will "agree upon a contract which shall be mutual and acceptable to the two parties, covering details of operating conditions and wages of the members of the local division No. 767 in the employ of the company."

New Line to Rockford Cantonment

The Rockford & Interurban Railway, Rockford, Ill., is building a 2¾-mile extension to the city lines to a point on the new cantonment at Rockford, where the military authorities desire to have a depot located. The track will be constructed on a private right-of-way paralleling the Chicago, Milwaukee & Gary and the Chicago, Burlington & Quincy Railroads to the camp. For the present, only a single track will be laid, but this will be constructed with 600-ft. sidings every 2500 ft. There will be one railroad crossing at grade with the Chicago, Burlington & Quincy Railroad, which will probably be interlocked for safety. It is planned to give a ten-minute service to the camp, but the sidings are so located that a five-minute service can be maintained if it is later needed. In rush-hour periods two and three-car trains will be run to handle the traffic.

Power will be furnished by the Rockford Electric Company in the form of 600-volt direct current, direct from the power house over two 5000-circ. mil. feeder cables. It is expected that light suburban equipment will be used for the normal service and that during the rush hours interurban and city cars with trailers will be used. A waiting depot will be built on the camp grounds for the convenience of patrons. The road is expected to be in operation by Sept. 12.

Interurban Terminal for Des Moines

The Fort Dodge, Des Moines & Southern Railway, Boone, Iowa, and the Interurban Railway now have a joint terminal building in Des Moines. For some time the Fort Dodge, Des Moines & Southern Railway ran its trains into the Rock Island station, using Rock Island tracks a greater part of the way from the city limits into the depot. It now is using city railway tracks to the terminal. The Interurban Railway formerly received and discharged its passengers at the waiting station of the Des Moines City Railway.

The location of the new terminal is at Second Street and Grand Avenue, a few blocks out of the heart of the business district. The two interurbans have plans for a fine passenger and freight terminal at Second and Grand Avenue. It was expected to start construction early this summer, but the material and labor situation was so critical that the plans have been postponed to such time as conditions are more nearly normal. A structure to cost about $250,000 is planned. Pending the construction of the new terminals a temporary building is being used.

B. R. T. to Meet Car Order

The Public Service Commission for the First District of New York has been notified by the management of the Brooklyn Rapid Transit Company that it will proceed to carry out the order of the commission for the purchase of 250 additional surface cars. The company appealed to the State court for a review of the order by writ of certiorari, but, after being defeated in an effort to secure a stay, the four operating companies took the matter to the federal court, which also decided against them.

In its communication the company points out that its present action is taken under duress and fear of prosecution and is not to be regarded as admitting the validity of the commission's order. It also points out that owing to the present conditions of the market for material plans have been made to allow bidders as wide a latitude as possible in submitting proposals, but the company promises to obtain tenders as speedily as possible.

Dinner to Mr. Stearns at Milwaukee

Farewell Dinner in Honor of R. B. Stearns, Retiring Vice-President of the Milwaukee Electric Railway & Light Company

An informal dinner was tendered Robert B. Stearns, retiring vice-president of the Milwaukee Electric Railway & Light Company, Milwaukee, Wis., by the officers and staff of the company in the Red Room of the Hotel Pfister, that city, on Aug. 29. Mr. Stearns was presented with a sterling silver centerpiece, bearing the following inscription: "Presented to Robert B. Stearns by his associates in the Milwaukee Electric Railway & Light Company, commemorating his retirement as vice-president after six years of loyal and able service, Aug. 29, 1917." The presentation was made by Dr. Charles H. Lemon, chief surgeon of the company. James D. Shaw, attorney, acted as toastmaster; other speakers were James D. Mortimer, president, and Mr. Stearns.

The program and the menu were practically a facsimile of the standard transfer used by the company. In place of the regular transfer points, however, the first transfer showed the transfer points of Mr. Stearns's career. The second transfer set forth a schedule of achievements during Mr. Stearns's connection with the company at Milwaukee. The third transfer contained the menu. The fourth transfer indicated the schedule for the evening, designated as Run No. 1, setting forth the order of the speakers in the following manner: Conductor, James D. Shaw, attorney; instructor, James D. Mortimer, president; bonus committee, Dr. Charles H. Lemon, chief surgeon; farewell, R. B. Stearns, vice-president. The fifth transfer, indicated as Run No. 2, listed the executives in attendance: John I. Beggs, director; D. E. Callender, general manager of the Wisconsin Gas & Electric Company; Edwin Gruhl, assistant to the president; Charles F. Pfister, vice-president; Fred Vogel, Jr., director; G. W. Van Derzee, assistant to the vice-president; S. B. Way, vice-president and general manager. The sixth and succeeding transfers, except the last, scheduled the crew, consisting of the various departmental heads and business associates of Mr. Stearns. The last transfer set forth company activities in which Mr. Stearns took a leading part, namely, the safety movement, company section of the American Electric Railway Association, company section of the National Electric Light Association, Employees' Mutual Benefit Association and the Employees' Mutual Saving, Building & Loan Association.

In place of the usual instructions appearing on the regular transfer, there was quoted the following in the language of President Mortimer: "No man having direct charge of any street railway can ever be a hero in the eyes of the public; the only hero is the one who attacks. Mr. Stearns here has had the most difficult of tasks and, despite it all, he was never known to lose his temper or answer attacks in kind."

Instead of car to car, the transfer indicated that Mr. Stearns was transferring from Milwaukee to Boston where he assumes the office of vice-president and general manager of the Bay State Street Railway.

B. R. T. Operates to Fourteenth Street

First Section of Brooklyn Rapid Transit System of Broadway Subway Opened as Far North as Fourteenth Street

On Sept. 4 the first section of the Broadway subway of the Brooklyn Rapid Transit System was put into commission. The section is about 1½ miles in length, the northern terminus being at Union Square, Fourteenth Street and Broadway, Manhattan. Through service is now given between Union Square and Coney Island. The route is under Broadway and Canal Street, over the Manhattan Bridge to the Fourth Avenue Subway, Brooklyn, thence to Coney Island by the Sea Beach line as before.

While all the details of schedules have not yet been worked out, for the present trains will leave Union Square every three minutes during the rush hours, and at other times every three and three-quarter minutes, except between 1 and 5 a. m., when the headway will be fifteen minutes. The Sea Beach service previously given between Coney Island and Chambers Street terminal in the Municipal Building, Manhattan, has been discontinued, but passengers can reach the Chambers Street terminal by making one change of trains. The new line will probably relieve the old system of at least 15,000 persons daily in rush hours It will enable many additional Manhattan workers who reside in Brooklyn to reach their homes for a 5-cent fare.

In view of the importance of the event, the Broadway subway opening was attended by a number of public officials, and the guests were entertained by the Borough Park Heights Civic Association. The first train left Union Square at 2 p. m., and took the guests to Coney Island. It was in charge of J. J. Dempsey, superintendent of elevated lines of the Brooklyn Rapid Transit System. The trip was made in twenty-seven and one-half minutes.

Progress on the Broadway subway is such that it is expected to extend operation as far as Times Square before the end of the current year, and during 1918 it should be completed to its terminal in the Borough of Queens.

Mediation Unlikely in San Francisco

Service Suspended Labor Day—Men Now Operating Cars Make Plea for Protection

Service on the lines of the United Railroads, San Francisco, Cal., was completely suspended on Labor Day, but was resumed on Sept. 4 from 5 a. m. to 8 p. m., including twelve cars to the Union Iron Works. On Monday an attempt was made to burn the carhouse at Twenty-eighth and Valencia Streets. This piece of vandalism was frustrated by the police. Two arrests were made in connection with the plot. A hundred working car men called on the Mayor on Sept. 3 and presented a petition through a committee of five asking proper police protection.

President Lilienthal of the company met members of the grand jury on Sept. 3. No headway was made toward a settlement. Mr. Lilienthal insists there is no case for mediation. His position is that certain of the men abandoned their cars without giving any notice or making any complaint, and that their places have been filled and the company is prepared to operate full service with adequate protection from the city.

The Board of Supervisors of the city on Sept. 4 considered the request of the Labor Council that the franchises of the company be declared forfeited because of failure to operate. The Supervisors also considered on Sept. 4 a resolution asking the State Railroad Commission to investigate the finances of the United Railroads to ascertain whether the company's claim that it cannot afford to meet the demands of the strikers is justified. Supervisor Gallagher is urging a plan for the return of the strikers to work if the company recognizes their right to unionize and agrees to discuss questions of wages, etc., with them as an organized body. Five municipal buses were being run on Sept. 3 in the Sunset district to the beach and two across Golden Gate Park between the Sunset and the Richmond districts.

The grand jury committee has abandoned its strike settlement plan. Neither Mr. Lilienthal nor the Labor Council would approve the proposal. The resolution brought before the Supervisors on Sept. 4 regarding the investigation of the finances of the United Railroad, which was referred to the public utilities committee, has been adopted by that body. Service remained about two-thirds normal on Sept. 6. Cars to the Union Iron Works are withdrawn when the iron workers go to and come from work.

Mr. Lilienthal has again reiterated his previous statement that his company will not arbitrate. He says that the 700 men now employed are satisfied with their pay and working conditions. The men who quit the company did so without notice or without making complaint or demands. On that account he has declined all mediation and "shall adhere to that course to the end." He declares that at the start the men who quit the company's employ numbered 100. These were strikers. Those who quit later were forced to do so by intimidation. He further states that the company is paying all it can with a 5-cent fare. In view of the competition of the municipal lines and the jitneys it would be useless for the company to appeal for a higher fare as other companies propose doing.

All sections of the city experienced rioting and trouble on Sept. 5 and 6. The Board of Health has notified Mr. Lilienthal that he must comply with the provisions of the new State housing law in the various carhouses where carmen are quartered. This law provides that no more than twenty adults be housed in one dormitory.

The earnings of the Municipal Railway for August were $228,648, the largest month in its history except August, 1915, exposition year. The earnings on Labor Day were $11,574, the largest for any one day. Neither the municipal steam lines nor the motor buses are meeting the cost of maintenance. These services are being run simply as an accommodation.

Policemen Disciplined in Kansas City

Forty-one Patrolmen and Two Sergeants Discharged for Actions in Recent Strike

The board of police commissioners of Kansas City, Mo., on Aug. 29 discharged forty-one patrolmen and two police sergeants, who during the recent strike of the employees of the Kansas City Railways had declared that they would not protect imported strikebreakers from violence. Many of these were policemen from the station near the carhouse, where rioting occurred upon the arrival of strikebreakers. The policemen allowed the mob to assail the imported men, besiege them in the carhouse, keep food from them, and then helped to organize a "guard" to escort the men to the union station, where they were loaded on trains. At that time the policemen were asked by their commanding officer if they would protect the strikebreakers. They responded that they would not ride on cars with them. It was largely, it is said, upon the demonstration of the police force against strikebreakers that the company rescinded its tentative plans to use the new men in the strike. At that time John R. Ransom, one of the police commissioners, declared that discipline must be maintained. He stuck to his declaration that the company's property would be protected whomever it employed to run cars.

When the cases of the policemen charged with insubordination came up on Aug. 29, all the men who were accused received an opportunity to explain their stand. All who were present at the board meeting reiterated their positions that they would not ride on street cars to protect imported strikebreakers.

Much interest was shown by various elements in the prospect of the discharge of the officers. Business men urged that the men be discharged in the interests of discipline. Several local labor unions united in an alleged threat to cause a strike of 12,000 workmen if the policemen were discharged. The business agent of the Industrial Council and the president of the Business Trades Council sent a telegram to the Lieutenant Governor asking that the discharge be prevented.

The police board is appointed by the Governor, and is independent of local control.

There was no trouble following the discharge of the policemen.

Police Commissioner Ransom issued the following statement about the discharge of the patrolmen:

"The police department is employed by all the people of the city to preserve the peace and protect lives and property at all times. To accomplish this there must be obedience to orders, and no man who either is afraid to do his duty or will place his own sentiments above law and order is fitted to remain in the department.

"It is quite conceivable that men might get on the force who are in sympathy with burglars and gamblers, or other lawbreakers, and there will be no precedent for their refusal to do their duty."

Riot in Springfield.—Considerable disorder was reported from Springfield, Ill., on Sept. 3 in connection with the renewed strike of the employees of the Springfield Consolidated Railway. Several cars were demolished. Order was restored by Companies F and G of the 9th Illinois Infantry.

Strike in Jackson, Tenn.—Twenty-two motormen and conductors in the employ of the Jackson Railway & Light Company, Jackson, Tenn., went on strike on Aug. 25, demanding a ten-hour working day, a 5-cent raise on each hour and time and a half for overtime. The wage scale heretofore has been from 16 to 20 cents an hour. John Wisdom, general superintendent of the property, declared he would not deal with the strikers as a union.

One More St. Louis Hearing at Least.—No public hearings on the proposed United Railways settlement ordinances were held in St. Louis during the week ended Sept. 1. Barney L. Schwartz, chairman of the public utilities committee of the Aldermen, has announced that at least one more public hearing will be held on the ordinances. The committee plans to discuss the bills and outline the procedure to be followed in making its report, after the public hearings have been closed.

Municipal Railway Employees Strike.—The Monroe (La.) Municipal Street Railway has been tied up by a strike that started at midnight on Aug. 31. The strike is a protest on the part of the union against the action of the city government in voting to adopt one-man cars for use in Monroe. The men contend that their contract with the city calls for a motorman and conductor on each car. It is said that the city officials will take action toward operating the cars with other employees if the men who are now out do not return to work in a few days.

Subway Commission Suggested for Cleveland.—An ordinance providing for the appointment of a subway commission by the Mayor and the issue of $3,500,000 of bonds for the construction of a subway in West Superior Avenue and underground street railway terminals at the Public Square was presented to the City Council of Cleveland, Ohio, on Aug. 26, together with a petition containing more than the requisite number of names, asking for its submission to the voters, unless approved by Council. The ordinance was referred to the committee on street railways without comment.

Short Strike in Anaconda.—Following the strike of about 700 of the 2400 men employed at the Washoe smelter of the Anaconda Copper Mining Company at Anaconda, Mont., men in the employ of the railway department of the company went on strike. The trainmen are members of the Smeltermen's Union. After an interruption of railway service for several hours, the company re-established service with other members of the union. The Smeltermen's Union, acting under its agreement with the company, furnished men to run the cars.

Utah Line Changes Its Name.—By unanimous vote of the directors of the Salt Lake & Ogden Railway, Salt Lake City, Utah, the name of the line has been changed to the Bamberger Electric Railroad. The change was deemed proper by the directors for the reason that there are so many roads entering the city with Salt Lake attached to their names. The initials of the road in the future will be the B. E. The name Bamberger Electric was selected for the reason that most residents of the State know the line better by that name than by the one under which it was incorporated.

Abandonment of Line Proposed.—The North Coast Power Company, Vancouver, Wash., plans to abandon its electric railway between Centralia and Chehalis on account of the greatly increased cost of operation and the decrease in receipts. W. A. Schoel, manager, states that last year the company paid $10,000 in taxes, a $250 franchise tax in both Centralia and Chehalis, $4,445 for paving in Chehalis and $500 for repairing the fair grounds crossing. The company's payroll for the railway department averaged $900 a month. According to Mr. Schoel, jitney traffic between the two cities has affected the receipts of the railway to such an extent that only a comparatively small part of the expenditure is recovered and the abandonment of the line has become necessary.

Street Railway Commissioner Appointed at Cincinnati.—The appointment of C. W. Culkins as Street Railway Commissioner at Cincinnati, Ohio, was unanimously approved by the Board of Rapid Transit Commissioners on Aug. 30. Mr. Culkins took up his duties on the following day, with offices in the city hall. The salary has been fixed at $7,500 a year. Mr. Culkins was formerly executive secretary of the Chamber of Commerce and made an excellent record in that position. His appointment was made by Mayor Puchta some time ago. His work will be to administer the duties of the Mayor and the Rapid Transit Commission under the provisions of the rapid transit loop lease ordinance, receive complaints and make recommendations in regard to service, extensions and other features of street railway service.

Busy Week in Massachusetts Revenue Affairs.—P. F. Sullivan, president of the Bay State Street Railway, and M. C. Brush, president of the Boston Elevated Railway, testified at hearings in Boston on Sept. 5 and 6 regarding the general problem of securing more adequate revenue for the electric railways of the State in an investigation being conducted by a special legislative recess commission. On Sept. 6 the Public Service Commission of Massachusetts heard the Bay State company in detail regarding proposed standardization of workmen's fare tickets on the system. The speakers in general advocated positive measures leading toward the relief of the companies, with provision for more direct institution of higher fares in certain cases. An abstract of President Brush's remarks is published elsewhere this week. Those by President Sullivan will be summarized in the next issue.

Program of Association Meeting

National Safety Council

The sixth annual safety congress of the National Safety Council will be held at the Hotel Astor, New York, N. Y., on Sept. 11, 12, 13 and 14. There will be two electric railway sectional meetings on Sept. 13, one in the morning and one in the afternoon. The chairman of this meeting is E. C. Spring, superintendent of transportation of the Lehigh Valley Transit Company, Allentown, Pa.; the vice-president, H. B. Potter, assistant to the president of the Boston (Mass.) Elevated Railway the secretary, J. H. Harvey, superintendent of efficiency of the Kansas City (Mo.) Railways. The following addresses are to be presented:

"Prevention of Accidents Between Street Cars and Automobiles."

"What Does the Safety Worker Want the President of His Company to Know?"

"Co-operation Between the Claim Department and the Transportation Department."

"Some Methods of Securing and Sustaining the Co-operation of the Trainmen in Accident Prevention Work."

There will be a public utilities sectional meeting on Sept. 13. This will be devoted to talks on the promotion of safety in the telephone, gas and electric light and power fields.

There will also be a sectional meeting of the car builders on the afternoon of Sept. 14. The addresses will have to do with the prevention of accidents in the building of cars, on the switching and transfer tables and on the shipping tracks.

There will be several sessions at which the promotion of safety on steam railroads will be considered.

Financial and Corporate

Annual Report

Interborough Rapid Transit Company

The comparative income statement of the Interborough Rapid Transit Company, New York, N. Y., for the years ended June 30, 1916 and 1917, follows:

	1917		1916	
	Amount	Per Cent	Amount	Per Cent
Revenue from transportation	$38,177,195	95.76	$34,182,100	95.24
Other operat.ng revenue	1,688,951	4.24	1,709,428	4.76
Gross operating revenue	$39,866 146	100.00	$35,891 528	100.00
Maintenance of way and structures—actual	$1,801,474	4.52	$1,539,217	4.29
Maintenance of equipment—actual	2,121,721	5.32	2,132 339	5.94
Total maintenance	$3,923,195	9.84	$3,671.556	10.23
Maintenance of way and structures—depreciation	$104,030	0.26	$288,103	0.80
Maintenance of equipment—depreciation	398,144	1.00	331.122	0.92
Total depreciation	$502,174	1.26	$619,225	1.72
Total "maintenance" appropr.ation	$4,425 369	11.10	$4,290,781	11.95
Traffic expenses	378	....	543	....
Transportation expenses	10,376,612	26.03	8,330 358	23.22
Acc.dents and damages	661,023	1.66	551,886	1.54
General expenses	1,120,251	2.81	834,598	2.32
Total operating expenses	$16,583,293	41.60	$14,008,166	39.03
Net operating revenue	$23,282,853	58.40	$21,883,362	60.97
Non-operating income	559,076	1.40	580 831	1.62
Gross income	$23,841,929	59.80	$22,464,193	62.59
Deductions from income:				
Taxes	$2,871,385	7.20	$2,341,607	6.53
Interest on bonds (rental)	4,183,995	10.50	4,085,440	11.38
Manhattan div.dends (rental)	4,200,000	10.53	4,200,000	11.70
Manhattan cash rental	35,000	0.09	35,000	0.10
Interest on notes and 5 per cent bonds	3,572,515	8.96	3,043,630	8.48
Amortization	625	....	....	....
Interest on unfunded debt	37,600	0.09	313	....
Other rent deductions	36,554	0.09	37,500	0.10
Interest on investment of depreciation reserve	18,897	0.05	7,376	0.02
Total	$14,956,571	37.51	$13,750,866	38.31
Net corporate income	$8,885,358	22.29	$8,813,327	24.28

The gross operating revenue for the year ended June 30, 1917, increased $3,974,618 or 11.07 per cent, the result of a gain on the subway division of $2,097.640 or 10.83 per cent and on the Manhattan Railway or elevated division of $1,876,978 or 11.35 per cent. The operating expenses increased $2,575,127 or 18.38 per cent. Of this $1,242,410 was on the subway division, caused by an increase of 1,407,104 in the car mileage operated, including the new lines opened under Contract No. 3, the general tendency to increased cost of labor and materials and an increase of 16.48 in the number of miles of road operated at the close of the year. On the Manhattan division the increase of $1,322,716 reflects the increasing cost of labor and material, the operation of the third tracks throughout the year against operation thereof for five and one-half months of the previous fiscal year, and the increase of 2,683.653 in car miles operated. The general increases in wages amounted to approximately $1,600,000.

The net operating revenue showed an increase of $1,399,490 or 6.39 per cent, the result of a gain on the subway division of $855,229 or 6.85 per cent and a gain on the Manhattan Railway division of $544,261 or 5.79 per cent. The total amount of taxes increased $529,778 or 22.62 per cent. The subway division showed an increase of $297.881 or 59.15 per cent, as the result of the increase in the rate of federal income tax and the adoption of the new federal capital stock and excess profits taxes. The Manhattan Railway division showed an increase of $231,896 or 12.61 per cent, due to the increase in the special franchise tax, the city and State taxes on capital and earnings, real estate taxes and also to the increased rate of the federal income tax and the adoption of the excess profits tax by the federal government.

The income from operation showed a gain of $869,712 or 4.45 per cent. This came from an increase on the subway division of $557,347 or 4.65 per cent, and an increase on the Manhattan Railway division of $312,365 or 4.13 per cent. The non-operating income decreased $21,754 or 3.74 per cent, due principally to the decrease in interest on bank balances and loans, reflecting the temporary advances from general cash for the purposes of construction of Manhattan third tracks and power plant improvements.

The gross income gained $847,958 or 4.21 per cent, the result of a gain on the subway division of $573,384 or 4.61 per cent, and a gain on the Manhattan Railway division of $274,574 or 3.57 per cent. Income deductions increased $675,927 or 5.92 per cent. The surplus over dividends of 20 per cent on the capital stock was $2,102,654, a gain of $210,639 over the previous year.

The number of passengers carried in 1917 was 763,574,085 compared with 683,752,114 the year before, an increase of 79.821,971 or 11.67 per cent. This came from a gain on the subway division of 42.688,674 or 11.49 per cent, and on the Manhattan Railway division of 37,133,297 or 11.89 per cent. The increase in traffic the previous year was 36,373,848. Deducting the increase in the number of passengers carried on the new lines constructed and equipped under Contract No. 3 and placed in operation, there remains an increase of 73,191,540 passengers for the old system. This is 10.75 per cent greater than the passenger traffic for the old system in 1916, when there was included five and one-half months' operation of the new elevated third tracks, and it compares with an average annual increase of 5.69 per cent for the last ten years.

The average increase per diem was 223.809 passengers, while the daily increase in gross earnings was $11,158, against an increase in operating expenses of $7,160. An analysis of the traffic figures shows a fairly even distribution of the increase over the entire period, indicating that it is not attributable to unusual causes but that it represents a permanent growth due to improved facilities and greater travel per capita.

Betterments during the year showed a net increase in the capital account of $29,811,729. They include the company's contribution toward construction of the new subway lines, extensions and additions to the shop, power house and station facilities, additional emergency exits, ventilating shafts, duct lines and cable connections on the old system, enlargement of power house units, and the construction and equipping of new sub-stations, feeder cables, passenger stations, switch towers, signal mains and other auxiliary equipment forming part of the new system.

The injuries and damages record of the company for the last year follows:

	1917	1916	Increase
Claims, suits and judgments	$585,981	$476,184	$109,797
Expenses	255,195	210,782	44,413
	$841,176	$686,966	$154,210

The increase in expenditures for accidents was due to conditions arising out of the strike and efforts to prevent litigation by prompt settlement of claims. The total disbursements for injuries and damages and expenses amounted to 2.25 per cent of the gross passenger receipts, an increase of 0.34 per cent over 1916.

The company has acquired the street easements of light, air and access required for third tracking improvements upon its Manhattan Railway lines covering approximately 95 per cent of the entire frontage involved. Pursuant to the decisions of the courts, it was necessary to institute condemnation proceedings covering 29 per cent of the entire frontage. With the exception of 2½ per cent of this frontage, this litigation already has been disposed of by settlement, and in no case has a judgment been obtained against the company, excepting in proceedings brought to effect settlements previously entered into. The aggregate cost of acquiring these easements has been $3.091,138. In view of the relatively small frontage now outstanding, it seems probable that the total cost will be materially less than the original estimate of $4,000,000.

Relief a Matter of Time

Present Situation Will Curb Public Belief That It Is Entitled to Secure Constantly Lowered Utility Prices

Henry L. Doherty, chairman of the board of directors of the Toledo Railways & Light Company, Toledo, Ohio, recently expressed the opinion that relief from the present situation confronting public utilities is purely a matter of time. In discussing this point Mr. Doherty said:

"While the present situation in regard to public utilities or any other branch of business where the selling price is more or less fixed is annoying, yet I feel that the period through which we are now passing will prove to be a healthy one for public utility enterprises and public utility securities.

"It is somewhat disturbing to public utilities to see everything that they buy advanced at will over night, and without review of any public body, while they in turn can only get an increased price for their commodity after a protracted public hearing by a State public utility commission or some similar governmental agency.

"Constant improvement in the public utility field of operation, and especially the ability to generate power at a lower and lower cost, has brought about constant reductions in price, until the public had begun to look for changes in price only in a downward direction. The present situation will require a resurvey of the public utility company from a new angle.

"Relief from the present situation is purely a matter of time. The public utility companies have been performing a service at a price far below the value of this service to the consumer; therefore, there is no danger of loss of trade by higher prices. The public utilities commissions realize the situation. Their attitude is constructive. Delay is our only complaint.

"The present situation will curb public opinion in the belief that it is entitled to a constant lowering of prices and will also make possible reforms in the method of charging."

Indiana Company Defaults

Fort Wayne & Northern Indiana Traction Company Unable to Meet Interest Payments Due on Sept. 1—Hope for Readjustment Without Receiver—Jitney a Contributing Factor

A circular sent out to the bondholders of the Fort Wayne & Northern Indiana Traction Company, Fort Wayne, Ind., announced that it would be impossible to pay interest due on Sept. 1 on the following securities: $1,059,000 of Fort Wayne & Northern Indiana Traction Company first and refunding mortgage gold 5's, $6,966,000 of Fort Wayne & Wabash Valley Traction Company first consolidated mortgage 5's, $1,200,000 of collateral trust 6 per cent gold notes. Security holders are urged to deposit their securities with a protective committee to be composed of some or all of the following, together with such others as may be chosen to represent large interests: William A. Tucker, Jay Cooke, Percy M. Chandler, J. Levering Jones and Randal Morgan. It is necessary that additional capital be secured and that the bonded debt of the parent company and certain of the constituent companies be reduced. The companies particularly named are the Fort Wayne & Wabash Valley Traction Company and the Lafayette & Logansport Traction Company. The difficulties in which the company finds itself are due to a combination of circumstances. The Bluffton accident, damage resulting from the 1913 flood, the appearance of the jitney in Fort Wayne, the competition of the city of Fort Wayne in the lighting field and the generally increased operating expenses are all contributing causes. It is hoped that the necessity for the appointment of a receiver may be avoided.

Bay State Street Railway, Boston, Mass.—Kidder, Peabody & Company and the Old Colony Trust Company, Boston, Mass., are offering, to yield 6¾ per cent, $1,308,000 of 6 per cent gold equipment notes of the Bay State Street Railway approved by the Massachusetts Public Service Commission. The notes are dated Aug. 1, 1917. This issue provides in part for the payment for 200 new semi-convertible pay-enter forty-four seat passenger cars and equipment, costing $1,631,000. The Old Colony Trust Company is trustee under the mortgage securing the notes. The notes are due serially, $131,000 on Aug. 1, 1918-1926, inclusive, and $129,000 in 1927, but are callable on any interest date at 100 and interest on six weeks' notice.

Buffalo (N. Y.) Southern Railway.—The bondholders of the Buffalo Southern Railway, operating between Buffalo, Hamburg and Orchard Park, are making an effort to reorganize the property and extend the line to East Aurora. Details of the plan of reorganization were to be presented to the commission at a hearing to be held in Buffalo on Sept. 7.

Manchester Traction, Light & Power Company, Manchester, N. H.—William A. Read & Company, New York, N. Y., and Tucker, Anthony & Company, Boston, Mass., are offering at 93½ and interest $902,000 of first refunding mortgage sinking fund 5 per cent gold bonds of the Manchester Traction, Light & Power Company, dated Aug. 1, 1917, due on Aug. 1, 1952. The authorized issue is $15,000,000. The present issue is $902,000. The proceeds of the present issue will be used to retire floating debt and provide for new construction and the development of valuable water powers, transmission lines, etc. Except for certain property of a value not in excess of $30,000 held for possible sale, the bonds will be secured by a mortgage on the entire property and assets, subject only to $2,000,000 of existing underlying liens, which the company agrees to pay at maturity and not to extend on or renew. In April, 1921, this issue will thus become a first mortgage on all property now owned.

Newport News & Hampton Railway, Gas & Electric Company, Newport News, Va.—This company has filed a notice of increase in its capitalization from $2,375,000 to $4,000,000 to provide for extensions and improvements to its system.

Orleans-Kenner Electric Railway, New Orleans, La.—The property of the Orleans-Kenner Electric Railway will be sold under foreclosure at New Orleans on Sept. 20 unless payment of obligations of the company now in default is made in the meantime. Principal and interest on indebtedness now overdue are said to total $284,018. William C. Dufour, of the firm of Farrar, Goldberg & Dufour, attorney for Leigh Carroll, receiver of the railway, has been appointed special master by Judge Foster to make the sale.

Philadelphia Company, Pittsburgh, Pa.—The committee of bankers representing the sinking fund and redemption plan of the Philadelphia Company first mortgage and collateral trust gold bonds due on March 1, 1949, announces that the bonds of this issue duly stamped as provided in the plan are now ready for delivery in exchange for certificates of deposit at the office of the depositary or the agent for the depositary which issued the certificates. The bankers representing the committee are Ladenburg, Thalmann & Company, Blair & Company, and Hayden, Stone & Company.

Salt Lake & Ogden Railway, Salt Lake City, Utah.—The name of the Salt Lake & Ogden Railway has been changed to the Bamberger Electric Railroad.

Seattle (Wash.) Municipal Railway.—It is proposed to finance a further extension of Division A of the Seattle Municipal Railway into Ballard or purchase the Loyal Railway, Ballard, with the proceeds of an issue of utility bonds. An ordinance to this effect has been introduced in the City Council by Councilman Oliver T. Erickson. The proposition was referred to the public utilities and finance committees of the Council. It is proposed that the bonds shall bear 6 per cent interest, the principal and interest to be payable out of earnings of the line. The Council recently authorized the extension of Division A to the intersection of Leary Avenue and Market Street in Ballard.

Third Avenue Railway, New York, N. Y.—The directors of the Third Avenue Railway have decided to pay on Oct. 1 interest of 1¼ per cent on the company's adjustment income bonds for the three months from April 1 to June 30.

Electric Railway Monthly Earnings

ATLANTIC SHORE RAILWAY, SANFORD, ME.

Period		Operating Revenue	Operating Expenses	Operating Income	Fixed Charges	Net Income
1m., July,	'17	$23,326	$13,048	$10,278	$431	$9,847
1 " "	'16	44,761	29,256	15,505	650	14,855

BANGOR RAILWAY & ELECTRIC COMPANY, BANGOR, ME.

Period		Operating Revenue	Operating Expenses	Operating Income	Fixed Charges	Net Income
1m., July,	'17	$71,350	•$41,322	$30,028	$18,794	$11,234
1 " "	'16	72,642	•39,318	33,324	17,632	15,692
12 " "	'17	861,585	•490,717	370,868	222,633	148,235
12 " "	'16	805,386	•433,219	372,167	211,578	160,589

CHATTANOOGA RAILWAY & LIGHT COMPANY, CHATTANOOGA, TENN.

Period		Operating Revenue	Operating Expenses	Operating Income	Fixed Charges	Net Income
1m., July,	'17	$139,345	•$90,573	$48,772	$29,835	$18,937
1 " "	'16	102,884	•65,613	37,271	30,067	7,204
12 " "	'17	1,337,254	•932,375	404,879	357,145	47,734
12 " "	'16	1,195,120	•750,209	444,911	357,072	87,839

CITIES SERVICE COMPANY, NEW YORK, N. Y.

Period		Operating Revenue	Operating Expenses	Operating Income	Fixed Charges	Net Income
1m., July,	'17	$1,365,312	$34,011	$1,331,301	$229	$1,331,072
1 " "	'16	672,190	20,033	652,157	10,470	641,687
12 " "	'17	16,559,106	314,280	16,244,826	3,759	16,241,067
12 " "	'16	6,833,862	209,504	6,624,358	461,115	6,163,243

COLUMBUS RAILWAY, POWER & LIGHT COMPANY, COLUMBUS, OHIO

Period		Operating Revenue	Operating Expenses	Operating Income	Fixed Charges	Net Income
1m., July,	'17	$320,953	•$240,374	$80,579	$47,540	$33,039
1 " "	'16	287,226	•173,447	113,779	42,862	70,917
12 " "	'17	3,781,218	•2,541,200	1,240,018	535,959	704,059
12 " "	'16	3,354,689	•1,961,205	1,393,484	504,364	889,120

COMMONWEALTH POWER, RAILWAY & LIGHT COMPANY, GRAND RAPIDS, MICH.

Period		Operating Revenue	Operating Expenses	Operating Income	Fixed Charges	Net Income
1m., July,	'17	$1,586,891	•$958,491	$628,400	$445,263	$183,137
1 " "	'16	1,379,381	•764,743	614,638	417,865	196,773
12 " "	'17	18,355,019	•10,773,757	7,581,262	5,138,542	2,442,720
12 " "	'16	16,009,772	•8,542,235	7,467,537	4,885,185	2,582,352

CUMBERLAND COUNTY POWER & LIGHT COMPANY, PORTLAND, ME.

Period		Operating Revenue	Operating Expenses	Operating Income	Fixed Charges	Net Income
1m., July,	'17	$308,571	•$183,736	$124,835	$66,823	$58,012
1 " "	'16	264,023	•159,786	104,237	69,423	34,814
12 " "	'17	3,019,819	•1,983,379	1,036,440	812,510	223,930
12 " "	'16	2,761,786	•1,653,046	1,108,740	794,467	314,273

HUDSON & MANHATTAN RAILROAD, NEW YORK, N. Y.

Period		Operating Revenue	Operating Expenses	Operating Income	Fixed Charges	Net Income
1m., July,	'17	$488,701	•$236,385	$252,316	$217,355	$34,961
1 " "	'16	449,094	•203,770	245,324	214,298	31,026

LEWISTON, AUGUSTA & WATERVILLE STREET RAILWAY, LEWISTON, ME.

Period		Operating Revenue	Operating Expenses	Operating Income	Fixed Charges	Net Income
1m., July,	'17	$99,449	•$62,693	$36,756	$15,570	$21,186
1 " "	'16	83,759	•51,196	32,563	15,214	17,349
12 " "	'17	861,823	•637,770	224,053	185,042	39,011
12 " "	'16	772,132	•508,869	263,263	191,518	71,745

NASHVILLE RAILWAY & LIGHT COMPANY, NASHVILLE, TENN.

Period		Operating Revenue	Operating Expenses	Operating Income	Fixed Charges	Net Income
1m., July,	'17	$197,671	•$131,481	$66,190	$41,343	$24,847
1 " "	'16	199,043	•125,137	73,906	42,248	31,658
12 " "	'17	2,430,215	•1,535,677	894,538	496,071	398,467
12 " "	'16	2,283,640	•1,409,218	874,422	514,590	359,832

NORTHERN OHIO TRACTION & LIGHT COMPANY, AKRON, OHIO

Period		Operating Revenue	Operating Expenses	Operating Income	Fixed Charges	Net Income
1m., June,	'17	$520,691	$332,701	$187,990	$80,992	$106,998
1 " "	'16	438,871	222,706	216,165	94,685	121,480
6 " "	'17	3,073,752	1,875,814	1,197,938	494,775	703,163
6 " "	'16	2,379,499	1,159,645	1,219,854	579,295	640,559

PHILADELPHIA (PA.) RAPID TRANSIT CO.

Period		Operating Revenue	Operating Expenses	Operating Income	Fixed Charges	Net Income
1m., July,	'17	$2,437,393	$1,429,475	$1,007,918	$811,330	$196,588
1 " "	'16	2,214,928	1,221,475	993,453	815,267	178,186

PHILADELPHIA & WESTERN RAILWAY, UPPER DARBY, PA.

Period		Operating Revenue	Operating Expenses	Operating Income	Fixed Charges	Net Income
1m., July,	'17	$55,775	$27,335	$28,440	$13,019	$15,421
1 " "	'16	46,833	21,257	25,576	12,557	13,019
12 " "	'17	547,078	272,848	274,230	150,934	123,296
12 " "	'16	497,130	237,413	259,717	150,391	109,326

PORTLAND RAILWAY, LIGHT & POWER COMPANY, PORTLAND, ORE.

Period		Operating Revenue	Operating Expenses	Operating Income	Fixed Charges	Net Income
1m., July,	'17	$511,624	•$279,043	$232,581	$177,586	$54,995
1 " "	'16	448,219	•255,256	192,963	181,780	11,183
12 " "	'17	5,727,598	•3,093,915	2,633,683	2,169,583	464,100
12 " "	'16	5,437,240	•3,069,517	2,367,723	2,189,891	177,832

PUGET SOUND TRACTION, LIGHT & POWER COMPANY, SEATTLE, WASH.

Period		Operating Revenue	Operating Expenses	Operating Income	Fixed Charges	Net Income
1m., June,	'17	$755,872	•$454,318	$301,554	$191,438	$110,116
1 " "	'16	632,890	•408,443	224,447	184,651	39,796
12 " "	'17	8,812,115	•5,336,144	3,475,971	2,255,365	1,220,606
12 " "	'16	7,710,458	•4,937,933	2,772,525	2,199,374	573,151

REPUBLIC RAILWAY & LIGHT COMPANY, YOUNGSTOWN, OHIO

Period		Operating Revenue	Operating Expenses	Operating Income	Fixed Charges	Net Income
1m., July,	'17	$388,002	•$257,983	$130,019	$110,178	‡$30,185
1 " "	'16	326,707	•196,867	129,840	94,773	‡35,391
12 " "	'17	4,344,363	•2,749,919	1,594,444	1,234,765	‡402,870
12 " "	'16	3,674,096	•2,165,626	1,508,470	1,078,359	‡442,491

TWIN CITY RAPID TRANSIT COMPANY, MINNEAPOLIS, MINN.

Period		Operating Revenue	Operating Expenses	Operating Income	Fixed Charges	Net Income
1m., July,	'17	$858,177	$567,607	$290,570	$150,671	$139,899
1 " "	'16	880,859	520,157	360,702	145,046	215,656
7 " "	'17	6,034,121	3,975,678	2,058,443	1,026,682	1,031,761
7 " "	'16	5,890,274	3,662,780	2,227,494	998,433	1,229,061

•Includes taxes. ‡Includes non-operating income.

Traffic and Transportation

Buffalo Traffic Recommendations

Report of Inspector Barnes Presented to Commission—Of Forty-six Recommendations Made Many Have Already Been Put Into Effect

Charles R. Barnes, electric railway inspector for the Public Service Commission of the Second District of New York, who made a survey of traffic conditions on the lines of the International Railway, Buffalo, from March 15 to May 18, 1917, has submitted his report to the commission. Of the forty-six recommendations made by Mr. Barnes many have already been put into effect by the company. With the exception of calling attention to the urgent need of additional equipment, the report recommended only minor changes in car routes; changes in the methods of loading passengers in congested industrial centers; the construction of short stretches of track to connect various lines and the speeding up of traffic by the use of the skip-stop plan.

The International Railway has already placed orders for 100 new cars for service on its city lines. These cars will be of the front-entrance and center-exit type and will be delivered within the next sixty days. Other new equipment recommended by Mr. Barnes includes four additional snow sweepers and additional double-truck snow plows.

Among the recommendations which have already been adopted by the company are the creation of a department of car cleaning and sanitation; the use of Mazda lamps for car lighting; the reduction of the number of car stops through the skip-stop plan; the immediate repair of cars with flat wheels and the adoption of a new heating system. Plans have also been made by the company to reroute several lines so as to eliminate congestion in the business district.

SUGGESTIONS MADE IN THE REPORT

Among other recommendations Mr. Barnes suggests the following:

That hand brakes be used on some portion of each trip to insure their being in proper working order in case of failure of air brakes.

That all cars be overhauled on a proper mileage basis. This recommendation also contemplates improved condition of equipment and general appearance of cars.

That temporary emergency wagons be placed in outlying carhouses during unusually severe winter weather to supplement the work of the present equipment.

That not less than twenty-seven additional telephones be installed for the use of train crews.

That daily reports or logs of the power department be revised and rearranged.

That a gasoline car be supplied to the power department to accommodate at least two repair men and a kit of emergency repair tools, thereby reducing the duration of delays from power interruption.

That the use of automatic track switches be extended to facilitate car movement.

That special car service be made available for employees in congested industrial districts and special loading facilities, including the construction of loading stations, be provided at several industrial centers.

That in the congested retail shopping district additional tracks be laid at Shelton Square so that additional cars can be loaded at the same time, and that a shelter roof be constructed over this island of safety.

Application has already been made to the City Council by the company for permission to lay tracks around the Soldiers' Monument in Lafayette Square so as to provide better terminal facilities for the Broadway line and thereby remove that line from Washington Street, which is now badly congested. The William and Clinton lines will also be removed from Washington Street by rerouting them over other East Side streets so as to make their Main Street connections. The commission recommends other rerouting plans which would relieve the congestion in Main Street.

It is suggested that passengers be allowed to board cars of the near-side pay-as-you-enter type by both front doors, especially during the rush hour. One door is now used for the entrance and the other for the exit.

The commission directs that no cars be turned back before reaching their destinations and that car signs shall not be changed before the car reaches its destination. Cars marked "Carhouse" and bound for the carhouse should be required to carry passengers and should return to the carhouse over some street other than Main Street. No work or utility cars should be allowed in the business section during rush hours.

It is pointed out that the number of transfers issued has been reduced materially in recent years by reason of the connection of several lines making through routes, but the report states that the company could further reduce the number of transfers by connecting additional single-end lines.

Touching upon the financial condition of the company the report says the earnings per capita and per car-mile compare favorably with those of other companies and indicate a prosperous financial condition. It is also pointed out that while capital investment and increased operating expense should be considered, they should not be the controlling factors, as the financial condition of the company is such that it can furnish additional service. It is then shown that the general business prosperity during 1916 was reflected in increased earnings per car-mile, the earnings for 1915 being 31.70 cents and those for 1916 33.74 cents.

Springfield Fare Hearing

Massachusetts Public Service Commission Hears Petition for More Revenue by Introduction of Two Fare Units

A hearing was held before the Public Service Commission of Massachusetts on the petition of the Springfield Street Railway for authority to increase its revenue by introducing two fare units. The proposed plan would divide the Springfield territory into two 5-cent zones and increase the fare in the other zones to 6 cents. The application of this plan in Springfield was referred to in the ELECTRIC RAILWAY JOURNAL for Aug. 4, page 204. The new 5-cent zones are to be about 2.5 miles wide measured radially from the center of the business district.

The present single-fare zones are unusually large and embrace not only Springfield and West Springfield, but also parts of several neighboring towns, extending about 7 miles from the heart of the city. Much of the outlying territory is thinly settled, the population density being 2190 as compared with 6400 for New Haven's 5-cent zone, 10,390 for Fall River, 7200 for Lowell, 8400 for New Bedford, 4700 for Worcester and 6410 for Manchester, N. H.

Bentley W. Warren, counsel for the associated railways of the State, represented the company. He said that during the seven months from January to August, 1917, the road had failed by about $48,000 to earn its fixed charges. In July the deficiency was $6,752, and that month is regarded as usually the most profitable of the year. Mr. Warren said the main issue was the method by which the needed revenue shall be realized. It was at first suggested that a flat increase from 5 cents to 6 cents for the whole territory be put into effect. This was carefully studied, but finally rejected. One objection to a general increase is the fact that a large proportion of the company's patrons are short-ride passengers, who would be affected more than those in territory where the average ride is longer.

It was believed that a 20 per cent increase would not furnish enough added revenue. Last year about 44,000,000 passengers were carried. A 10 per cent loss in patronage was estimated if a 6-cent fare were instituted. This would leave 39,600,000 passengers to pay the increased rate, giving the company $396,000 additional revenue. On the other hand, the loss of 4,400,000 passengers at 5 cents would take away $220,000 of that increase, leaving $176,000 net increase. This was said not to be sufficient.

Touching on the capital aspects of the case, Mr. Warren stated that for every share $118.98 had been paid into the treasury. The present capital stock is $4,654,700, the stockholders having paid $883,750 in premiums. Some of the stock was bought at as high as $170. The company paid an 8-per cent dividend for several years up to 1909; then 7 per cent for four years, and 6.5 per cent until Dec. 31, 1916. For 1917 no dividend has been paid on the common stock.

City and town officials at the hearing voiced their objection to the mode of dividing the territory into zones, claiming discrimination against local interests.

Changes in Harrisburg Service

Pennsylvania Commission Makes Several Recommendations to Company for Careful Consideration

As a result of the complaints made by the Harrisburg Railways against sixty-seven jitney operators in that city, the Public Service Commission of Pennsylvania has suggested that several changes be made in the transportation service given by that company. The commission's investigation into this matter was referred to in the ELECTRIC RAILWAY JOURNAL for Aug. 25, page 334. The commission has made ten recommendations for changes in the routing and operation of the cars in the city and suburbs and asks the co-operation of the company in the improvement of its service. It desires the company to make and submit studies, plans and estimates of the cost relative to the suggested changes, which, stated in brief, are as follows:

General improvement of Steelton service during rush hours; development of the Nineteenth Street route to Steelton; providing more cars for Steelton during rush hours; building of direct line to Steelton via Second Street.

Rerouting and running cars both ways on North Third Street.

The relocation of tracks in the Capitol Park zone.

Building of new line on Herr Street through the subway under the Pennsylvania Railroad to serve that section of the Hill.

Double-tracking of proposed Walnut Street or State Street viaduct.

Speeding up of cars on lines where traffic is now impeded by congestion and too frequent stops.

Roadbed and tracks to be made the subject of immediate examination in places and number of new cars it is proposed to purchase to be subject of report to commission.

Plan of changes contemplated in Market Square and center of city when Valley Railways terminal is built to be furnished the commission.

Study of widening of Market Street subway recommended.

Plan for general improvement of service in all parts of city to be submitted to the commission.

Frank B. Musser, president of the Harrisburg Railways, after receiving the suggestions from the commission, said that the company will co-operate with the State in making whatever changes can be made immediately looking toward the improvement of the service and that the other points outlined will be made subjects of careful study. Conferences with the commission will be arranged as soon as possible. The company will depend for advice largely upon the report of Bion J. Arnold, who has been working on these problems for several months and whose report will soon be ready.

Six-Cent Fare in Pottsville

The Eastern Pennsylvania Railways, Pottsville, Pa., began charging an additional cent on Aug. 30 according to the terms of its application filed with the Public Service Commission for authority to raise its rates. The company advertised its need for more revenue before the effective date of the increase in a publicity campaign referred to recently in the ELECTRIC RAILWAY JOURNAL.

Soon after the first 6-cent fares were collected officials of St. Clair, a borough of Pottsville, ordered a portion of the tracks taken up to prevent cars from running through that town, claiming that an agreement stipulates that no more than a 5-cent fare shall be charged between St. Clair and Pottsville. Attorneys for the Eastern Pennsylvania Railways are preparing an appeal to court for an injunction to prevent interference with the service.

Ohio Roads Meet Opposition

Transfer of Milk to Freight Cars Opposed—Applications for Higher Mileage Rates May Also Be Contested

The promulgation of new schedules increasing the rate of passenger fares and eliminating the transportation of milk from passenger cars has resulted in interesting complications before the Ohio Public Utilities Commission. Municipal and civic organizations have entered protests against the proposed change in milk transportation and threatened opposition to increased passenger fares, if the new plan of carrying milk is put into effect.

As stated in the ELECTRIC RAILWAY JOURNAL for Sept 1, page 374, the Western Ohio Railway Company has already received authority to increase its passenger rates to a basis of 2½ cents a mile. The Cleveland, Southwestern & Columbus has filed new schedules with fares fixed upon the same basis and the Northern Ohio Traction & Light Company has asked the privilege of increasing its rate on round-trip tickets from 1¾ cents to 2 cents a mile. From this it has been concluded that most, if not all, the electric roads in the State will eventually file new schedules providing for an increase in fare, because of the excessive cost of materials, equipment and labor.

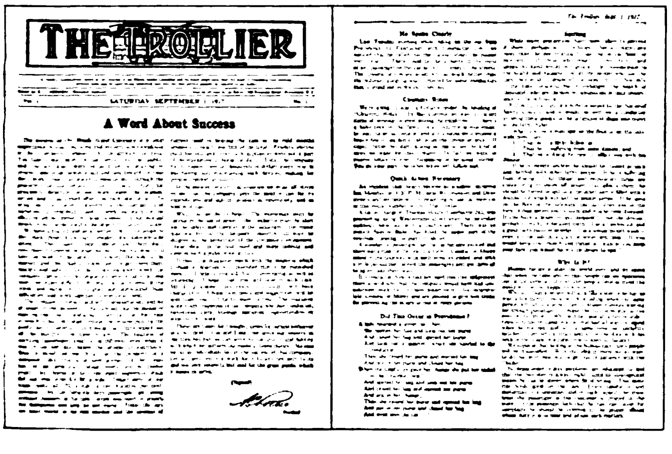
The Ohio Electric Railway, Springfield, has asked the approval of the commission of its plan to eliminate the transportation of milk from passenger cars, thus limiting that business entirely to freight cars. Towns which have been served by this road are seriously objecting to the change, and the Ohio branch of the Council of National Defense has also made known its opposition to a change of that kind at this time, as it is feared it will result in the waste of milk through delays in the freight service.

It is thought that the request made by the Ohio Electric Railway may be followed by similar ones from other electric and steam roads. This, it is said, would mean a serious situation if the requests are granted.

"The Trollier" Started in Rhode Island

The Rhode Island Company, Providence, R. I., has just issued the first number of *The Trollier*, a weekly publication in the interest of the company and its employees, "that the bond of friendship existing between them may be more firmly cemented and the best service possible be insured to the public." It is edited by E. J. Cooney, executive assistant.

The first issue contains a statement from A. E. Potter, president of the company, in regard to the opportunity for employees to become successful through helping the company to secure success. Other articles deal with matters of news and points in which the employees should have or should acquire an interest.


THE TROLLIER

A Word About Success

SPECIMEN PAGES OF RHODE ISLAND COMPANY'S BULLETIN

Later on the scope of the publication will be widened considerably, but for the present the issues will be wholly in the interest of the employees. From time to time, however, the company expects to issue circular matter on various topics in addition to the weekly.

Automatic Coin Registers in Chattanooga.—The Chattanooga Railway & Light Company, Chattanooga, Tenn., is putting the Rooke automatic register into use on all its lines. The company used advertisements in the local papers with illustrations to instruct its patrons in the use of the new system.

D. U. R. Would Extend Skip-Stop Territory.—E. J. Burdick, assistant general manager of the Detroit (Mich.) United Railway, has written the councils of Hamtramck and St. Clair Heights for permission to put the skip-stop plan of operation into effect in conjunction with the permission granted by the Detroit City Council.

Package Delivery for Wheeling Shoppers.—The West Virginia Traction & Electric Company, Wheeling, has inaugurated a package delivery service. Packages are delivered by the stores to the office of the company and shipped to the destination by trolley. This service will be an especial accommodation to people living in districts where a limited number of deliveries are made by the stores.

Winnipeg Electric Warns Children.—Just previous to the opening of the present school term the Winnipeg (Can.) Electric Railway published an advertisement in the local papers asking parents and teachers to add their co-operation in an effort to prevent accidents. Eleven safety rules were printed, together with the statement that children who have been taught invariably to obey the laws of safety first do so in emergencies by force of habit and thus avoid disaster. It is requested that the rules be read to the children.

Six-Cent Fare Wanted in Portland.—The Portland Railway, Light & Power Company, operating the electric railway system in Portland, Ore., recently petitioned the Public Service Commission of that State to be allowed to charge a 6-cent fare instead of 5 cents as at present. A hearing on the petition was tentatively set by the commission for an early date in September. Platform men of the company have pending a petition to the company for an advance in wages and the company claims it cannot meet this extra expense unless it is permitted to increase its fares.

Company Opposes Commission's Decision.—The Northampton, Easton & Washington Traction Company, Easton, Pa., which operates between Phillipsburg and Port Murray, N. J., has instituted certiorari proceedings in the New Jersey Supreme Court to review the action of the Board of Public Utility Commissioners in refusing the company permission to increase its rate from 5 cents to 6 cents in each of its seven fare zones. The Public Utility Commission held that the contracts with various municipalities through which the road operates are a barrier to increasing the fares.

Interborough Service Hearing Postponed.—The hearing before the Public Service Commission for the First District of New York, which was to have been continued on Sept. 4, to consider the causes for the interruption of service on the subway lines of the Interborough Rapid Transit Company on Aug. 25, was put over for a later date. The commission ordered a larger coal reserve to be provided to prevent any subsequent shutdown, and its engineers, together with those of the company, have been making some further investigations. The results of the first hearings in the case were reviewed in the ELECTRIC RAILWAY JOURNAL for Sept. 1, page 373.

Seattle Jitney Drivers Dismissed.—Thirty-eight of the seventy jitney drivers in Seattle, Wash., charged with operating "for hire" cars without the $2,500 bond required by the State, were dismissed when arraigned before Justice of the Peace Brinker on Aug. 30. Superior Court Judge Ronald's decision restraining employees of the Puget Sound Traction, Light & Power Company from appearing as witnesses against the defendants caused the dismissal of nearly half of the thirty-eight drivers. The rest had either complied with the law by taking out bonds or had ceased to operate. The remainder of the cases were continued and hearings will be set at an early date.

Electric Freight Service for Webster.—The Public Service Commission of Massachusetts has approved the petition of the Worcester & Webster Street Railway, the Webster & Dudley Street Railway and the Worcester Consolidated Street Railway, lessee of the first-named roads, for authority to do an express and freight business in the

Webster district. The city authorities, through their counsel, and representatives of Webster business concerns objected to the new service largely on the ground that no provision had been made for a freight station and that delivery of shipments from the cars in the streets would cause congestion of traffic and be a menace to public safety. The companies had made plans before the hearing for a freight delivery station at a convenient point.

Higher-Fare Advertising in Rochester.—The Rochester Lines of the New York State Railways are conducting a campaign in an effort to enlist the support of the public in their request for a 6-cent fare now before the Public Service Commission for the Second District. A series of newspaper advertisements is being used under the caption "The Street Car Nickel Will No Longer Provide Street Car Service." All of the advertisements are signed by James F. Hamilton, general manager of the company. One advertisement on the subject of company prosperity points out that "cities cannot be prosperous without efficient utilities, and utilities cannot be efficient without prosperity." It points out the merits of the electric railway service in Rochester as compared with that in other large cities in the United States and declares that this condition is worth protecting.

Traffic Law Hurts Texas Jitneys.—The new highway law in Texas is working against the jitneys under the interpretation of the law as given at the office of the attorney general for the guidance of peace officers in its enforcement. Especially is this true in Dallas, the only city in the State that previously had failed to enforce its ordinances enacted to effect better jitney regulation. The provisions of the new law were stated briefly in this paper for June 30, page 1206. The officers of Dallas have been particularly rigid in their enforcement of these provisions. Several hundred arrests have been made and in the majority of cases fines have been assessed. This law-enforcement campaign has already caused many jitney drivers to cease operating. While it is proving of great aid to the electric railway lines, officials of several companies in Texas say their receipts have been cut into by the jitneys so that several years will be required to get back to normal conditions.

Trenton Car-Riding Ordinance Defeated.—The City Commission of Trenton, N. J., has defeated the ordinance introduced by Director of Public Safety LaBarre to prohibit persons from riding on the running boards, fenders and bumpers of trolley cars and fixing a fine of $100 for offending companies. John L. O'Toole, assistant to the president of the Public Service Corporation, and Gaylord Thompson, manager of the New Jersey & Pennsylvania Traction Company, said the responsibility for the excessive overcrowding of cars rested with the traveling public. They declared the crews of the cars did not have the authority to eject passengers, and that attempts to enforce the ordinance would cause disorder on the cars. They suggested that cars with running boards could be replaced by other cars. It is said that Commissioner LaBarre will introduce a new resolution after the railways have abolished cars with running boards. The city ordinance requiring electric railways to sprinkle along their track has also been defeated.

Directing Louisville Traffic.—Citizens of Louisville are receiving "Walk-Rite" instruction from local Boy Scouts, who are acting on the suggestion of the Rotary Club of Louisville and in co-operation with the city officials. At all of the downtown corners where traffic police are stationed or semaphores are operated three Scouts are stationed on each sidewalk armed with the staves which they carry. They bar the way or lift the staves simultaneously with the traffic officer's operation of the semaphore, the idea being to impress on the minds of the pedestrians that the traffic regulations are to be obeyed. The boys also carry standards bearing traffic instructions. In addition to directing traffic across the intersections the Boy Scouts patrolling the streets hand out cards explaining the proper use of the street. The cards contain the following rules: 1. Keep to the right always. 2. Do not congregate in middle of sidewalk. Step to one side. 3. Do not cross the streets except at intersections. 4. Glance to the left and then to the right when crossing a street to avoid moving vehicles. 5. Do not cross streets until signaled to do so by traffic officer. 6. Obey all traffic regulations.

Personal Mention

C. L. Van Doren has been elected president of the Kankakee & Urbana Traction Company, Urbana, Ill.

A. C. Erwin, a director of the Athens Railway & Electric Company, Athens, Ga., has been nominated for Mayor of that city.

Harry Hollis, electrical engineer for the Reading (Pa.) Transit Company, has resigned to accept a similar position with the Bethlehem Steel Company at Lebanon.

U. G. Fowler has been elected vice-president of the Kankakee & Urbana Traction Company to succeed W. I. Saffell. The latter will continue as general manager.

T. E. Leland, assistant freight agent of the Bay State Street Railway, Boston, Mass., has been made general freight agent of the company to succeed George Dunford.

Lawrence B. Webster, secretary of the Western Ohio Railway, with headquarters in Cleveland, has been commissioned as captain in the ordnance department of the United States Army.

Harry J. Clark has been appointed treasurer and assistant general manager of the Syracuse, Lake Shore & Northern Railroad, Syracuse, N. Y., following the reorganization of that company.

Joseph F. Porter has resigned as president of the Tri-City Railway & Light Company, Davenport, Iowa, to become president of the Kansas City Light & Power Company, Kansas City, Mo., to succeed John H. Lucas.

Edward J. Cooney has been appointed executive assistant of the Rhode Island Company, Providence, in charge of a newly established publicity department. Mr. Cooney will edit *The Trollier*, a new publication portrayed on page 417 of this paper.

Fred J. Moore has been appointed general superintendent of transportation of the Ohio Electric Railway, with headquarters at Springfield. Mr. Moore has been connected with the company since its organization. For several years he has held the position of superintendent of the three divisions entering Columbus.

C. W. Culkins has been appointed street railway commissioner at Cincinnati, Ohio. Mr. Culkins was formerly executive secretary of the Chamber of Commerce. He will administer the duties of the Mayor and the Rapid Transit Commission according to the provisions of the rapid transit loop lease ordinance. He will also act in an advisory capacity and make general recommendations in the service.

Harold V. Bozell, one of the organizers of the Oklahoma Electric Railway Association and of which he was secretary for a number of years, has accepted the position of assistant professor of electrical engineering in the Sheffield Scientific School of Yale University. Professor Bozell has been professor of electrical engineering at the University of Oklahoma for nine years, but has been at Yale University during the past year on Sabbatical leave. He is a graduate of the University of Kansas, class of 1908. He is well known throughout the State of Oklahoma for his active interest in engineering affairs.

Dr. Howard B. Shaw, former dean of the School of Engineering of the University of Missouri and later a member of the Public Utilities Commission of that State, has been appointed advisory head of the cadet schools of the Doherty Organization. His duties will include the selection of men from universities, supervising the courses and recommending the men for positions in the organization. Dr. Shaw is a graduate of the University of North Carolina, class of 1890. He received an A. M. degree from Harvard four years later. Prior to 1896 he engaged in instructional work in the University of North Carolina and Lawrence Scientific School, Harvard University, and in that year he became assistant professor of electrical engineering at the University of Missouri. He was made dean of the School of Engineering there in 1907. Dr. Shaw has also had considerable experience as a consulting engineer.

W. J. Grambs, assistant to the president of the Puget Sound Traction, Light & Power Company, Seattle, Wash., has been appointed by the United States Shipping Board to the position of section chief of the Sixth District of the Free Navigation Schools established by the government and under the board's general supervision. The sixth district comprises Washington and Oregon, and Mr. Grambs has direct supervision over the schools of Portland, Astoria and Tacoma.

George Dunford, for the last eleven years general freight agent for the Bay State Street Railway, Boston, Mass., has resigned. Mr. Dunford was first employed by the National Express Company thirty-two years ago and after its consolidation with the American Express Company he remained with the latter company for several years. He next became general express agent for properties in New York State formerly controlled by the Mohawk Valley Company and since transferred to the New York State Railways. In February, 1906, three years later, he accepted the position of general express and freight agent for the Bay State Street Railway and has continued in that capacity until the present time.

L. E. GOULD

Lawrence E. Gould has resigned his long connection with the ELECTRIC RAILWAY JOURNAL and has organized the Economy Electric Devices Company which will act as exclusive sales agents for the railway products of the Sangamo Electric Company, with offices in Chicago. Mr. Gould is undoubtedly one of the best-known men in the electric railway industry, due to his active work in a number of the territorial electric railway associations, as well as in the American associations, and because of a personality which once known is long remembered. His many friends will be interested in knowing of his decision to devote his time to the sale of a device and the promotion of educational work, which together offer immense possibilities for economy in the industry with which he has spent most of his business life. Mr. Gould was born in the State of Michigan in 1878 and received his electrical engineering education at Cornell University. As a boy in school he worked for the Owosso & Corunna Electric Railway & Light Company, which is now a part of the Michigan Railway system, on various work around the repair shops and also on line work. During his college course he did some triangulation work and contour sketching in the State of New York for the United States Geological Survey, and after graduation served as apprentice on the road now known as the Albany Southern Railroad. He worked on this road from June to October, 1901, and when he resigned was general foreman of the electrical department and had charge of the transmission, conversion and distribution systems and the lighting in the cities of Hudson and Rensselaer. After a few months spent in civil engineering work on the Mineola, Hempstead & Freeport Electric Railway, Hempstead, N. Y., he became connected with the Aurora, Elgin & Chicago Railroad as assistant electrical engineer, and remained with this property during the entire construction period. At its completion, in 1903, he became chief engineer in charge of location and construction of the Sterling, Dixon & Eastern Electric Railway, now controlled by the Middle West Utilities Company. After that road was built, in 1904, he became engineer of the Columbia Construction Company of Milwaukee, then engaged in electric railway construction, and while connected with this company he wrote a series of articles on electric railway construction for the *Street Railway Review*, known later as the *Electric Railway Review*. These articles led to his appointment, in January, 1905, as electrical editor of the paper, and in the fall of that year he became its editor-in-chief. With the consolidation in 1908 of that paper and the *Street Railway Journal* to form the ELECTRIC RAILWAY JOURNAL, Mr. Gould became Western editor of the combined paper and retained this position until late in 1912, when he moved to New York to become business manager of the paper. In May, 1914, he returned to Chicago as Western manager, and, on May 1, 1916, he was appointed industrial editor in charge of the department which he created, intended especially for manufacturers and purchasing agents and known as the "Manufactures and Markets" department. This work he continued to date.

J. D. Whittemore, who was heretofore general manager of the Claremont Railway & Lighting Company, Claremont, N. H., has been appointed general manager of the West Virginia Traction & Electric Company, Wheeling, W. Va. Both roads are controlled by the Eastern Power & Light Corporation, New York. Mr. Whittemore was at one time employed by the General Electric Company at Schenectady, N. Y., and later was transferred to Boston, working in the construction department. He subsequently entered the industrial engineering department of the Rochester Railway & Light Company, Rochester, N .Y. Prior to his connection with the Claremont Railway & Lighting Company he was manager of the Gardner (Mass.) Electric Light Company.

J. Milton Ayer of the engineering staff of the Boston (Mass.) Elevated Railway has resigned to become treasurer of the Day Baker Motor Truck Company of Boston. Mr. Ayer was educated at the University of Maine and at Harvard University, and has had a wide experience in both the civil and electrical engineering fields. Before joining the staff of the Boston Elevated Railway he was associated with a district steam heating company in Boston. He has been closely identified with the engineering side of rapid transit development there, and for several years was an assistant in the office of the chief engineer of motive power and rolling stock. Recently he has been engaged in special investigations in executive service. In his new post, Mr. Ayer will be associated with the development of the New England agency for the sale of gasoline and electric trucks and power station and industrial conveying machinery.

R. R. Hayes, who, as reported last week, has been appointed general manager of the Tiffin, Fostoria & Eastern Electric Railway, Tiffin, Ohio, was born in 1876. He entered the service of the Western Ohio Railway in March, 1902, as extra conductor and was advanced to the position of train dispatcher about three years later. On Jan. 1, 1907, Mr. Hayes became connected with the Chicago, South Bend & Northern Indiana Railway as division superintendent at Elkhart, Ind., and in October, 1910, resigned to enter the service of the Illinois Traction System as dispatcher at Decatur. The following year he re-entered the service of the Western Ohio Railway and soon afterward was made superintendent of transportation. He had been superintendent of overhead for that company for the last two years, from which position he resigned to become general manager for the Tiffin, Fostoria & Eastern, succeeding Samuel B. Sneath, who was president and general manager.

Obituary

William Lacey, assistant superintendent of the Wisconsin Traction, Light, Heat & Power Company, Appleton, Wis., died recently from a stroke of apoplexy. Mr. Lacey was forty-nine years of age.

Martin N. Todd, president of the Galt, Preston & Hespeler Street Railway and general manager of the Lake Erie & Northern Railway, Galt, Ont., died at his home in that city on Aug. 29. Mr. Todd had been in ill health for about a year. He was on sick leave last spring and made a trip covering several weeks, during which he visited New Orleans and other Southern points. He was fifty-nine years of age.

Thomas J. Harrington, formerly superintendent of the Pittsburgh & Charleroi Street Railway, which is now operated by the Pittsburgh (Pa.) Railways, died recently at the home of his sister in Charleroi, Pa. Mr. Harrington had resigned from active service on account of injuries received in a wreck several years ago. Prior to that time he had been in the employ of the Pittsburgh & Charleroi Street Railway for more than thirty-five years.

Construction News

Construction News Notes are classified under each heading alphabetically by States.

An asterisk (*) indicates a project not previously reported.

RECENT INCORPORATION

***East Texas & Gulf Railway, Hicks, Tex.**—Incorporated to construct a line from Hicks to Warsbaugh, 10 miles. Capital stock, $20,000. Among the incorporators are E. R. Campbell and A. E. Ammerman, of Houston, and S. B. Hicks, J. T. Wurzbaugh, M. F. Johnson and T. H. Scoville, of Shreveport, La.

FRANCHISES

Santa Ana, Cal.—The Pacific Electric Railway has received a franchise from the Board of Supervisors to construct an extension from Orange north to the Tustin line.

Edwardsville, Ill.—The Alton & Edwardsville Railroad has received a thirty-year franchise from the City Council to construct a line in Edwardsville. The franchise provides that work shall be begun within six months and the line is to be in operation by Sept. 1, 1919.

Shelbyville, Ky.—The Louisville & Interurban Railroad has received a franchise from the City Council for an extension on Main Street, east of First Street.

Dayton, Ohio.—The People's Railway has received a franchise from the County Commissioners of Dayton to extend its line on North Main Street outside the city corporation line.

Henryetta, Okla.—At a special election recently held in Henryetta, the electors voted to grant the Henryetta-Dewar-Kusa Traction Company a franchise to construct an electric railway in Henryetta. [Aug. 25, '17.]

Tacoma, Wash.—The extension of the Tideflats line of the Tacoma Municipal Railway from the Todd shipyards up the Hylebos waterway to Lincoln Avenue and the Buffelin Mill Company's plant has been approved by the City Council.

TRACK AND ROADWAY

***Birmingham, Ala.**—The Birmingham Civic Association advocates the construction of an electric railway from Birmingham to the Warrior River, about 20 miles. T. L. Cannon, chairman.

***Globe, Ariz.**—William V. Shenk, Globe, Ariz., represents a syndicate which proposes to build an electric railway from the southwestern part of Colorado through Arizona and northern Mexico, extending to the Gulf of California. The project includes a huge dam on the Colorado River, 60 miles from the Arizona-Utah line, a 200,000-hp. hydro-electric plant and a port on the Gulf. The preliminary work will cost about $500,000.

Municipal Railways of San Francisco, San Francisco, Cal.—Plans and specifications for connecting the Parkside district with the Twin Peaks tunnel are being prepared. City Engineer M. M. O'Shaughnessy, with the authorization of the public utilities committee of the Board of Supervisors, has recommended an appropriation of $90,000 to cover the construction of tracks. The proposed line will extend from the western portal of the tunnel over Taraval Street to Twentieth Avenue, where it will connect with the United Railroads system. The municipality will operate its cars to Thirtieth Avenue under a special clause in the Parkside franchise.

Waterbury & Bristol Tramway, Waterbury, Conn.—Inability to get labor and material has caused the postponement of the construction of the Waterbury & Bristol Tramway between Bristol and Waterbury, which was scheduled to be started this month. Work on the line will probably be begun in the spring. Frederick N. Manross, Bristol, president. [May 19, '17.]

Valdosta, Moultrie & Western Railway, Valdosta, Ga.—It is reported that electrically-operated motor cars will be operated on the Valdosta, Moultrie & Western Railway.

***Chicago, Ill.**—It is reported that the Mark Manufacturing Company contemplates the construction of an electric railway from East Chicago and Whiting to Indiana Harbor in connection with a model city comprising 190 acres which it is building for its employees.

Jacksonville Railway & Light Company, Jacksonville, Ill.—This company has received permission from the City Council of Jacksonville to remove its tracks on East State Street. The rails will be used either on West State or South Main Street, where the lines are to be rebuilt in connection with the new pavements.

Central Illinois Public Service Company, Mattoon, Ill.—The property of the Southern Illinois Railway & Power Company has been taken over by the Central Illinois Public Service Company. It is reported that the line will be extended to Marion, there joining lines of the Coal Belt Electric Railway and the Murphysboro Electric Railway, Light, Heat & Power Company, with the view of entering St. Louis by finally joining several electric railways now being operated and promoted south from St. Louis.

Rock Island Southern Railroad, Monmouth, Ill.—Work has been begun by the Rock Island Southern Railroad on the rehabilitation of its line between Galesburg and Monmouth. Improvements are also being made to its power house at Cameron.

Quincy (Ill.) Railway.—Work will be begun at once by the Quincy Railway on the construction of a loop near the Chicago, Burlington & Quincy Railway station on Second Street.

Des Moines (Iowa) City Railway.—A contract has been awarded by the Des Moines City Railway to the North American Construction Company for the double-tracking of Sixth Avenue from Grand Avenue to School Street.

***Jackson, Ky.**—Plans are being made by Mayor Hays and others of Jackson to construct an electric railway to connect Jackson, Quicksand, O. and K. Junction and Kragon. A company is being organized with Mayor Hays as head.

New Orleans Railway & Light Company, New Orleans, La.—A monthly allowance of $16,667 from its current surplus earnings will be made by the New Orleans Railway & Light Company until June 1, 1918, to be used for improvements and replacements to its system in New Orleans.

New Castle, Me.—Burgess, Lang & Company, Boston, Mass., reported in a recent issue as contemplating the construction of an electric railway from New Castle to Boothbay Harbor, state that the line will not be built in the immediate future. [June 2, '17.]

United Railways & Electric Company, Baltimore, Md.—A financial plan has been arranged by this company under which the proceeds of an issue of $3,000,000 of five year notes will be used for various extensions and improvements during the next four years.

Vicksburg Light & Traction Company, Vicksburg, Miss.—The tracks of the Vicksburg Light & Traction Company at Walters are being raised to a point which will be on a level with new pavement to be laid by the city.

Trenton & Mercer County Traction Company, Trenton, N. J.—The City Commission has ordered the Trenton & Mercer County Traction Company to remove its feed wires and poles, etc., from Division, Hudson, Southard, Monmouth, Kent, Prospect, Beatty, Globe, Mulberry, Elmer and Frazier Streets and Cummings, Evans, Lincoln, Brunswick and Chestnut Avenues. It is held by the commission that the company did not have the authority of the State or the municipality to erect these poles and wires.

Brooklyn (N. Y.) Rapid Transit Company.—Work will be begun at once by the Brooklyn Rapid Transit Company on the extension of the Metropolitan Avenue surface line from its present terminus at St. John's Cemetery, Middle Village, to Jamaica.

Buffalo Southern Railway, Buffalo, N. Y.—Plans are being made to reorganize the Buffalo Southern Railway, now in the hands of a receiver, and to extend the line from East Seneca to East Aurora, via Springbrook and Elma.

Dunkirk (N. Y.) Street Railway.—The Public Service Commission for the Second District of New York has denied the application of the Dunkirk Street Railway, a subsidiary of the Buffalo & Lake Erie Traction Company, for approval of its abandonment of a portion of the city belt line. The company is ordered to replace the trackage torn up and to continue operation of the line.

Southern Public Utilities Company, Charlotte, N. C.—Grading has been completed by the Southern Public Utilities Company for two double-track lines to Camp Greene. A 500-ft. trestle will be built in connection with one of these lines.

International Railway, Buffalo, N. Y.—E. J. Dickson, vice-president of the International Railway, has notified the City Council of Lockport that the company cannot build its double-track line in West Avenue this year, owing to the condition of the money market. The work will be done next spring.

Lindsay & Minden Railway, Minden, Ont.—It is reported that negotiations are under way for the construction of the Lindsay & Minden Railway. A preliminary survey has been made through Minden to Mountain Lake and estimates are being prepared as to cost. [March 23, '12.]

Port Arthur (Ont.) Civic Railway.—A report from the Port Arthur Civic Railway states that it is placing concrete reinforced lines adjacent to its rails on the main line on Cumberland Street, between Arthur and Bay streets.

Trenton, Bristol & Philadelphia Street Railway, Philadelphia, Pa.—The work of rebuilding the tracks of the Trenton, Bristol & Philadelphia Street Railway is now well under way and several miles of tracks have been relaid, new ties placed in position and many new rails laid. New switches have also been laid and stone ballast placed between the rails. The company plans to reconstruct its line between Torresdale and Bristol and between Bristol and Morrisville.

Reading Transit & Light Company, Reading, Pa.—About $200,000 is being spent by the Reading Transit & Light Company this year on extensions and improvements to its system.

Texas Electric Railway, Dallas, Tex.—Work on the extension of the street car line at Waco to Camp MacArthur is progressing rapidly. Owing to scarcity of steel, the company has been forced to dismantle switches and spur tracks at Waco, Waxahachie and Kirkland Park to get steel for this extension.

***International & Great Northern Railway, Houston, Tex.**—Official announcement has been made that the International & Great Northern Railway will construct an electric railway from Fort Worth to the site of the Canadian Army aviation training camp at Everman, 9 miles south of Fort Worth. The company will purchase a sufficient number of cars to care for all the traffic and a regular schedule will be maintained.

Oregon Short Line Railroad, Salt Lake City, Utah.—It is reported that an extension will be built by the Oregon Short Line from the Ogden Cement Plant to Bear River, about 6 miles. It is said that the new road when completed will be turned over to the Ogden, Logan & Idaho Electric Railway and will eventually be extended to Brigham City to connect with the electric line at that place.

Rutland Railway, Light & Power Company, Rutland, Vt.—The work of relaying the ties on its system has been completed by the Rutland Railway, Light & Power Company. During the last year the company has replaced 12,500 ties and reballasted about 4 miles of road.

Seattle (Wash.) Municipal Railway.—The Board of Public Works is receiving bids for the improvement of Division A of the Seattle Municipal Railway by construction of a trestle approach on Thorndyke Avenue, and by constructing single and double track for the street railway, furnishing all labor and material therefor, excepting rails, angle bars and special work.

North Coast Power Company, Vancouver, Wash.—This company is considering abandoning its line between Centralia and Chehalis. It is stated that competition from jitneys between the two cities is causing the line to be operated at a loss.

Green Bay & Eastern Railway, Green Bay, Wis.—This company, which proposes to construct a line from Green Bay to Manitowoc and Sheboygan, has increased its capital stock to $3,000,000. William M. Willinger, Manitowoc, president. [April 21, '17.]

SHOPS AND BUILDINGS

Des Moines, Iowa.—The Fort Dodge, Des Moines & Southern Railway and the Inter-Urban Railway plan to construct a passenger and freight terminal at Second and Grand Avenue, Des Moines. A structure to cost about $250,000 is planned.

Public Service Railway, Newark, N. J.—The New Jersey & Pennsylvania Traction Company and the Public Service Railway have under consideration the construction of new terminals in Trenton.

Trenton & Mercer County Traction Corporation, Trenton, N. J.—This company will erect a modern passenger terminal at Princeton. The architecture will conform with the Gothic structures of Princeton University. New sidings and switches will also be laid. Material for the new building and the track is now on the ground.

Buffalo & Lake Erie Traction Company, Buffalo, N. Y.—A new concrete passenger and freight station will be built by the Buffalo & Lake Erie Traction Company at Union and Main streets, Westfield. Application has been made to the municipal authorities of Westfield by the company for permission to extend its line through Main Street to the new property.

New York State Railways, Syracuse, N. Y.—Plans have been prepared by the New York State Railways for the construction of a new carhouse and shops, 75 ft. x 150 ft., to be erected at Burnett and Fairview avenues.

Sand Springs (Okla.) Railway.—This company reports that it will place contracts within the next four weeks for the construction of a new carhouse.

Texas Electric Railway, Dallas, Tex.—A contract has been awarded by the Texas Electric Railway for remodeling its passenger station at Corsicana. The improvements will cost about $8,000.

POWER HOUSES AND SUBSTATIONS

Pacific Gas & Electric Company, Sacramento, Cal.—A contract has been awarded to the Pacific Gas & Electric Company for furnishing Camp Fremont with electricity. The company has begun work at the camp, and substations are being built, rights-of-way established and the poles erected.

Wilmington & Philadelphia Traction Company, Wilmington, Del.—This company will construct an addition to its plant at Eighteenth and Buena Vista streets. The structure will be one story in height, 64 ft. x 54 ft., and will be of steel and concrete. The cost is estimated by the company at $55,000.

Washington & Old Dominion Railway, Washington, D. C.—The power house of the Washington & Old Dominion Railway at Rosslyn will be closed and energy will be purchased from the Potomac Electric Power Company to operate the system.

Hattiesburg (Miss.) Traction Company.—Lighting service and power for pumping water will be supplied by the Hatties burg Traction Company to the militia camp situated at Hattiesburg.

Metropolitan Electric Company, Reading, Pa.—This company has completed plans for the erection of another substation, of 13,000-volts capacity, in the vicinity of Sixth and Bern Streets, Reading.

Puget Sound Traction, Light & Power Company, Seattle, Wash.—It is reported that this company will change both its Georgetown and Western Avenue plants over from oil burners to coal. About $250,000 will be required to install chain grates or automatic stokers for the burning of coal instead of oil at its Georgetown plant and an equal amount will be spent on the Western Avenue plant.

Marinette & Menominee Light & Traction Company, Marinette, Wis.—Plans have been prepared by this company for a transformer station.

Manufactures and Markets

Discussions of Market and Trade Conditions for the Manufacturer, Salesman and Purchasing Agent
Rolling Stock Purchases Market Quotations Business Announcements

Credit Problems and Conditions

Railways Meeting Obligations Promptly—Progressive System of Payments Has Advantages—Manufacturers Take Into Account Railway's Methods of Raising Funds

Railway companies which are buying materials and equipment, are, as in the past, meeting their obligations promptly. Some large sales have been made recently and in case the manufacture of the equipment extends over a long period, progressive payments are usually arranged between the manufacturer and the purchaser. This system has its advantages and insures the manufacturer of partial payment for the equipment as the work progresses. The need for a progressive system of payments is easily understood when the conditions existing in the factory of the manufacturer are analyzed. A railway may place an order for standard equipment which would ordinarily be taken out of stock. If the manufacturing company cannot supply the demand until it has made large investments in raw materials, it does not request progressive payments from the railway, as it is up to the manufacturer to keep large reserve supplies of fairly standard stocks on hand, regardless of orders received. On orders of this nature payments may vary, but usually the terms are net cash, thirty days from date of invoice. In other instances, such terms as 50 per cent of the total order on the date of shipment, 40 per cent in thirty days, and 10 per cent in sixty days have been arranged.

PROGRESSIVE PAYMENTS NECESSARY FOR SPECIAL APPARATUS

However, when large orders for special equipment, such as large units of electrical apparatus, etc., are received, it is necessary for the manufacturer to make an enormous outlay for raw materials at once, with no chance of receiving any money on the order until date of shipment, which might be from eighteen to twenty-four months, unless progressive payments were specified.

One objection that is of importance has been made to this system. When the manufacturer reports that a certain amount of work has been completed for which payment is due, it is necessary for the railway company to send an engineer or inspector to the factory to check up the manufacturer. Occasionally an inspector is kept at the factory in case the volume of work is sufficiently great to demand one. Where this inspection prevails little trouble has been experienced, but in other instances engineers and factory men have not been able to agree on estimating the progress of the work and payments have been held up on this account. Frequent trips by engineers are expensive, especially if the railway is a considerable distance from the factory.

One large company has solved this progressive payment problem in the following manner. When a large order is under consideration the credit manager asks the engineering department for estimates on the progress of the work on certain future dates. Upon the receipt of the engineering department's progress report, a contract is drawn up specifying payments of a given amount on the specified dates named by the engineering department. This arrangement relieves the railway of inspecting the equipment under construction and at the same time guarantees regular payments without quibbling about the progress of the work. The terms of progressive payments vary considerably, but usually four or five payments, aggregating 50 per cent of the total amount of the order, are required before the date of shipment, with payments at the end of thirty, sixty or ninety days for the 25, 15 and 10 per cent, respectively, of the balance of the purchase price.

The usual procedure of the larger railways when purchasing a considerable number of cars is to have their engineers get out specifications, etc., of the equipment required, simultaneously formulating a method of obtaining the necessary money to meet their obligations. This is done either by special bonds, issuing of equipment notes, etc. The manufacturer from whom the equipment has been ordered usually requires a guarantee or a knowledge of the financing to be done by the company.

Occasionally a manufacturer has been approached by promoters to furnish equipment for a road in the process of building and on which certain securities, such as bonds, mortgages, etc., are offered. These properties are investigated very carefully and credit extended only when the financial plans of the property concerned are approved by the manufacturer.

Railway supply manufacturers feel the closeness of the present money situation, as the raw material producers require sight draft payment on the receipt of certain materials. Unless the supply men can make the same terms as they are given for raw material, they must require a considerably greater outlay of capital than heretofore with which to conduct their business.

Deliveries on Trucks Uncertain

Six to Twelve Months Being Quoted—Special Truck Parts Scarce—Some Delay Due to Government Orders

Truck deliveries are being quoted from six to twelve months, depending on the size of the orders received. Small orders can be delivered in six months, according to one truck manufacturer, but only in case cast-iron wheels are specified. Where steel or other types of special wheels are specified, more than twelve months is required to complete orders. In former times it was usually possible to deliver the trucks for a large car order by the time the car bodies were completed, but this condition no longer exists. Reports have been received from two large companies to the effect that car bodies which have been finished by the builder have not been put in operation on account of failure to receive trucks. Several of the largest truck manufacturers have either accepted government work or are expecting to close contracts shortly. The government orders will no doubt slow up truck deliveries considerably. One large manufacturer has stopped all work on trucks in order to rush important work which is now on hand under government contract.

MANY PARTS IN TRUCK MAKE-UP

When orders for trucks are placed, usually some special parts are designated, such as wheels, axles, journal boxes, center or side bearings, etc. If one or more of these special parts is required the delivery of these parts usually determines the delivery of the trucks. As a rule the special part delay the delivery from two to five months. Standard designs are being emphasized by the truck manufacturers, and the difference in delivery dates of standard and special trucks is sufficient in most cases to show the railway men the advantage of ordering the former.

Some railway companies have attempted to manufacture their own trucks. One truck manufacturer made a bid for a year's business of a large Middle West company and was surprised to receive an answer that the railway company had actually built trucks cheaper than the bid which had been submitted. The truck company decided to investigate the matter and sent a truck specialist out to the property to go over the figures with the general manager. Most of the figures prepared by the railway were checked satisfactorily with the exception of the amounts for labor and for overhead expense. Practically nothing was charged up by the railway to labor, and the explanation given was that the work on trucks was done when the men were not employed on other work. In other words, labor that should have been charged up to trucks was charged to general repairs, maintenance, etc. After the labor and overhead charges had been added to the railway's costs it was found that the manufacturer's estimates were considerably lower than what the railway had spent. Such instances have caused the truck manufacturers to look for business in other fields, and the acceptance of orders for heavy motor truck parts or gun carriages by the truck manufacturers will have a decided effect in slowing up truck deliveries.

Big Car Shortage Probable During Winter Season

Thousands of Cars Being Requisitioned to Supply Cantonments—No Freight Cars Ordered for Many Months

Reports from time to time that have appeared in these columns have indicated that the car shortage has been decreasing gradually and that manufacturers have experienced less trouble than heretofore in making shipments of supplies and equipment to railways. New conditions, however, now exist which are causing railroad officials to believe that a big car shortage is not far off. During the past two months thousands of freight cars have been requisitioned by the government to furnish raw materials and supplies for the building of cantonments in different parts of the country. It is true that these cantonments will soon be completed and many of the cars may be withdrawn. However, the camps must be continually furnished with food and supplies and it is believed that a considerable number of these cars will not be released for some time.

Another factor that must be given serious consideration is that no car orders are being placed by either the steam or electric freight roads nor are there liable to be any placed for some time. As mentioned in a recent article in the Manufacturers and Markets department, about 100,000 freight cars were on order in the different manufacturing plants on June 1, but most of these orders are of long standing and many are nearing completion. On account of the government's action in requisitioning freight cars to be used where they are most needed there has been little incentive on the part of the railroads to place orders for additional equipment. Practically all the orders placed recently are for freight cars to be used in France and in Russia. The railroads have been holding back waiting for the government's plans for purchasing freight cars to materialize, but nothing has been heard of it for a number of weeks and little hope is expressed that definite action may be expected soon. In order to keep pace with present conditions about 250,000 freight cars should be built as soon as possible, but it is nevertheless true that practically no orders have been placed for many months with the exception of the above-mentioned government order aggregating 20,000 cars for war purposes.

Recent facts and figures which have been published recently prove conclusively that the railroads have broken all previous records for heavy tonnage. Loadings have been doubled in many instances, fewer but heavier trains operated and every expedient known to the railroad officials has been called into play to assist the progress toward greater efficiency. The proposed plan of the government to purchase 125,000 freight cars, which was noted on page 252 of the Aug. 11 issue of this paper, is the only relief in view at the present time, and any action taken by the government toward the completion of the proposed plan will be welcomed by all concerned.

The United States Geological Survey estimates that the production of spelter during the first six months of 1917 was 364,000 short tons, as compared with 351,000 short tons during the last half of 1916. Stocks on hand are estimated at 33,000 tons, as compared with 17,600 at the beginning of the year.

Metal Market Quiet

Producers and Manufacturers Await Government Action on Adjustments—Prices Normal with Few Sales Reported

No activity has been shown during the last week in the metal market. The uncertainty of the government's action in fixing prices has caused a suspension of all buying and requests in some instances have been made by purchasers to hold up shipments on contracts pending a decision in Washington.

There is a belief that more favorable prices than have been hinted at heretofore will be fixed for copper and steel. Considerable opposition to the price-fixing for coal has caused the government to consider the steel and copper situation most carefully, and it would not be surprising to the trade if 25 cents per pound was named for copper.

PRICE READJUSTMENTS NEAR

There is a general feeling that regardless of government action some price readjustments are necessary and that when these readjustments commence no one can predict just what the outcome will be. Attention has already been called on page 128 of the July 14 issue to the decline in the scrap metal market. Later the market for pig iron and steel billets softened, and in last week's issue a large drop in steel plates was reported, which seems to indicate that the readjustment of prices has already started.

The curtailed production of copper is causing much concern, especially since the announcement of the closing of the Anaconda smelters. It is not expected that there will be any activity until the government's price-fixing schedules are known, which should be within the next few days.

The demand abroad for American electrical appartus continues to increase. A compilation by the National City Bank of New York shows that the value of electrical machinery, appliances and instruments exported from the United States in the fiscal year 1917 aggregated more than $50,000,000 against $30,000,000 in 1916, $20,000,000 in 1914, $10,000,000 in 1911 and $6,000,000 in 1900.

NEW YORK METAL MARKET PRICES

	Aug. 29	Sept. 6
Prime Lake, cents per lb	25½	25¼
Electrolytic, cents per lb	25½	25¼
Copper wire base, cents per lb	36	36
Lead, cents per lb	10½	10¼
Nickel, cents per lb	50	50
Spelter, cents per lb	8⅜	8¼
Tin, Straits, cents per lb	61½	61
Aluminum, 98 to 99 per cent, cents per lb	50	47

OLD METAL PRICES

	Aug. 29	Sept. 6
Heavy copper, cents per lb	24¼	24
Light copper, cents per lb	21½	21
Red brass, cents per lb	19½	19
Yellow brass, cents per lb	16	15½
Lead, heavy, cents per lb	8¾	8½
Zinc, cents per lb	6	6
Steel car axles, Chicago, per net ton	$42.00	$42.00
Old car wheels, Chicago, per gross ton	$32.50	$32.50
Steel rails (scrap), Chicago, per gross ton	$41.00	$41.00
Steel rails (relaying), Chicago, per gross ton	$55.00	$55.00
Machine shop turnings, Chicago, per net ton	$18.00	$17.50

CURRENT PRICES FOR MATERIALS

	Aug. 29	Sept. 6
Rubber-covered wire base, New York, cents per lb.	36	36
No. 0000 feeder cable (bare), New York, cents per lb.	36½	36½
No. 0000 feeder cable (stranded), New York, cents per lb.	33¾	33¾
No. 6 copper wire (insulated), New York, cents per lb.	33½	33½
No. 6 copper wire (bare), New York, cents per lb.	36	36
Rails, heavy, Bessemer, Pittsburgh	$38.00	$38.00
Rails, heavy, O. H. Pittsburgh, per gross ton	$40.00	$40.00
Wire nails, Pittsburgh, per 100 lb.	$4.00	$4.00
Railroad spikes, 9/16 in., Pittsburgh, per 100 lb.	$7.00	$7.00
Steel bars, Pittsburgh, per 100 lb.	$4.00	$4.00
Sheet iron, black (24 gage), Pittsburgh, per 100 lb.	$8.85	$8.85
Sheet iron, galvanized (24 gage), Pittsburgh, per 100 lb.	$10.05	$10.05
Galvanized barbed wire, Pittsburgh, cents per lb.	4.85	4.85
Galvanized wire, ordinary, Pittsburgh, cents per lb.	4.65	4.65
Cement (carload lots), New York, per bbl.	$2.22	$2.22
Cement (carload lots), Chicago, per bbl.	$2.31	$2.31
Cement (carload lots), Seattle, per bbl.	$2.65	$2.65
Linseed oil (raw, 5 bbl. lots), New York, per gal.	$1.25	$1.25
Linseed oil (boiled, 5 bbl. lots), New York, per gal.	$1.26	$1.26
White lead (110 lb. keg), New York, cents per lb.	12¾	12¾
Turpentine (bbl. lots), New York, cents per gal.	42½	42½

Lumber Alone, of All Building Materials, Has Had Only Modest Advance in Price

Lumber is at the bottom of the list of building materials in statistical tables prepared by Roger W. Babson, the well-known statistical authority, showing advances in the cost of various commodities. A bulletin just issued by him gives a tabulation of the prices of ninety-six leading commodities on Aug. 1, 1914, July 1, 1916, and July 1, 1917. These figures show that the ninety-six commodities have advanced an average of 55 per cent in price since July 1, 1916, and 127 per cent since Aug. 1, 1914.

In view of the fact that the lumber industry has generally claimed that its product has advanced less in price than many other commodities, and has remained one of the most easily obtainable, readily workable and reasonably priced materials, the following figures taken from Mr. Babson's report are of special interest:

	Advance in Price Since July 1, 1916, Per Cent	Advance in Price Since Aug. 1, 1914, Per Cent
Brick	26	80
Cement	27	34
Lime	8	102
Nails	60	158
Steel	128	390
Lumber	23	28
Average of ninety-six commodities	55	127

ROLLING STOCK

Quebec (Can.) Railway, Light & Power Company is building two double-truck closed cars in its shops at St. Anne de Beaupre.

International & Great Northern Railway, Houston, Tex., will purchase cars to equip the 9-mile electric line which it is building from Fort Worth to Everman, where the Canadian army aviation training camp is located.

Brooklyn Rapid Transit Company, Brooklyn, N. Y., is preparing specifications for 250 pressed steel center-entrance cars similar to the 100 cars which were described fully in the issue of the ELECTRIC RAILWAY JOURNAL for April 19, 1913, page 708. This is a double-end straight sided body type with low step passenger entrance and two exits located at the center of the car, arranged for fare collection as the passenger enters. The length over all is 45 ft. 6 in., and the seating capacity is 58.

TRADE NOTES

Electric Service Supplies Company, Philadelphia, Pa., has received an order for 500 Golden Glow headlights for Baldwin locomotives to be shipped abroad.

H. W. Johns-Manville Company, New York, N. Y., has leased a six-story building at Eleventh and Olive Streets, St. Louis, Mo., which will be remodeled at a cost of $30,000.

T. M. Avery, one of the New York representatives of the Blaw-Knox Company, will take charge temporarily of the San Francisco office, Edward M. Ornitz having joined the Engineering Corps.

George D. Kirkham, sales agent in charge of the St. Paul office of the American Steel & Wire Company, has returned to the Chicago office. H. S. Durant, formerly of Washington, D. C., will return to the St. Paul office.

Paul Caldwell of the Pittsburgh office of the General Electric Company has accepted a position with the Cleveland Crane & Engineering Company in the sales department and will take charge of this company's New York office about Oct. 1.

C. A. Crowe has been placed in charge of the Detroit office of the Asbestos Protected Metal Company. He was formerly manager of the Grand Rapids office. N. W. Tabor, manager of the Detroit office, has been made factory manager.

American Gear Manufacturers' Association will hold a meeting at the Edgewater Beach Hotel, Chicago, Ill., Sept. 14 and 15. Among the subjects on which papers will be presented are "Heat Treating and Hardening of Gears," and "Inspection of Gearing."

Vulcan Fuel Economy Company, Chicago, Ill., announces that its soot-cleaner business will hereafter be conducted by Vulcan Soot Cleaner Sales Company, a new Illinois corporation. The new company includes the officers and directors of the manufacturing company and also Charles DeVed as vice-president and director, and Joseph Kissick, Jr., as director and general sales manager.

W. K. Palmer, who for sixteen years past has been engaged in consulting engineering practice and the head of the W. K. Palmer Company, engineer, Kansas City, Mo., has accepted a commission as major in the Engineer Corps of the United States Army. In consequence his practice and the business of the W. K. Palmer Company will be discontinued for the period of the war.

Titanium Alloy Manufacturing Company, Niagara Falls, N. Y., announces that the constantly increasing demand for superior bronze and brass castings has compelled it to enlarge its bronze department and make a distinct unit of it under the name of Titanium Bronze Company, Inc., with works at Niagara Falls, N. Y., sales offices at Buffalo, N. Y., and general offices at 165 Broadway, New York City.

American International Steel Corporation, New York, N. Y., has been formed to build up export trade in steel and steel products, acting as a selling agency for American manufacturers and also as a buying agency for foreign concerns desirous of placing orders in the American market. This corporation is a subsidiary of the American International Corporation of which Charles A. Stone is president. It is stated that this company will not compete with the United States Steel Products Corporation, the foreign selling subsidiary of the United States Steel Corporation, but will supplement its efforts in opening foreign markets to American steel.

NEW ADVERTISING LITERATURE

A. F. Daum, Pittsburgh, Pa.: Folder describing and illustrating Daum refillable cartridge fuses for electric light and power service.

Northern Equipment Company, Erie, Pa., successor to the Erie Pump & Equipment Company, has issued a booklet on the Copes system of feed water control.

Westinghouse Electric & Manufacturing Company, East Pittsburgh, Pa.: Bulletin on complete stoker equipment, including descriptions and illustrations of the Roney stoker, chain-grate stoker, underfeed stoker, etc.

National Paving Brick Manufacturers' Association, Cleveland, Ohio: Booklet on vitrified brick pavements for city and country. The illustrations show installations in many localities, a number of which were made on streets used by electric railways.

Western Electric Company, New York, N. Y.: 1918 year book on electrical supplies, consisting of 1160 pages and containing more than 50,000 items. This book is being distributed at this time because the entire supply of 1917 books is exhausted and in order to meet the demand for a book published early in September for use in placing requisitions for fall and winter stocks.

Guaranty Trust Company, New York, N. Y.: Pamphlet on government export control entitled "The Regulation of Exports Under the Espionage Act." This pamphlet, which is of particular importance to those concerned in foreign trade, contains the list of articles which cannot be exported without licenses, and makes clear the restrictions governing the two distinct classes of exports under governmental regulation. One of these classes relates to the shipment of articles to the enemy and to European neutral countries; the other to certain commodities whose export is prohibited to countries other than those named in the first class. A list of destinations to which shipments are not permitted, and a list of those to which shipments are allowed under licenses, are included. How and where licenses may be obtained, and the nature of the information required to fill out the forms of application, are also clearly outlined.

NEW PUBLICATION

Belts and Belt Guards. The seventh in the series of safe practices pamphlets. National Safety Council, Chicago, Ill. Price, 10 cents.

Electric Railway Journal

Published by the McGraw-Hill Publishing Company, Inc.
Consolidation of STREET RAILWAY JOURNAL and ELECTRIC RAILWAY REVIEW

Volume 50 NEW YORK, SATURDAY, SEPTEMBER 15, 1917 Number 11

The "Journal's" Syllabus of the National Electrical Safety Code

THE trial year of the National Electrical Safety Code is approaching an end. Through the efforts of the United States Bureau of Standards, the national associations of affected interests and the technical press, it has been brought forcefully to the attention of all who need to be familiar with it in principle and in detail. It is automatically taking its place alongside the National Electrical Code, the guide in electrical construction with respect to fire risk. Familiar as it now is in general, however, the code is not as well known in detail as it might be, and as it needs to be if the best results are to be secured with its aid. In the electric railway field executives as well as engineers ought to have a comprehensive grasp of its provisions because they will be blamed if safety conditions on their properties are not what they should be. Realizing the difficulty necessarily experienced by busy officials in finding the time to study this code as they would like, the editors of the ELECTRIC RAILWAY JOURNAL cast about for some plan by which it could be grasped as a whole in a minimum of time. The outcome was an arrangement with Dr. E. B. Rosa and W. J. Canada, of the Bureau of Standards, to produce a digest or syllabus of the code for the specific needs of electric railway men. This work has just been completed and it will appear in this paper in two installments, the first being in the present issue. Dr. Rosa and Mr. Canada, who together largely fathered the code, have boiled it down to such compass that the whole syllabus can be read slowly in an hour, leaving the reader with a clear perspective view of the plan and scope of the work. It must not be expected that this outline will displace the code itself, which is already condensed as much as possible. Its function is merely to serve as a guide to the full text, for which purpose it is admirably fitted.

Regulating Current in Incandescent Headlight Circuits

PURE metals possess the inherent property of increasing in resistance with temperature. For apparatus requiring constant resistance this property is undesirable, and alloys having resistance practically independent of temperature are used in such cases. There are some cases, however, in which this property furnishes a protection against fluctuations in voltage as, for example, in the tungsten incandescent lamp. Here the current fluctuates much less than the voltage, and there is a tendency in the direction of self-regulation. The same principle applies in a more marked degree in the "ballast" used with the Nernst incandescent lamp, which contains a kaolin filament quite sensitive to variation in current. A very fine iron wire, inclosed in a vacuum tube and connected in series with the filament, varies its resistance so much with change in current as to serve as an almost perfect compensation for a tendency of the current to fluctuate with changes in voltage. At temperatures from zero up to say 150 deg. C., many pure metals increase in resistance at the rate of about 40 per cent per 100 deg. or 100 per cent per 250 deg. In tungsten the rate is slightly higher. At very high temperatures the variation is less definite, but the principle applies. The value of "resistance temperature coefficient" given is, however, a convenient one to remember and serves at least for qualitative reasoning. For some time past the fact that tungsten has a "positive" temperature coefficient has been utilized in regulating the current in incandescent headlights, the car lamps being utilized as resistors for the purpose. In an article published elsewhere in this issue the author gives the results of tests made to determine the effects of variation in voltage in such an arrangement. The data which he presents in graphical and tabular forms will be valuable for reference.

What Is the Disease "Streetcaritis"?

THE *Searchlight*, a monthly published at Grayslake, Ill., definies this word as the tendency of a large portion of the public to criticise the electric railway service which they patronize. Most of these critics are not perfect in the performance of their own duties or in their daily life, but this makes no difference. If they see or if they think they see any flaw in the quality of the electric railway transportation which they expected, they complain to each other and to the management. In fact, an improvement is quite as likely to draw their condemnation as a defect if it is of sufficient prominence to attract their attention. According to the paper quoted, this disease of the public "is as universal as street cars, as perennial as the burdock, as contagious as the itch and as virulent as smallpox." But the paper adds: "There is no more need for it than there is for any of these other things, and the same intelligence which will prevent them will prevent this." "The trouble is," it goes on to say, "that people want low fares, high wages, useful if profitless service, and the inalienable right to cuss the management. In the public mind these things constitute progressive and advanced public utility regulation. They do not. It is these things which retard the advancement and development of the service." The remedy it suggests is a better understanding of the utility by its patrons, and this can be secured only through publicity. This is undoubtedly true, and more companies are realizing this fact than ever before. The campaign for higher fares has been an education to the railways as well as to the public, although we believe that there would have been a marked movement in the direction of greater frankness and more publicity, even if the higher fare emergency had not arisen. Many companies have joined the movement. It is a part of the spirit of the times.

Keep Up Good Service Even if Fares Are Too Low

AS time goes on it becomes clearer and clearer that it is a false policy to cut down on up-keep of the electric railway plant when income falls off. The reason is simple and lies in the psychology of the public. A man realizes only that which actually touches him. And actual realization is a result not of logic but of feeling. Let us consider a typical case. Suppose that, owing to increased costs of material, the company is pinched. The nickel no longer produces sufficient revenue to pay all the bills, so the company begins to tell its troubles to the public.

As a matter of fact, the public doesn't care a rap about the company's troubles. It has heard the calamity cry too often. The words "bankruptcy" and "receivership" frighten only the general manager and the stockholders. But let an individual member of the public once realize that this situation is going to touch him and mean that because of insufficient revenue the service on the street where he lives may be cut next week from cars every three minutes to cars every six minutes and he is interested at once—even if to keep up the good service will necessitate an increased fare.

One thing is certain—the American wants good service. He's your friend if you give it to him. He's your critic if you do not. Once let him actually experience long waits for cars or rough rides over bad roadbed in dirty cars that are half heated and poorly lighted, and he will hold you responsible and find fault regardless of the fare or of your financial condition. The public as a public simply won't believe the service cannot be better. No matter what the fare, you cannot win friends by cutting down on service.

If in time of stress the companies keep up the service the interest of the public will be aroused on its side when this service is threatened.

Increasing costs leave the company three courses to pursue:

The first is to go on as companies generally have done, neglecting depreciation in the hope of better days to come. This has led to severe condemnation by both courts and public service commissions, and has also led to losses by investors. Bitter experience has taught railway men the short-sightedness of this course. They are no longer willing to be Micawbers, waiting for something to turn up.

The second, now that the law enjoins proper attention to depreciation, is frankly to lay the whole case before the public, asking for increased income equivalent to the increased cost of service, meantime keeping service up to standard. This is the policy of wisdom which more and more companies are following. The public through its official bodies must decide whether the service is to be kept up or allowed to degenerate. The typical American decision will be to pay the cost and have the service.

The third course is to skimp and pare at every point, resulting in service unsatisfactory to either company or public. This is the alternative which the companies in New York and other states which have applied for higher fares are now seeking to avoid.

But let the companies bear this firmly in mind. It is their duty—and no one else can do it—to convince both commission and public that the fair decision is the choice between more income or bad service. They should keep the service up while the matter is under investigation, acting on the theory that both commission and public really prefer the square deal and the wisest solution, regardless of demagogic clamor or ill-founded criticism. This policy should be persisted in unless, as is by no means to be expected, the commission recognizes no responsibility whatever to investors who have furnished the capital to set the railway system going. In that case, it is a choice between bad service, no service or bankruptcy.

The Public Should Deal with Innovations on Their Merits

IN matters relating to utility service the public is likely to regard any innovation with suspicion, either because of natural conservatism or because of fear that the change is suggested purely in the interests of the public utility. Time was, during the infancy of the electric railway industry, when people looked forward to the travel of heavy, noisy cars on tracks laid in the city streets as an abomination. Now it is generally conceded that the transportation facilities of a community are closely allied with its development, and the electric street railway has come to be regarded as a vital factor in business and social life. However, proposals to change rates of fare, to use one-man cars, etc., are too frequently met by the charge that such operating changes are not specified in the company's franchise, the terms of which at one time had been fully accepted by the company, without any consideration of the desirability or justice of the change in the light of present conditions or the results in service to the public.

Opposition to the skip stop is another good example of this common inertia of public opinion. Fast and accommodation service on steam roads is admittedly most efficient for long-distance transportation, just as express and local trains are used in rapid-transit operation for handling large crowds quickly. Either of these systems necessarily works inconvenience to certain patrons no less than the skip stop imposes upon those who live nearest the omitted corners. Not unlike many other improvements in electric railway facilities intended to give more, better and safer service and not generally comprehended by the average person, the skip stop as a form of express service has come to do its part. It can only be of the greatest good to the largest number. Those who oppose such changes on the ground that precedence or statutes alone prohibit them, or from distrust in the motives of their promoters, are deliberately blocking the progress of their community and are ignoring its vital needs.

Reversing the Present System of Rate Regulation

IS THE present system of rate regulation satisfactory? If not, how should it be changed? It is difficult to imagine questions more vital than these to the electric railway industry, but they are not ones which all operators have answered openly and fully. Too many are prone to grumble at the existing system without really using their gray matter to work out a plan for its improvement. It is much more easy to criticise than to construct. For these reasons we have read with great interest the speech made last week by President M. C. Brush before the Massachusetts Legislative Investigating Commission. Mr. Brush tears down the existing regulatory system, but he also builds it up, and to the latter process the industry should give serious thought.

A perusal of Mr. Brush's speech, abstracted in last week's and this week's issues, will show how he has got down to fundamentals in rate-making. To his mind the present system is defective because it places an unfair and unwise burden upon the utility. As a rule, a company desiring to increase its fare must file an application which must receive commission approval, or a revised tariff which may be suspended pending such approval. In either case the company must justify the increase before it can secure relief. This in reality means that in order for the company to be successful it must first become actually unsuccessful. Is this overdrawn? By no means, as we can testify. A company recently asked for additional revenue, on the plea of dire necessity. It produced figures showing the beginning of a serious decline in net earning power. "Ah," said the commission's experts, "but this may be only temporary." So now the case is held up until the company can accumulate figures indisputably showing its dangerous condition. In other words, when a group of business men in all seriousness announce that their company is on the road to bankruptcy, their judgment counts for nothing and they cannot secure relief until they are actually insolvent.

This is not the fault of the commissioners, but of the law. But why should it be?—says Mr. Brush. If a man tells the doctor he is going to die, the doctor does not calmly wait until the embalmer is called in. So Mr. Brush thinks that the existing system should be changed. He suggests giving the directors of an electric railway the power to establish an increase in fare to go into effect in thirty days. The new fares will continue thereafter for not less than one year if the commission does not after due investigation change the fare upon the ground of excessiveness or of managerial defects, or if the commission disapproves and the court upon appeal overrules it on questions of judgment. Further interesting details—such as those in regard to a provision for depreciation, the restriction of the return to 6 per cent or that higher rate necessary to invite additional capital, and the use of the surplus above the fair return under commission approval—we will not discuss. We are here concerned simply with the reversal in rate regulation procedure embodied in Mr. Brush's major recommendation.

For that is exactly what his plan means. Now the burden is on the utility of proving the absolute need of a higher fare, no weight being given to the judgment of its officials. Under Mr. Brush's system, the burden would be on the complainant, the public, of proving that the company had taken relief in excess of its needs. And in the meantime the company would have the benefit of the doubt, the public being duly protected against the payment of excess dividends. But one may ask how the public could demonstrate by any legal standards and legal evidence that the new fares were excessive, without a fairly long trial, any more easily than a company now can prove that it needs more revenue before its coffers go bare. Very likely it could not, but even then Mr. Brush's plan is the better.

The reason may be summed up in these words—electric railway credit. As Mr. Brush says, the entire basis of the proper relationship between a public utility and the community served is credit. Commissions thus far have minimized this point, probably unintentionally but none the less effectively. Now the investor is afraid of the new securities that are needed for electric railway development, and the only way he can be attracted is for it to be made apparent that henceforth electric railways operators will not be needlessly handicapped in the application of common business judgment to their problems. There must be a combination between the public and the investor, looking to the development of transportation facilities, and the way to secure this is to give the company the benefit of the doubt in rate cases. The public will be benefited, not harmed, for company prosperity means community prosperity. The point raised by Mr. Brush is vitally important. It should be embodied in the law.

The Issue of September 22

will contain a series of important articles on the one man car. Among those who will be represented by signed contributions are: F. W. Hild, C. O. Birney, W. H. Heulings, Jr., J. C Thirlwall, Clarence Renshaw and T. H. McCauley. There will also be valuable articles and tabulated data on one man car installations

Rebuilding Interurban Cars to Reduce Weight

The Author Shows How Old Cars Can Be Remodeled to Approximate Modern Equipment in Weight and Appearance at About One-Half the Cost of New Bodies—Detailed Drawings and Data Show Special Considerations in Accomplishing This End

By R. N. HEMMING
Superintendent of Motive Power Union Traction Company of Indiana, Anderson, Ind.

MUCH discussion has appeared in the ELECTRIC RAILWAY JOURNAL and has been heard at various conventions relative to car design and construction, particularly with reference to new equipment. Very little has been said, however, regarding the old interurban equipment which is generally in evidence on the long-established properties. Few interurban companies are so fortunately situated that they can consign these old cars to the scrap heap and purchase new and modern cars to replace them. In many instances, then, this brings about the need to rejuvenate the old cars in a manner which will add fifteen or more years of life to the fifteen or twenty which they have already served and to do it in a way which will make their continued existence an economical procedure.

Rebuilding these old cars, of course, means the retention in service of wooden equipment. The writer is a strong advocate of steel cars, and what is said here is intended in no way to discourage their use, but merely to point out the economic aspects of rebuilding the wooden structures as compared with buying new modern all-steel bodies. The idea is simply this: If, by spending $3,000 or $4,000 on an old car, it can be put in approximately the same class with reference to weight, comfort and appearance as a new car costing $6,000 or $8,000, thereby adding from fifteen to twenty years to its life, it may be well worth while to consider the investment of this amount of money in rehabilitating and modernizing old wooden equipment. In such case the old bodies are made virtually into new ones at approximately 50 per cent less cost, and the remodeled car will have the same earning capacity as a new one.

In the maintenance of wooden cars in the past, there has been a tendency to avoid a first-class reconstruction job by adding on a brace here and a reinforcement there in the effort to overcome sagging at the middle or drooping at the platforms, and to lose sight of the greatly increased weight resulting from this patchwork or makeshift procedure. In the end, it will probably cost about as much as it would to have done a first-class reconstruction job in the first place. How this remodeling can best be accomplished is a matter which each master mechanic must decide for himself, taking into consideration the peculiarities of the car construction and the service requirements. However, the writer presents herewith data compiled for comparison of the weights involved in different methods of reconstruction work on various parts of the car body.

Different types of underframe construction and their comparative weights are indicated in items *T*, *U* and *X* appearing in the tables of data on page 429. The use of pipe spreaders for bridging in place of wood bridging as listed in item *T* brings about a reduction in weight on a 60-ft. interurban car of about 1000 lb. in favor of pipe. There is also the advantage of a reduced material cost and a less labor cost in favor of the pipe. With the wood bridging (item *U*), it is necessary to drill four holes in each angle iron, four in each piece of bridging, two in each sill and the steel plate on the side of the sill, for each set of bridgework, and also one hole in each sill and sill plate for the staybolt. Some time is also consumed in bolting the pieces in place. On the other hand, with the pipe bridge construction (item *T*) a single hole serves for spreaders, bridging and staybolt. In each case a sufficient number of ½-in. x 6-in. diagonal braces are placed on top of the sills to eliminate any lateral motion of the sills. This is not shown in the drawing, as it was assumed to be standard practice on all wooden interurban cars, and for the same reason no data have been given as to the weight. The body bolster, needle beams and bumpers aid the staybolts in tying the underframe together.

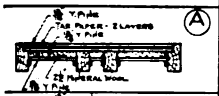
Another suggestion for weight reduction by eliminating part of the intermediate sills and using main sill construction for the remaining intermediate sills is shown in item *X*. The type of sill referred to is shown in item *Q*. These main intermediate sills are extended behind the bolster for a distance somewhat more than enough to counterbalance the load. They are riveted to the bolster and also supported underneath the bulkhead by a 4-in. x 6-in. angle iron, giving a uniform distribution of load on all sills. The comparative weights of the three above-mentioned types of underframe construction show a saving of 1046 lb. in favor of type *T* over type *U*, while the type *X* construction shows a saving of 2381 lb. over type *U* or 1335 lb. over type *T*.

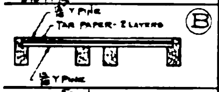
SIDE FRAME CONSTRUCTION

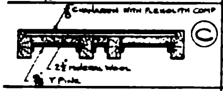
Different methods for construction of the side framing of a car are shown with their respective weights in items *K-N* and *V-W*. Type *K* construction has been used on some of the old types of wooden cars and is still used at the present time. Type *L* construction is being used somewhat, adding on No. 14 gage black iron by screwing or bolting to the face of the siding, in order to brace up the framework of the car body and give the car the appearance of semi-steel construction, and also to eliminate the cross-bracing between side posts, as shown in item *V*. The

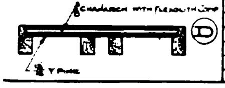
Data on Various Types of Construction Suitable for Use in Remodeling Old Cars—Union Traction Company of Indiana

Passenger Car Floors—Comparative Weights per Square Foot for Different Types of Construction


⅞ Y Pine
Tar Paper - 2 Layers
⅞ Y Pine
2½ Mineral Wool
⅞ Y Pine

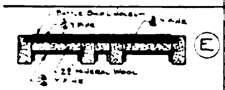

⅞ Y Pine
Tar Paper - 2 Layers
⅞ Y Pine

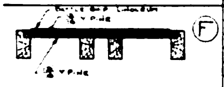

Chanarch with Flexolith Comp
2½ Mineral Wool
⅞ Y Pine

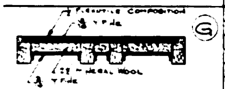

Chanarch with Flexolith Comp
⅞ Y Pine

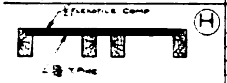
Type of Construction	⅞ Y Pine	Flexolite Comp	Tar Paper	Mineral Wool	Chanarch	[illegible]	Linoleum	Flexolith Comp	Total Wt per Sq Foot
A	2.57¢ 2.57¢ 2.57¢		.27¢ .27¢	4¢		2.88¢	.75¢		15.88¢
B	2.57¢ 2.57¢		.27¢ .27¢			2.88	.75¢		9.31¢
C	2.57¢			4¢	1.72¢	2.88¢		4.88¢	16.05¢
D	2.57				1.72¢	2.88¢		4.65¢	11.36¢

Passenger Car Floors—Comparative Weights per Square Foot for Different Types of Construction


Battle Ship Linoleum
⅞ Y Pine
⅞ Y Pine
2½ Mineral Wool
⅞ Y Pine

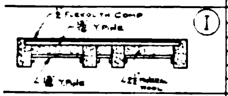

Battle Ship Linoleum
⅞ Y Pine
⅞ Y Pine

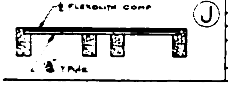

Flexotile Composition
⅞ Y Pine
2½ Mineral Wool
⅞ Y Pine


½ Flexotile Comp
⅞ Y Pine

Type of Construction	⅞ Y Pine	Flexotile Comp	Tar Paper	Mineral Wool	Chanarch	[illegible]	Linoleum	Flexolith Comp	Total Wt per Sq Foot
E	2.57¢ 2.57¢ 2.57¢			4¢			Battleship 9¢		21.21¢
F	2.57¢ 2.57¢						Battleship 9¢		14.14¢
G	2.57¢ 2.57¢	4½¢		4¢		2.88¢			16.52¢
H	2.57¢	4½¢				2.88¢			9.95¢

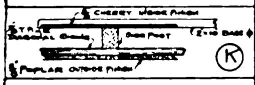
Passenger Car Floors—Comparative Weights per Square Foot for Different Types of Construction

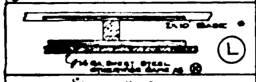

½ Flexolith Comp
⅞ Y Pine
⅞ Y Pine
2½ Mineral Wool

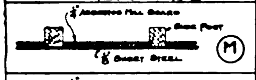

½ Flexolith Comp
⅞ Y Pine

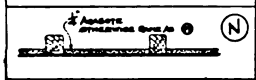
Type of Construction	⅞ Y Pine	Flexotile Comp	Tar Paper	Mineral Wool	Chanarch	[illegible]	Linoleum	Flexolith Comp	Total Wt per Sq Foot
I	2.57¢ 2.57¢			4¢		2.88¢		3.3¢	15.32¢
J	2.57¢					2.88¢		3.3¢	8.75¢

Passenger Car Bodies—Comparative Weights per Square Foot for Different Types of Construction


⅝ Cherry Inside Finish
⅞ Y.P. Diagonal Siding
Side Post
2×10 Base ♦
⅝ Poplar Outside Finish


2×10 Base ⊕
#14 Ga. Sheet Steel Otherwise Same as K


¼ Asbestos Mill Board
Side Post
⅛ Sheet Steel

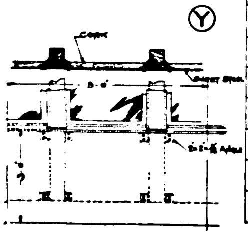

¼ Agasote Otherwise Same as M

Type of Construction	Inside Finish	Diagonal Siding	Outside Poplar Finish	Base Board	Sheet Steel	Sheet Asbestos	Sheet Agasote	Total Wt per Sq Ft
K	⅝ Cherry 2.07¢	⅞ Y Pine 2.77¢	⅝ Poplar 1.5¢	2×10 Y Pine .63¢				Add 40% for base board 8.86¢
L	2.07¢	2.77¢	1.5¢	.63¢	2.61¢			Add 40% for base board 11.47¢
M					⅛: 5.24¢	¼: 2.6¢		7.84¢
N					5.24¢		¼: 1¢	6.24¢

♦ Add 40% for base

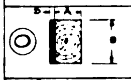
⊕-·-·- Exclusive of steel for base

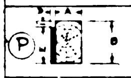
Passenger Car Bodies—Comparative Weights per Square Foot for Different Types of Construction

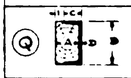

Cork
Sheet Steel
5-6"
3×3×⅜ Angle

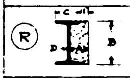
Type of Construction	Sheet Steel	Cork	2×2×⅜ Angles 2½ Long	⅜×3½ Bolts				Total Wt per Sq Foot
Y	⅛: 5.24¢	½: .43¢	[illegible]	6 @ .15¢ each, 1.2¢				7.47¢
	³⁄₁₆: 7.6¢	•	•	•				8.83¢
	•	¾: .6¢	•	•				10¢
	•	1: .85¢	•	•				10.25¢

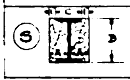
Passenger Car Sills—Comparative Weights per Lineal Foot for Different Types of Construction





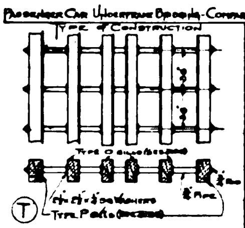


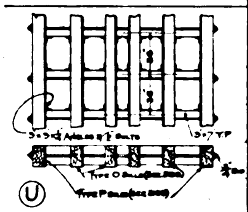




Type	Dimensions A	B	C	D	E	Kind of Wood	Cu. Inches per Lin Foot	Wt per Cu Inch of Wood	Wt per Lineal Foot of Wood	Wt per Lineal Foot of Steel	Total Weight per Lineal Ft of St and Wood
O	5	7		⅜		Y Pine	420	.022¢	9.240¢	17.85¢	27.09¢
P	6	8		⅜	7	Y Pine	576	.022¢	12.672¢	12.75¢	25.42¢
Q	2⅞ 3⅛	7 8	2×12 2×12			Y Pine •	241.5 293	.022¢ .022¢	5.313¢ 6.446¢	17.28¢ 18.75¢	22.5¢ 25.19¢
R	2⁹⁄₁₆ 2¾	6 7	[illegible] [illegible]			Y Pine •	184.4 228.7	.022¢ .022¢	4.058¢ 4.985¢	17.28¢ 20.¢	21.338¢ 24.98¢
S	2⅝ 2⅝	6 7	[illegible] [illegible]			Y Pine •	368.8 451.4	.022¢ .022¢	8.116¢ 9.930¢	17.28¢ 20.¢	25.396¢ 29.930¢

Passenger Car Underframe Bridging—Comparative Weights per Square Foot for Different Types of Construction


Type O Sills (See Sills)
⅞ Rod
⅝ Pipe
2½×2½×⅝ Washers
Type P Sills (See Sills)

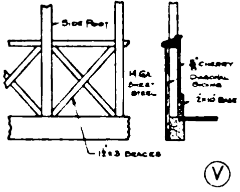

3×3×5/16 Angles & ⅝ Bolts
3×7 Y.P.
⅞ Rod
Type O Sills (See Sills)
Type P Sills (See Sills)

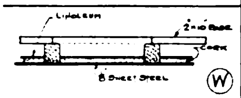
Quantities & Weights of Bridging Material Used in a 60×8½ Foot Car or 510 Sq Feet

Type of Construction	⅞ Rods	2½×2½×⅝ Washers	⅝ Pipe	Sills			Total Wt Required	Wt per Square Ft
T	12 Pcs 153¢	102 Pcs 90.3¢	92.8 Ft 104.86¢	Type P 2 @ 60 Ft 3080¢ Type O 4 @ 60 Ft 6501¢			9900¢	19.4¢

Type of Construction	⅞ Rods	3×3×5/16 Angles	3×7 Y Pine	⅝×3½ Bolts	⅝×7 Bolts	Sills	Total Wt Required	Wt per Square Ft
U	12 Pcs 153¢	170 Pcs 425¢	138 cu ft 609¢	340 106¢	204 102¢	Type P 2 @ 60 Ft 3080¢ Type O 4 @ 60 Ft 6501¢	10946¢	21.4¢

Passenger Car Bodies—Comparative Weights per Square Foot for Different Types of Construction


Side Post
14 Ga. Sheet Steel
⅝ Cherry
Diagonal Siding
2×10 Base
1½×3 Braces

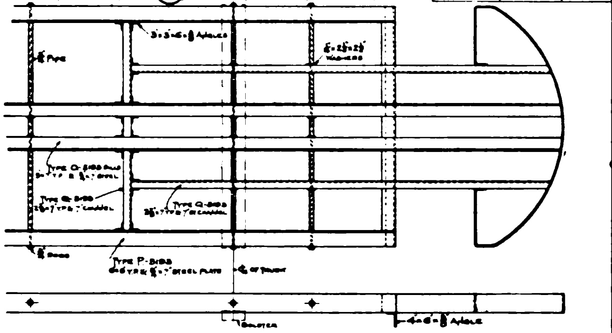

Linoleum
2×10 Base
Cork
⅛ Sheet Steel

Type of Construction	Inside Finish	Diagonal Siding	Diagonal Braces	Base Board	Sheet Steel	Linoleum	Cork	Total Wt per Sq Foot
V	⅝ Cherry 2.07¢	⅞ YP 2.77¢	1½×3 YP 13.3¢	2×10 YP 2¢	#14 Ga 2.61¢			22.75¢
	2.07¢	2.77¢		2¢	2.61¢			9.45¢
W				2¢	⅛: 5.24¢	Inlaid .75¢	½: .43¢	8.42¢
				•	³⁄₁₆: 7.65¢	•	•	10.83¢
				•	•	•	¾: .6¢	11.¢
				•	•	•	1: .85¢	11.25¢

Passenger Car Underframe—Quantities and Weights of Material Used in a 60×8½ Foot Car or 510 Square Feet

⅞ Rods	⅝ Pipe	⅝×2½×2½ Washers	5×5×6×⅜ Angles	⅝×7 Bolts	Cross Members Type Q Sills	4×6×⅜ Angle	Sills	Total Weight	Total Wt per Sq Foot
12 Pcs 153¢	32.8 Ft 104.80¢	36 Pcs 17¢	32 Pcs 122¢	60 Pcs 40¢	4 @ 3 Ft 270¢	2 Pcs 209¢	Type P 2 @ 60 Ft 3080¢ Type O 2 @ 60 Ft 3280¢ Type Q 4 @ 6 Ft 1380¢	8663¢	16.7¢

TYPE Ⓧ


5×5×6×⅜ Angles
⅝×2½×2½ Washers
⅝ Pipe
Type Q-Sills plus 6×7 Y.P. & ⅜×7 Steel
Type Q-Sills 2⅝×7 Y.P. & 7 Channel
Type Q-Sills 2⅝×7 Y.P. & 7 Channel
⅞ Rods
Type P-Sills 6×7 Y.P. & ⅜×7 Steel Plate
℄ of Truck
Bolster
4×6×⅜ Angle

use of either the cross-bracing between posts or the steel plate on the outside adds materially to the car weight, as is seen from a comparison of the weights in the tables on page 429. A number of railways have adopted a type of construction which is a combination of steel siding lined with Agasote or asbestos millboard for types *M* and *N*. Perhaps this method is more commonly used in the modern type of suburban and city cars of all or semi-steel construction. Few, if any, new or old interurban cars are built in this manner, for it is generally known that the heat insulating value of this construction is not as high as that shown in type *W*, where cork cemented to the steel siding and faced with plain linoleum is used. This linoleum is added as a flexible finish and can be stained to match any interior finish. The thickness of the cork or any other insulating material necessary would be governed by the geographical location and climatic conditions. Insulating values for various materials, except cork, is not available, but for Nonpareil corkboard the heat transmission is 6.4 B.t.u. in twenty-four hours per degree Fahrenheit difference in temperature per 1-in. thickness.

Side posts may be rigidly and neatly anchored to the steel siding plates by riveting angle plates to the sheet steel on each side of the post and bolting these through the post as shown in item *Y*. This may also be accomplished by riveting a U-strap around the post. By utilizing the type *W* construction the continuous truss plank can be omitted, thereby not only gaining a reduction in weight but also providing space for installing wider and more comfortable seats between the posts. This will be governed, however, by space between posts and whether reversible or stationary seats will be used.

FLOOR CONSTRUCTION

Several types of floor construction are shown in items *A-J*, together with their respective weights per square foot, not including sills. These weights are somewhat dependent upon the number of sills, since this governs the extent of sub-floor, mineral wool, etc., necessary. Separate weights are given for each item, even including the link aisle mats, making the data very flexible and applicable for almost any construction combination the rebuilder may select. Judgment, of course, must be exercised to select such combinations as will meet climatic conditions and assure a warm, comfortable car in the winter season. This is important as an item in fuel economy, as well as for the comfort of passengers. In choosing the floor material, the comparative wearing values of the various finished floors must receive consideration and the weight advantages balanced against the maintenance charges.

STORM SASH CONSIDERATION

The use of removable storm sash is an important item in the endeavor to minimize the weight of equipment to be hauled around. For example, the weight of the storm sash on a particular car is 380.5 lb. On forty-two cars the total storm sash weight would be approximately 8 tons. It has frequently been stated that it costs, on an average, $100 per year per ton in energy cost to operate a car. With this as a basis of figuring, and assuming the storm sash are on from Dec. 1 to May 1, a period of five months, the total energy cost for carrying these storm sash would be $333.30. If these were permanent storm sash and carried throughout the entire year, the energy cost would be $800. Thus the use of removable sash represents a saving in energy cost of $466.70, or 6 per cent on $7,800. From this it is obvious that it is quite worth while to avoid carrying this idle weight throughout the months when it is not needed, for it certainly would not cost $466 to remove, store, care for and replace the storm sash on forty-two cars. Furthermore, considerable additional work is involved in removing permanent storm sash when the cars are overhauled for painting.

In conclusion it should be noted that, when making such radical weight reductions in remodeling old cars, consideration must be given to the shifting of the center of gravity that results, and proper adjustment of the side bearings must be made.

New York City Fare Hearings Further Postponed

The only result of the reopening of the 2-cent transfer charge hearings for the Third Avenue Railway, New York, N. Y., on Sept. 10 was a further postponement until Nov. 12. Counsel for the company stated that he desired to secure operating figures for August, September and October. The postponement of this case from July 23 was noted in the ELECTRIC RAILWAY JOURNAL, of July 28, page 146.

The Third Avenue Railway is the only one of the New York City lines that has opened its transfer-charge case. The hearing on the application of the New York Railways has also been put over until Nov. 12, when it will probably be begun after the closing of the Third Avenue hearing.

Some advance may be made before this date, however, for the transfer-charge case of the Brooklyn Rapid Transit Company, although now not quite ready, is expected to be completed for a hearing scheduled on Oct. 1. Next in order at that time will be hearings on the 6-cent fare applications of the two Staten Island lines, the Richmond Light & Railroad Company and the Staten Island Midland Railway.

The only fare case that has been closed before the Public Service Commission for the First District is that of the New York & North Shore Traction Company, Roslyn, N. Y., which petitioned for a 7-cent fare for its lines in New York City. The final hearing on this application was held on Aug. 10. The commission, it is believed, will soon hand down a decision.

Fourth Annual Report of National Safety Council

The general manager of the National Safety Council reports a 68 per cent increase in membership for the past year, the active membership now being 3293. There was an income of $77,000 from dues and the surplus is $7,000. More than 5,000,000 bulletins have been mailed during the year. Six of the safe practices pamphlets have been issued, and six more are in process of publication. The fifth annual safety congress, held at Detroit, Mich., was attended by 2100 persons. The new danger emblem approved at that congress has since gained considerable popularity. The 1917 congress is being held this week in New York.

The National Electrical Safety Code from the Electric Railway Standpoint[*]—I

A Synopsis or Syllabus of the Code Prepared for the Convenience of the Busy Electric Railway Executive

By E. B. ROSA and W. J. CANADA
United States Bureau of Standards, Washington, D. C.

FOR nearly four years past the electrical industry has been co-operating with the National Bureau of Standards in the preparation of the National Electrical Safety Code. The necessity for a code of this character, applying to construction, operation and maintenance of electrical equipment and outside distribution lines, has long been apparent to the users of such equipment, to manufacturers, and to those administrative authorities whose duties include the safety and reliability of electrical service. In response to the public demand the Bureau of Standards, under authorization received from Congress, undertook a thorough investigation of the subject, in which it has had the co-operation and assistance of a great many other agencies.

The code has indeed been developed through the fullest co-operation of all the various interests concerned, including the American Electric Railway Association and its subsidiaries. The work has been carried on through conferences, correspondence and field inspections. The material contained in the code as presented to the industry has thus been made to represent the best consensus of judgment concerning electrical practice. In order to further assure that the code is reasonable, adequate and practicable in its engineering requirements, it has now been submitted for "examination, trial and constructive criticism," in its second edition, published Nov. 15, 1916, and will be further revised after a year or more of use and field study in any respects that experience shows necessary.

The code as presented consists of four principal parts, as follows: Part 1, Rules for the Installation and Maintenance of Electrical Supply Stations and Equipment; Part 2, Rules for the Installation and Maintenance of Electrical Supply and Signal Lines; Part 3, Rules for the Installation and Maintenance of Electrical Utilization Equipment, and Part 4, Rules to Be Observed in the Operation of Electrical Equipment and Lines. The condensed summaries, begun in this issue and to be completed in a later issue, briefly outline the material contained in the rules of the several parts with special reference to their application to electric railway conditions. Since these summaries are necessarily brief, parenthetical reference numbers are given and these indicate the particular rules of the code which apply to the conditions under consideration. It is believed that a brief examination of these summaries will form a reasonable basis for an understanding by interested but busy persons, of the general scope and character of the rules themselves.

Summary of Part I

Installation and Maintenance of Stations

Scope—The rules apply to generators, motors, storage batteries, transformers and arresters where under control of qualified operators and inaccessible to others (100). The conditions are outlined under which rules are to be applied, and when they are to be modified or waived (101).

Arrangement—For convenient use the rules are divided into nine sections, 10 to 18 inclusive.

Section 10. *Protective Arrangements of Stations and Substations*—The spaces in which electrical supply equipment is installed must be kept clear of dangerous processes, materials, gases or dampness (102), must be properly illuminated and provided with emergency lighting (103), and must be inaccessible to unauthorized persons (104). Floors must give good footing, floor openings and stairways must be protected (105), and adequate exits from such spaces (106) and safe fire-fighting facilities for the spaces must be provided (107).

Section 11. *Protective Arrangements of Equipment*—Electrical supply equipment is required to be so installed as to minimize the attendant life hazard and to comply with the rules (110), and the installation must thereafter be properly inspected and maintained (111). Non-current-carrying parts are required generally to be permanently and effectively grounded with given exceptions (113), grounding to be in accordance with the rules for grounding in Section 9. Current-carrying parts are required generally to be either guarded (115) or isolated (116), unless provided with adequate working spaces (114), and the voltage and other determining conditions are outlined. Equipment must also be sufficiently identified by suitable means (117).

Section 12. *Rotating Equipment*—Prime movers and, under given conditions, certain electric motors, must have automatic speed-limiting devices (120a, b), and no-voltage releases are required for certain field rheostats (120c). Prime movers or motors driving generators are required to have conveniently located stopping devices (120d, e). Guards are required for pulleys, belts and other moving parts (121). The character of guarding for live parts is specified (122), and special rules given for grounding non-current-carrying parts (124). In locations where inflammable gas or flyings exist special enclosures are required for parts which spark or arc in operation (123). Special protection of windings is called for where exposed to steam or oil (125).

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[*] For recent references to the National Electrical Safety Code see the following issues of the ELECTRIC RAILWAY JOURNAL: In 1915, April 3, page 673; April 17, pages 741, 750, 758; May 1, pages 825, 845; May 15, pages 939, 941; May 29, page 1036; June 19, page 1162; June 26, page 1189; Oct. 9, pages 697, 776; Oct. 16, pages 791, 839; Nov. 6, page 953; Nov. 13, pages 977, 996. In 1916, June 3, page 1048; Nov. 18, page 1059. In 1917, March 24, page 531.

Section 13. *Storage Batteries*—Batteries above 50 kw.-hr. capacity are required to be in separate enclosures (130), ventilated to the outside of the building (131) and illuminated as specified (134), and to be set on well-drained, acid-resisting floors with suitable insulating supports (132). All conductors in battery rooms are required, if subject to corrosion, to be well coated with corrosion resistive material (135). Live parts of high voltage are required to be so separated or barriered that persons cannot readily make short-circuits between them (133).

Section 14. *Transformers, Reactances, Induction Regulators, Balance Coils and Similar Equipment*—Means must be provided for readily short-circuiting current transformer secondaries (140). Low-voltage circuits of instrument transformers and the cases of transformers in general are required to be permanently grounded unless identified and guarded as high-voltage parts (141). Transformers used with utilization equipment are required to be installed under station, line or utilization rules respectively, according as they are so located or of such voltage that they come within the scope of the respective rules (143).

Section 15. *Conductors*—Automatic cutouts are required to protect conductors against electrical overload (150), and mechanical guards or flameproof covering to protect against mechanical injury or spread of flames under certain given conditions (151). Even where mechanical disturbance is unlikely, effective isolation (153), guards, mats and other protection is specified according to given conditions of voltage and other factors, to safeguard persons in the vicinity of conductors (153). In gaseous surroundings conduit must be sealed to prevent entrance of gases (154). A number of special rules cover damp locations (154), taping of joints (157), use of flexible cords (155), and the safeguarding of temporary wiring (156).

Section 16. *Fuses and Other Cutouts; Switches and Controllers*—Detailed requirements are given for these protective and control devices, which must be accessible, must identify the equipment controlled, must not be subject to accidental operation (160), and must be suitably enclosed if in gaseous or other hazardous locations (161). Some of the places and conditions requiring use of switches or of disconnectors are specified (162). Arrangement for the locking or blocking of switches is required under given conditions (164), and air-break switches are specified for certain places (164).

Automatic cutouts are required for given conditions, and provision must be made for their safe disconnection in specified manner (165 and 166). The suitable isolation or shielding of fuses and circuit-breakers is required to avoid burning or striking persons in their vicinity (167). Grounding of exposed non-current-carrying metal parts of switches or cutouts is required under certain given conditions (168), and the special requirements for suitably guarding live parts of these devices are detailed (169), including the use of sufficient working spaces, isolations by elevation, barriers or mats, as the given conditions determine.

Section 17. *Switchboards*—The points of control are required to be readily accessible (170), the board to be well lighted (171), orderly in arrangement and with points of control well identified (173). It is required that arrangement of boards be such that temporary barriers may be placed about live parts while work is being done on the board, and suitable normal separation of parts of different potential is called for (174). Detailed requirements are given for the grounding of non-current-carrying parts (175) and for the guarding of live parts by isolation, barriers or adequate working spaces, according to the voltage and other conditions involved (176).

Section 18. *Lightning Arresters*—Provision for disconnection of arresters is required under certain specified conditions (181), and suitable location (180), ground connection (182), and guarding of live parts of arresters are specified (184). Metal frames or cases of arresters must be grounded unless marked as high-voltage parts and suitably guarded (183). Arresters installed with utilization equipment must comply with either line or station rules, according as they are so located or of such voltage that they come within the scope of such rules (185).

Summary of Part II

Installation and Maintenance of Electrical Supply and Signal Lines

The rules of Part 2 deal with matters of line construction and maintenance. These rules have necessarily received more extended consideration than any of the others because with a greater number of interests affected by a given type of line construction than is the case with station construction there has been a greater diversity of opinion concerning what constitutes acceptable practice.

As more experience is being accumulated through the many trial applications of the code to field practice, the reasonableness and usefulness of the code become more apparent, and many utilities are voluntarily adopting it as their standard for future practice.

Scope—The rules on overhead and underground lines cover both transmission and distribution lines and their auxiliary equipment. They are intended to apply to all new and existing installations except where for special reasons any rule can be shown to be unreasonable or impracticable. The time allowed for bringing existing installations into compliance with the rules is to be determined by the proper administrative authority.

Arrangement for Convenient Use—The rules of Part 2 are divided into ten sections, 20 to 29, of which 20 is general, 21 to 28 apply to overhead lines, and 29 applies to underground lines.

Section 20. *General Protective Requirements*—Lines are to be so installed, inspected and repaired as to comply with the requirements and minimize the life hazard (202, 204). The rules are minimum requirements, but their interdependency must be considered if any one requirement is increased (203). Lines are to be isolated or guarded, poles are not to be stepped too near ground, metal parts to be grounded if within reach

(205, 207). Switches, conductors and poles are to be so arranged and marked as to facilitate identification and safety in operation (206, 208).

Section 21. *Grades of Construction Required for Crossings, and Other Conditions of Hazard*—In order to provide a degree of strength in overhead lines comparable with the hazard involved, but limiting expense of construction to an amount warranted in minimizing the hazard, three grades of construction for supply lines and two for signal lines are prescribed.

Grade A, the highest grade of construction, is required for supply lines where they cross important railways and for supply lines above 7500 volts, where crossing, conflicting or on common poles above signal lines (211, 214).

A lower grade of construction, Grade B, is required for supply lines over unimportant railroads, or where supply lines between 5000 and 7500 volts cross, conflict or are on common poles above signal lines, or where supply lines over 7500 volts are in urban districts, either alone or crossing, conflicting or on common poles above other supply lines (212, 215, 217).

A still lower grade of construction, Grade C, is required in urban districts for supply lines between 750 and 5000 volts, either alone or crossing, conflicting or in common use above signal lines.

Two still lower grades of construction are specified for signal circuits crossing over railways, Grade D, where the railway is important, and Grade E, where spurs, branches or unimportant railways are concerned. Believing that there is a difference in the relative hazard involved at crossings over railroads, depending upon the importance of the road, the code states that unimportant railroads generally are those having not more than a single parallel signal circuit. Signal circuits carried over a different right-of-way for a part of their route, but concerned in the operation of the railway line, are included as parallel signal circuits within the intent of this paragraph. Several alternate methods of construction for telegraph and other signal lines not for public use and for supply lines exposing them are permitted. Signal lines may be considered either as signal lines for public use, or as supply lines of the highest voltage to which they are exposed; or they may be protected in such a manner as to prevent their voltage to ground from exceeding 400 volts (210, 213).

Where none of the foregoing hazards is present no special requirements are made as to strength of construction for supply lines (212, 216, 218, 219).

Section 22. *Loading Assumptions and Sags of Conductors*—The actual strength requirements for any particular installation are determined not only by the grade of construction required, on account of the hazard, but also by the wind and ice loading which is likely to be experienced in the locality. Three loading districts, designated as heavy, medium and light respectively, are outlined in a map of the United States given in Appendix A (220, 222).

It is assumed that heavy loading is the resultant at 0 deg. Fahr. due to the weight of the conductor plus the weight of a layer of ice ½ in. in radial thickness, combined with a transverse horizontal wind pressure of 8 lb. per square foot on the projected diameter of the ice-covered conductor. Medium loading is taken as two-thirds and light loading as four-ninths that of heavy loading at temperatures of 15 deg. Fahr. and 30 deg. Fahr. respectively. In some extreme cases these values would be about equal to that of the conductor normally, so it is further stated that the total resultant load shall in no case be assumed as less than 25 per cent in excess of the weight of the conductor.

Tables of recommended normal sags based on these loading assumptions are given in Appendix A for bare and covered medium and hard drawn, and also for covered soft-drawn copper wires of ordinary sizes in spans from 100 to 1000 ft., these sags varying according to the grade of construction. Tables of stresses and tensions in conductors corresponding to these various sags are also given.

Some limitations are placed on conductors as regards material, minimum sizes and lengths of spans (221, 223). Soft-drawn copper in the smaller sizes is considered as unsatisfactory and sizes smaller than No. 6 are prohibited, with recommendations that this size be limited to spans not exceeding 150 ft. in heavy loading districts.

Section 23. *Strength of Poles, Towers and Other Line Supports*—The assumptions upon which the transverse loads on supporting structures are calculated are somewhat different from those for longitudinal stress in conductors. In heavy loading districts the assumed horizontal wind pressure at right angles to the direction of the line is taken for cylindrical surfaces, as 12 lb. per square foot of projected area for Grade A, 7 lb. for Grade B and 4 lb. for Grade C, the pressure being computed for poles and towers without ice covering, while conductors supported are assumed to be covered with a layer of ice ½ in. in radial thickness (230). In medium loading districts the transverse pressure is taken as two-thirds and in light loading districts as four-ninths that in heavy loading districts.

A table of transverse wind pressures on conductors is given in Appendix B for various sizes of bare and covered conductors for combinations of grades of construction and loadings. Other tables in this appendix include those for vertical loads on conductors and resisting moments of poles. These will be found of great convenience in making rapid calculations when determining the strength of existing or proposed lines. Minimum requirements and other specifications are made for crossarms, conductor fastening (231), wood and reinforced concrete poles (235), and steel towers (234). Methods of meeting transverse strength requirements by the use of side guys are also specified (233, 235).

Section 24. *Clearances and Separations of Line Conductors.*—Minimum clearances and separations are prescribed for all characters of wire crossings, conflicts and common use of poles while adequate climbing and working spaces on poles, depending on the voltage and in some cases also on established practice, is provided in order to insure reasonable safety to workmen (240, 242, 246, 249). In all cases the necessary increase in clearance, as span length or voltage increases, is specified (241). Where conductors are strung to different sags the necessity of suitable modification is stated for the otherwise required vertical separation at the pole (244).

The required clearances are stated for conductors in conflicting pole lines (245). Certain clearances are required for conductors from buildings and bridges according to voltages and other given conditions (247, 248).

Section 25. *Supporting Structures and Attachments*—The proper clearance of poles from hydrants and curb lines is required (250). The use and proper method of installing guys and anchors, including use of guy insulators and traffic guards, is specified (251, 252). Transformers, regulators, lightning arresters, switches and lamps are to be installed so as not to obstruct climbing space, and so that they are safely accessible (253, 255, 256). Insulator ratings are to be indicated by markings, and at locations where hazards are considerable the insulators are to be of greater dielectric strength if subjected to greater stress than elsewhere in the line. Test requirements are also given (254). Tree trimming is called for to prevent mechanical injury to live conductors (257).

Section 26. *Crossing of Supply Lines with Railways and with Signal Lines*—This section is a segregated and conveniently arranged specification for crossings of supply lines with railways and with signal lines. It contains all rules specially pertaining to these subjects, and reference is made to general rules to be found in previous sections that have a bearing also on crossings. Such clearance and separation requirements as apply, although fully given in Section 24, are here repeated in a form convenient for ready reference when considering this important phase of crossing construction. Underground and underbridge crossings of supply lines beneath railways are covered as well as overhead crossings.

Power, railway and signal engineers as well as inspectors can find in this section, either directly or by reference, the necessary rules and specifications relating to these types of crossings.

Section 27. *Overhead Supply Lines* (*or Signal Lines Which Have Taken on the Character of Supply Lines*) *in Various Situations*—This section is devoted exclusively to overhead supply lines in various situations in both urban and rural districts, and includes signal lines which have assumed the character of supply lines and railway feeders and contact conductors. As in Section 26, reference is made to previous sections for general requirements, while clearances and special features are given in detail. Rules for all possible conditions where only supply lines are concerned, including crossings, conflicts and common use of poles by different supply lines, are given either in detail or by references to preceding sections. Parallel pole lines are required to be properly separated. Where this is not practicable placing the lines on the same poles is recommended (270a). Utilities should agree upon and maintain a standard of levels (270b). Proper specified clearances of poles from fire hydrants and signal pedestals is to be maintained (270c).

Section 28. *Signal Lines at Crossings, Conflicts and Commonly Used Poles*—This section contains practically all the rules of the code applicable to signal line construction except for such signal lines as have taken on the character of supply lines, which are treated under Section 27. But few references are made to previous general sections, as signal lines are exempt from most of the general requirements for supply lines. Rules somewhat less severe than for supply lines cover in detail minimum requirements, materials and sags for signal lines crossing railroads. The crossing requirements vary somewhat, depending upon whether the crossing is over important or unimportant railroads. Special attention is given to the subject of common use of poles by supply and signal lines, as this type of construction is considered preferable to separate conflicting lines. Such rules as are necessary are given for signal lines alone or where concerned only with other signal lines.

Section 29. *Manholes, Handholes, Splicing Chambers and Ducts, Conductors and Equipment*—The duct system is required to be so laid out as to avoid short curves and to secure proper drainage (292d). Manholes are required to be conveniently accessible, of sufficient strength and to have sufficiently large openings and working space (292b and c). Covers must require a tool for removal, and openings must allow mechanical guards to be used. The duct arrangements must be such that conductors may be installed and maintained without mechanical injury, and sufficient distance must be provided between ducts for signal and those for supply conductors.

Supply and signal conductors are required to be maintained in separate conduits and manholes with given exceptions (295). Cables must be suitably identified, sufficiently accessible from the working space, properly supported and suitably protected against arcing (296). The necessary mechanical protecting is outlined for connections to overhead lines (297). Joints are required to be so arranged as to leave no bare current-carrying parts exposed in manholes, and cables of different voltages are required to be separated as far as practicable (297).

Customer-Ownership Plan on Byllesby Properties

Sales of preferred stock in August in the home territories of the Byllesby utilities prosecuting the customer-ownership plan exceeded $103,900 par value, the purchasers numbering 252 citizens, of whom seventy invested on the partial-payment plan. At the Oklahoma properties the initial offer was made to the public in the latter part of July, but it was well into the following month before the 2300 inquiries received from a population of 176,000 could be handled on a systematic basis. At Ottumwa the initial offer was made on Aug. 22. Plans are being made to start the customer-ownership plan early in September at the properties served by the Arkansas Valley Railway Light & Power Company, centering at and including Pueblo, Col.

A jitney bus service from the center of the city to the Federal Army Camp 6 miles south has been announced by the Louisville (Ky.) Jitney Bus Service Company. The company will also operate a line to the southwestern section of the city, the routes to be those not ordinarily traversed by the street railway. Fares will be 10 cents each. Regular schedules, it is announced, are to be maintained. A. D. Hollet is president of the company.

Reduction of Railway Operating Costs by Use of Automatic Substations

While the Labor Saving Is Most Conspicuous, There Are Other Sources of Economy Which Deserve Careful Consideration

By W. D. BEARCE

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During the past three years it has been clearly demonstrated that the automatic substation is capable of making substantial savings in the cost of railway operation. A dozen or more equipments have been installed on no less than seven different railway systems in various parts of the country and are now in operation. In addition to these, approximately thirty equipments are under construction in the factory of a single manufacturer.

Although the automatic substation has been previously described in the technical press, it may be of interest to outline the functions of this equipment. Briefly, the automatic-control apparatus is designed to do the work of the substation operator, and in addition automatically to limit the amount of current taken from the machine. The starting up and shutting down of the substation machinery is entirely taken care of by electrically-operated switches which are controlled by a motor-driven drum controller through suitable master relays, eliminating entirely the services of the attendant except as may be required for periodical inspections. The portion of this equipment designed to secure overload protection is a load-limiting resistor which is automatically inserted between the direct-current machine and the station bus when excessive peaks are drawn by reason of high acceleration on cars or locomotives or due to short-circuits occurring on the line. Where individual feeder protection is required a portion of the resistance is inserted in the outgoing feeders.

WHEN AUTOMATICS ARE MOST FEASIBLE

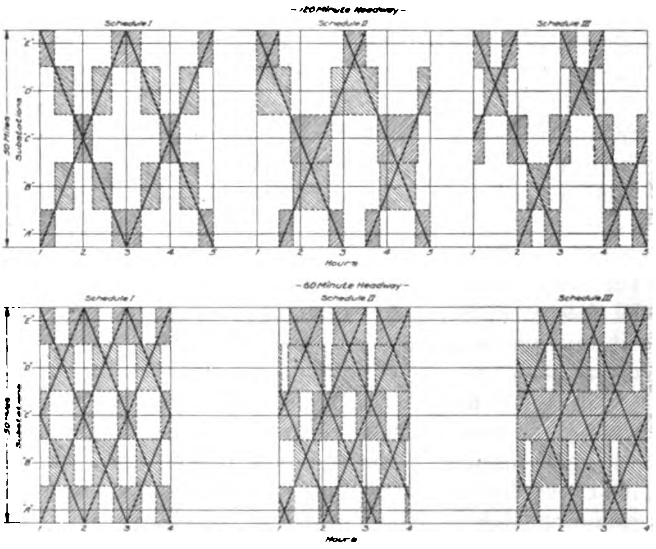
The accompanying train sheets have been prepared to show graphically the conditions under which the automatic substations operate. They represent hypothetical conditions on a 50-mile line, with one-hour and two-hour headway, and with several layover periods. Horizontal, light lines represent substations, "A" to "E," equally spaced, and the heavy diagonal lines are the time-distance lines for the cars. The shaded areas show the energy output from the several substations, their vertical dimensions being proportional to the power output, and their horizontal dimensions to the duration of that output. These areas also indicate when and for how long the substations are in action.

The sheets are drawn for no layover, and ninety-minute and sixty-minute layover for the two-hour headway, and for no layover, fifteen-minute-forty-five-minute, and thirty-minute layover for the one-hour headway. They show that of the assumed conditions the one-hour layover is most favorable for automatic operation with the two-hour headway, and no layover is best with the one-hour headway.

The specific items of operating costs upon which savings have been made are: First, reduction in cost of labor by cutting the operating force; second, reduction in the cost of power by eliminating light-load and no-load losses.

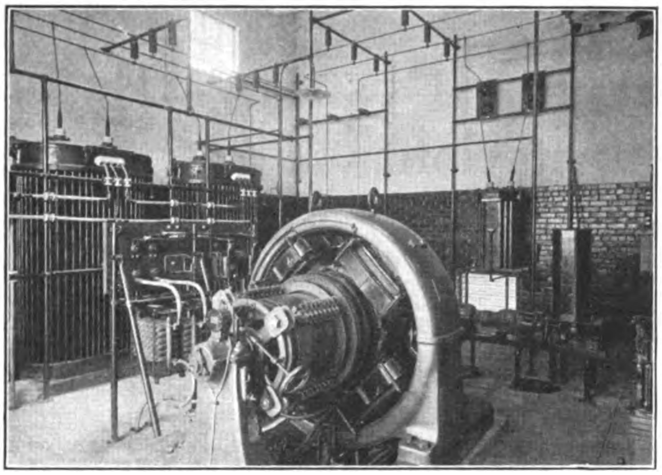
The most conspicuous saving which can be secured by automatic control is the item of expense for substation attendants.

Salary for these operators varies from $50 to $75 per month, and men are increasingly more difficult to get at even higher figures. At least two men are required per station for the day and night shifts, and on some roads it is customary to employ a relief man, in case of sickness or other emergency. With the automatic substation it is possible to employ one day and one night inspector for all of the stations on the ordinary system. One or the other of these men is always available in case of emergency, and the two will have ample time to make inspections at stated intervals and keep the equipment in proper adjustment. In the case of the Des Moines City Railway it has been stated that two inspectors will have ample time to look after the operation of sixteen automatic converter stations which will eventually be installed. In view of the present shortage of labor, this item should be especially attractive to the operating company.

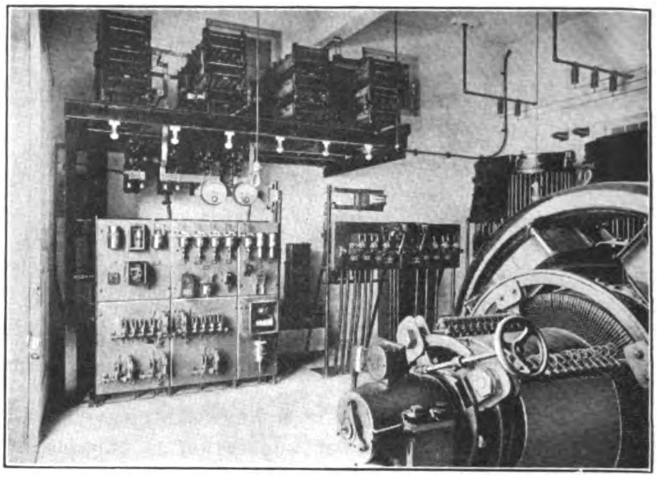


TRAIN SHEETS FOR INTERURBAN RAILWAY, SHOWING RELATIVE ADAPTABILITY FOR AUTOMATIC SUBSTATIONS

The saving in the cost of power is also an important item, whether energy is purchased, or manufactured in the railway company's plant. On the ordinary interurban system it is customary, and in fact necessary,



BRENNAN AUTOMATIC SUBSTATION, INTER-URBAN RAILWAY, DES MOINES, IOWA, INTERIOR



AUTOMATIC CONTROL EQUIPMENT IN SUBSTATION OF GRAND RAPIDS, GRAND HAVEN & MUSKEGON RAILWAY

to operate one machine over a period of at least eighteen hours per day. On a system of this kind, operating cars, for example, under a two-hour headway, the time of actual running for the substation machines can be reduced to about seven hours per day. Automatic operation thus eliminates the no-load losses on converters and also on the transformers during periods of eleven hours out of the eighteen.

In addition to this saving, the effect of the load-limiting resistance is to reduce instantaneous peaks caused by excessive drafts of current, upon starting trains, so that the machinery is fully protected from flashovers and abnormal overloads. This feature also serves as a check on careless motormen on occasions when they attempt to accelerate their cars too rapidly. The heavy current demand immediately brings the load-limiting resistance into the circuit, and automatically reduces the trolley voltage.

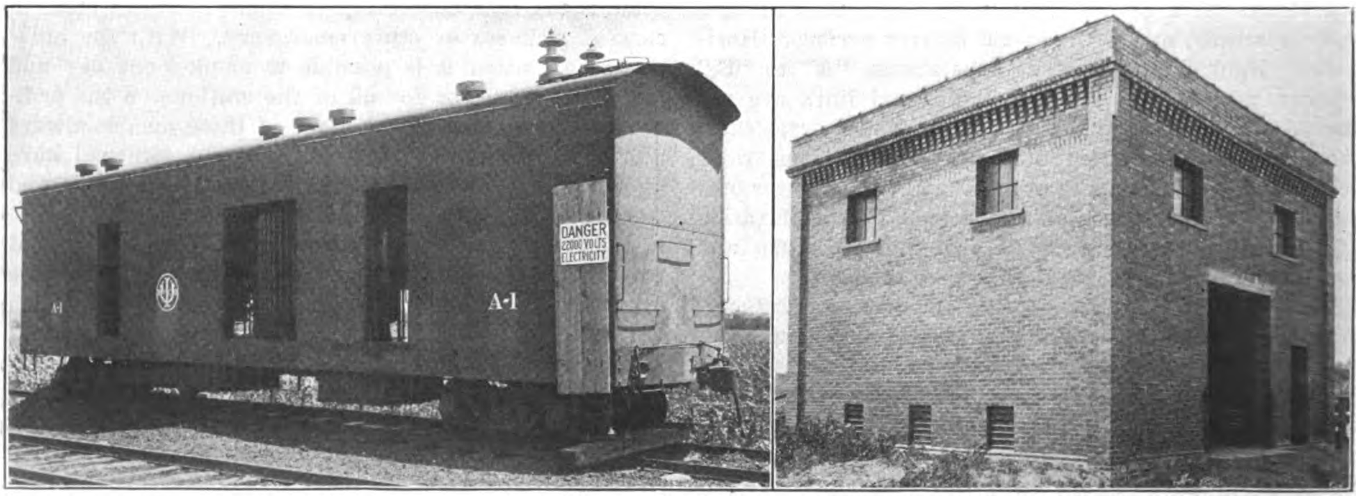
Advantages also result from the decreased time of running and the beneficial cushioning effect of the load-limiting resistance. The commutators of the synchronous converters soon acquire a durable polish, and thus become capable of long periods of service without attention.

On city or suburban systems operating cars on a more frequent headway the power savings are somewhat less. Where power is required throughout the day, two or more units may be found in the substations, and automatic control makes it possible to supply power from a single machine during normal load conditions with this machine shut down when no trains are on the division. The spare machine may be automatically cut in and out during rush hours to assist in handling sustained peaks. In many instances, the protection afforded by the load-limiting resistance so reduces the instantaneous peaks that one machine will carry the load. In any case, the improved load factor will help out the power station, and, where energy is purchased, will constitute an argument for more favorable power contracts.

EQUIPMENT COST MAY BE REDUCED ALSO

Further interest attaches to this apparatus, from a money-saving standpoint, due to the fact that a number of cases have been investigated in which it was possible to remove enough excess feeder, after the installation of properly located automatic substations, to pay for the entire cost of the automatic-control equipment. This condition is due to the fact that in the progress of natural growth city systems have usually found it more economical to install additional feeder than to construct and maintain new substations.

On systems where there is insufficient feeder to cope with a rapidly increasing traffic, the railway management is faced with the necessity of putting up additional feeders or building new substations. Assuming auto-



PORTABLE AUTOMATIC SUBSTATION AND EXTERIOR OF BRENNAN SUBSTATION, INTER-URBAN RAILWAY, DES MOINES, IOWA matic operation, new substations will usually prove much more economical than new feeder metal. With the present high price of copper, and the question of operators' wages disposed of by automatic control, the excess feeder becomes "money in the bank."

In addition to this actual cash asset the operating company has the satisfaction of knowing that less power is being used up in overcoming the resistance of the feeders.

Equipments are under construction for automatic stations ranging in capacity from 200 to 1500 kw. It may thus be seen that the possibilities of reducing operating expenses are not limited to the interurban system where it was first tried out, but may be secured as well on city systems operating frequent service.

As an example of the specific savings which can be made on a typical interurban road, the following table has been calculated as an engineering illustration, based on a hypothetical road having four substations of 300 kw. capacity each, and operating a car service on a 2-hr. headway. The savings indicated in this calculation are significant.

	Hand Operation	Automatic Operation
Headway between trains, minutes	120	120
Number of substations	4	4
Capacity of each substation, kilowatts	300	300
Actual time machines operate per day, hours	18	7
No-load losses per substation, kilowatts	12	...
No-load energy losses per day per substation, kilowatt-hours	132	...
Cost of energy at substation, per kilowatt-hour, cents	1	1
Value of energy saved per day per substation	...	$1.32
Value of energy saved per year per substation	...	$482
Number of inspectors or operators	8	2
Wages of each operator or inspector per month	$65	$65
Total wages per year	$6,240	$1,560
Value of wages saved per year	...	$4,680
Value of energy saved per year	...	$1,928
Total saving per year	...	$6,608

In the ELECTRIC RAILWAY JOURNAL for Jan. 13, 1917, most interesting figures were submitted regarding the Des Moines city and interurban equipments, showing the cost of installation and possible savings. Further evidence has been disclosed in a description* of the Milwaukee Electric Railway & Light Company's new station, operating at 1200 volts D.C., by means of which approximately $1,700 per year is being saved.

Another interesting system which is now operating a 500-kw. automatic substation is the Grand Rapids, Grand Haven & Muskegon Railway, which is largely fed from an overrunning third-rail. This station is located at Spring Lake, Mich., and was put in service in May of this year.

While all automatic railway equipments in operation thus far control synchronous converters, the adaptation of this apparatus to motor-generator sets is a very simple matter.

The field of application of the automatic station is not limited to railway substations, but may be extended to lighting and industrial units as well. In fact, equipments have been built to control water-wheel-driven generators and one at least to operate a synchronous condenser.

From the standpoint of the railway management which is faced with constantly increasing cost of operation, the automatic substation is one of the most effective means of reducing operating costs, and the whole subject deserves a careful study with reference to each particular case.

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*ELECTRIC RAILWAY JOURNAL, July 14, 1917.

Women Employees on Electric Railways

Details of Uniform Designed in This Country for Their Use—Conditions of Employment

In view of the extended employment of women in electric railway service abroad many electric railway executives are looking forward to the time when such employment may be necessary in this country. The ELECTRIC RAILWAY JOURNAL has, therefore, published all available information on the subject with a view to assisting in the making of plans for the future. Among the articles published one of the most recent and informing was that appearing in the issue for Sept. 1, page 351, where the successful employment of motorwomen in Rome, Italy, was described. Photographs of women employees were reproduced primarily to show the details of the uniforms worn.

One important company which has given careful study to the possible employment of women has prepared specifications for a uniform for surface car conductresses. The suit will comprise coat, skirt and cap, and will be made of khaki cloth. The coat will have a straight military effect, buttoning with ten large regulation buttons. There will be a convertible collar and the coat will be reinforced around the shoulders in a substantial manner. Across the back will be a belt fastening with three small regulation buttons on each side. There will also be a wrist strap on the sleeve with two small regulation buttons. There will be two side and two breast pockets, 1-in. deep, with reinforcement on the left breast for the badge. The skirt will be a plain gored skirt effect, belted around the waist, and will be worn about 7 in. from the ground. There will be two inside front pockets, straight cut. A plain military cap will be worn.

While the cost of the above uniform cannot as yet be determined accurately from the sample, it is believed that in large lots they can be made for $11 per suit and that the caps can be had for $1.75.

This company, in considering the employment of women conductors, has as yet only thought of this as an emergency measure if men cannot be obtained. Consideration has also been given to the use of women in emergency as porters, fare-box attendants, car cleaners, clerks, telephone operators and receiving clerks. It has been thought that it would be wise to employ only women between the ages of twenty-four and thirty-five, and that they should be given the same wages as men now receive for doing the same work. In the state in which this company operates the law requires that women be not compelled to work more than ten hours per day, or fifty-four hours per week, and they must have one day off each week. If women conductors are employed it now seems that they should be given separate work, and separate rating from the men, with separate accommodations at carhouses. As yet no physical requirements for women have been fixed, but they would, of course, require substantially the same training as men.

This subject is so vital at present that it is suggested that companies which have any helpful information regarding it should place this at the disposal of the industry generally. It is to form a topic for discussion at the coming conference of the American Electric Railway Association.

Why Present Fare Regulation System Should Be Changed

Additional Material Presented by President Brush Before Massachusetts Investigating Commission to Show Why Electric Railways Should Have Limited Power to Initiate Tariffs—Unfortunate Aspects of Present System

A REVERSAL of the present regulative policy of Massachusetts with respect to rate-increase procedure was advocated by M. C. Brush, president Boston Elevated Railway, at a hearing on Sept. 6 before the legislative recess commission which is investigating the present electric railway economic situation. A preliminary report of Mr. Brush's remarks was published in the ELECTRIC RAILWAY JOURNAL of Sept. 8. In place of the present protracted proceedings necessary before a rate increase can be authorized, Mr. Brush urged that companies be granted limited powers to initiate new tariffs, subject to corrective restriction by the Public Service Commission. Such a plan, he said, would do away with the burdensome delays at present sustained by the companies and would immediately insure the development of vitally important facilities and service improvements which cannot now be obtained because of the great difficulty of enlisting capital in the industry.

CAUSES OF THE PRESENT UNFORTUNATE SITUATION

With an elaborate system of laws for the purpose of covering each and every detail of the electric railway industry, and with a long list of able citizens in the rôle of public service commissioners, the question naturally is asked how the railways have got into their present unfortunate condition. Among the causes, Mr. Brush said, are the following:

1. In most cases the 5-cent fare was never ample to provide necessary service, sufficient revenue to care properly for depreciation and obsolescence, a fair return on the money invested, and a reasonable surplus for emergencies.

2. In endeavoring to create and maintain good terms with the public, unwise and improvident concessions have been granted. There have been too many cases of doing this, that or the other thing for expediency's sake. Furthermore, the companies in many cases have been afraid to stand up and state what was right and what was wrong.

3. At the time of the original creation of commissions it was believed that with improved methods and the growth of communities rates could properly be reduced. The minds of several years ago did not conceive the tremendous increases in the costs of labor and material and money. Moreover, it has been found in many cases by actual experience that after a community reaches a certain degree of development, the kind of service necessary requires larger investment per passenger carried than for service when the community was smaller.

4. The economic situation is always elastic, but the law is rigid. The electric railway situation is constantly changing, but the law providing for the supervision of railways is so rigid that the system fails to be sufficiently flexible to respond promptly and adequately to the varying conditions.

WHAT THE PRESENT RATE PROCEDURE DEMANDS

Under the present system, when an electric railway deems it necessary to revise its tariff, it must file with the commission its new rates. Then the commission must hold public hearings, after which it can authorize such of the changes or such portions of the changes as it deems expedient.

No matter how self-evident the necessity for the changes may be, none can be made until there have been hearings, special examinations and investigations, and then only such portion of the request is granted as the commission may think proper, basing its finding upon specific evidence of the company's actual past experience and proof. Of course, the increase cannot be retroactive, and therefore from the time the necessity exists until the hearings are closed and the order of the commission is issued the earnings must be insufficient and the return or service suffer.

Moreover, in order to secure such absolute figures as will justify an increase under the present system, the company must necessarily have previously failed to earn a reasonable return. It is inherent, therefore, in the present system that, instead of an electric railway being kept successful and healthy, it first must become actually unsuccessful and ill before any remedy can be secured.

HOW THE DAYS PASS BEFORE RELIEF IS SECURED

The Massachusetts Public Service Commission has in a number of cases granted increases in fares, but in substantially each case a considerable period of time necessarily elapsed between the time of the petition by the company and the time authority had been granted by the commission for any portion of the increase. Under the wording of the present act such suspension of revised tariffs and lapse of time is necessary, but in all such cases the company in the first place, in order to prove its case, was compelled to let occur a condition of earnings insufficient properly to maintain its credit before it petitioned for increases. In addition to such time as had already elapsed, therefore, the suspension of the suggested tariff by the commission to permit the remonstrants to prepare their case merely increased the period during which the company was earning insufficient net income.

From the time the public service commission act took effect on July 1, 1913, up to June 30, 1917, the various companies filed schedules of increases in fares, with elapsed time before being granted as shown in the table on page 439 opposite.

According to Mr. Brush, the present method has created a condition where the company, on account of its efforts to operate efficiently its property, is constantly opposing demands of the public in hearings before the Public Service Commission and elsewhere. It seldom is in a position to agree that any changes or improvements in service are wise unless they actually do not decrease net revenue. It is constantly arguing in hearings against the request of petitioners. Such a situation makes both petitioners and the commission feel that the company is antagonistic to them and is not willing to assist in the combined efforts to improve the transportation conditions.

The company fully realizes that its purpose is the furnishing of good, efficient, reliable transportation for the community in which it operates, but in its efforts to fulfill to the highest degree possible its function and give to the car-rider that transportation which is so absolutely essential it must also keep its property in a successful condition. The fact is too often lost sight of that the interests of the company and the public are essentially identical and that neither can be served properly at the sacrifice of the other's interests.

As a matter of actual fact, every burden which is placed on a public utility must necessarily, to a certain degree, eventually be transferred to the car-rider, either in increased cost of transportation or—if this is impossible, due to inability to raise rates—then in poorer service. The railway man is no more able than the farmer to make two and two equal five. When the farmer is confronted with increased labor and material cost, he meets it by an immediate increase in his price or the discontinuance of unprofitable production, while the railway man, because of his inability to increase his rate, must necessarily eventually take it out of his service.

An electric railway is practically manufacturing and selling transportation. The minute it sells its product at less than cost and is unable to pay a fair return on capital which has been furnished, investors will cease to buy its securities. This is exactly what has happened in Massachusetts. The investors have already lost so much in income and in the market value of their investments that they are reluctant to invest money under the present system. Yet capital must be secured or the communities will suffer.

IS COMMISSION REGULATION OF ELECTRIC RAILWAYS A SUCCESS?

There can be no question, in Mr. Brush's opinion, that there have been many advantages in commission regulation. The system has undoubtedly accomplished a great deal, but unfortunately it has cared for but part of the situation which it was created to cover. It has prevented the issuance of other than genuine securities; has prevented abuses, careless operation and discrimination; has compelled a correct and honest keeping of accounts, and has forced public utilities under its jurisdiction into making public such information as has been beneficial. Yet it has failed to perform one of its most important functions in its failure to provide for a reliable method of adequately increasing the transportation facilities of the commonwealth.

TIME CONSUMED IN SECURING FARE DECISIONS

Company	Petition Filed	Action	Elapsed Time, Days
Providence & Fall River	Jan. 1, 1914	Granted	71
Middlesex & Boston	July 3, 1914	Part granted	117
Norfolk & Bristol	March 12, 1915	Part granted	149
Blue Hill	March 19, 1915	Part granted	133
New Bedford & Onset	April 14, 1915	Part granted	147
Berkshire	(Company withdrew petition)		
Bay State	Sept. 7, 1915	Part granted	358
Case reopened	May 16, 1917	Part granted	47
Massachusetts Northeastern	Oct. 1, 1915	Part granted	379
Bristol & Norfolk	Dec. 20, 1915	Part granted	254
Norwood, Canton & Sharon	Oct. 27, 1916	Granted	186
Worcester & Warren	Jan. 17, 1917	Part granted	71
Ware & Brookfield	Feb. 21, 1917	Granted	36
Concord, Maynard & Hudson	April 5, 1917	Part granted	50
Milford & Uxbridge	May 3, 1917	Granted	97
Middlesex & Boston	May 24, 1917	Part temporarily granted	77
Holyoke	June 5, 1917	Pending	?
Boston & Worcester	June 25, 1917	Pending	?
Norton, Taunton & Attleboro	June 29, 1917	Pending	?

There is a tendency on the part of all concerned not fully to realize the tremendous importance of excellent transportation service. The question of fares is of secondary consideration, as long as they are anywhere nearly within reason, as compared with the importance of good service.

It is scarcely conceivable that almost any car-rider would not be willing to pay 1, 2 or 3 cents more per day for good, reliable transportation, than he would for poor transportation. A passenger is willing to pay for good transportation if he gets it. While a small increase in rates means comparatively little to the individual, it does mean in the aggregate a substantial sum which not only permits better transportation but so assures the investor of a reasonable return that he is not only willing to furnish funds for improved facilities and extensions, but is willing to furnish these funds at a comparatively low rate of return.

PRINCIPLES OF SUGGESTED REMEDY

To find a really constructive solution, Mr. Brush said, it will be necessary to get down to fundamentals and completely reverse the present system of commission regulation in so far as fares are concerned. The relations between that portion of the public who are car-riders and that portion of the public who are investors must be equitably regulated the same as all other political and economic relations are governed. The Public Service Commission should be a commission of supervision and not of administration, for there cannot be successful administration of private capital by public authorities without direct responsibility to the person who furnished the capital that makes the business possible.

The investor must be permitted to run his business according to his best judgment, and sell his goods at such prices as will render a reasonable return on the investment, provided he conducts himself at all times in accordance with the law of the community. He must be so allowed at least until he is shown to be in error by a proper authority, and then the same authority should prescribe the changes he must make in his practices or administration and assure the conserving of his interests.

In short, Mr. Brush stated, electric railways should have the right to initiate new tariffs, these to be subject to later change by the commission if found necessary. His full plan along this line was given in detail in the ELECTRIC RAILWAY JOURNAL of Sept. 8, page 400. The commission should continue, as at present, to keep informed as to the situation and the service of the companies, so that when a new tariff is filed it will know reasonably well the real condition and practices of the company.

It is doubtful if any temporary relief which might be suggested would meet the situation, for the permanency and also the sufficiency of any relief are the only things that will bring back into the railway field the much scarred and impoverished investor who has seen both his income and the value of his investment disappear.

What is done to remedy the situation must have a decidedly strong element of permanency, not only to invite new private capital now, but to make it reasonably clear in the invitation that a repetition of the present situation will not occur again in the near future.

After the war is over there will be a world-wide and keenly competitive market for capital, and it is manifestly for the best interests of the commonwealth to provide for the development of its own transportation industry—the very backbone of its prosperity—by making the investments of its citizens' savings in its railways so secure that their entire savings will not be forced into other investments or foreign markets.

RECOMMENDATIONS BY PRESIDENT BRUSH

In conclusion Mr. Brush summarized his opinions in the form of the following recommendations:

1. It should be constantly realized that substantially all capital stock of electric railways has been issued and the funds invested in the property in this commonwealth under the authority and inspection of the Railroad Commission or Public Service Commission, and therefore the usual charge of watered stock is not applicable to Massachusetts electric railways. Therefore substantially the amount paid at the time of issuance for stocks and bonds is the proper one on which to consider a fair return.

2. The importance of the industry to the community makes it imperative that some permanent means be provided either by private or public funds for its constant development, with respect to both extension of lines and enlargement of facilities on existing lines.

3. There need be little change in the laws with respect to the inspection and supervision of the companies by the Public Service Commission so far as service, safety, etc., are concerned. The change that seems necessary to effect improved conditions in the electric railway industry in the State concerns that portion of the present act which deals with the fare-regulatory powers of the commission.

4. Every burden or obligation such as paving, taxes, contribution to abolition of grade crossings, etc., becomes a part eventually of the operating expenses of an electric railway, and every element which tends to reduce the gross receipts, such as unrestricted operation of jitneys, etc., also eventually becomes the car-riders' burden. Therefore, to the extent that the legislative commission deems it expedient to recommend modifications in the present acts with a view toward increasing the net returns of companies, to that extent if the legislature approves, will fares be lower.

5. Various boards of public authorities such as boards of aldermen, superintendents of streets, boards of selectmen, highway, park, bridge and other commissions, etc., have jurisdiction over some detail or other of electric railways. It would be advantageous to all concerned to have the Public Service Commission authorized to act in the capacity of a board of appeal or supervisory board with very full powers on all matters where at present final jurisdiction rests with these other authorities.

6. The present unsatisfactory financial condition and service of substantially all electric railways in the State is evidence of the necessity of some prompt and constructive action whereby good service can be assured.

7. In order to restore the necessary confidence of investors in the continuity and integrity of a fair return, the companies should have limited powers to initiate their tariffs, subject to the corrective restriction of the Public Service Commission, with an opportunity to appeal to the courts for adjudication of differences in opinion.

8. Any solution of this problem must recognize that continuity of return on investment is important to the car-rider, and that merely temporarily improving the situation by increases in rates of fare will not be sufficient again to induce private investors to supply funds for extensions and improvements.

9. In every case where the credit of an electric railway is so impaired as to compel the payment of a rate of interest higher than the rate would be if the credit of the company were good, for either refunding existing securities or for providing funds for extensions, betterments, etc., the car-rider eventually suffers by paying more for the actual service than is necessary.

10. The only way first-class electric railway service can be assured to the car-rider, regardless of whether capital through private ownership or public ownership is employed, is for the fare to be sufficient to pay a proper rate of interest, except that if public funds are employed any deficit below the amount necessary to pay interest on bonds issued for such public purposes must be made up from taxes on the community served.

Creating Interest in New Freight Terminal

Upon the opening of its new East Side freight terminal, which was set for Sept. 4, the Detroit (Mich.) United Railways sent out a semi-formal invitation to attend the opening to the patrons of the company and to Detroit shippers, and consequently the affair was largely attended. Representatives from several electric lines with which the D. U. R. connects were also present. An illustrated article on this terminal appeared in the issue of the Electric Railway Journal for Aug. 11, 1917, page 219.

The arrangements for the opening were necessarily simple, so as not to interfere with business. Floral decorations were supplied to add to the attractiveness of the station and the visitors were entertained by being shown through the entire plant. W. S. Rodger, general traffic manager, states that all who attended were enthusiastic in their praise of the facilities provided for handling traffic and that they assured the company of a very large increase in the amount of business which it would be called upon to handle.

The Louisville (Ky.) Railway, in connection with a three-day baby show at Fontaine Ferry Park, in the west end of the city, arranged for transportation of the baby carriages from the park lines to the park and return. Mothers who wished to have their babies' vehicles transported so informed the conductors and the go-carts were then moved on a special.

Higher Fares Benefit the Public

This Point Should Be Emphasized in Publicity Campaigns for Higher Fares—Without Adequate Income the Company Cannot Give Adequate Service or Make Needed Extensions or Improvements

By IVY LEE

IT IS most important that the electric railways should cultivate in the public an entirely different attitude of mind toward them. The railways are seeking an increase of fares in order that they may continue to render service to the public. But a great part of the public seems to think only that the companies seek the increase of fares to pay higher dividends. The truth is that the prosperity of the utility and the prosperity of the city are prosperity in common and it is for the benefit of both. Elemental as this is, many do not yet understand it. It will take intelligent and persistent publicity for this idea to give it the general acceptance to which it is entitled.

Several up-State newspapers, notably the Syracuse *Post-Standard*, while frankly skeptical at first of the proposition to increase car fares, has, since the publication in advertisements by the New York State Railways of a complete showing of the financial facts, said practically this: "The company has proved its case; it needs more money." The *Post-Standard* adds: "Because the system cannot grow in equipment and service as it should on a 5.30 per cent return it does not follow that it must have an 8.32 per cent return (indicated from a 6-cent fare)."

This reveals the mental attitude of one looking upon the increase merely as a benefit to the company. It is not at all a matter of granting anything, little or much, to the railway company for the sake of making the company or its officers more prosperous, or just to be fair, as so many seem to think. It is entirely a matter of putting the company in financial position to bid successfully in the open market for capital in order that it may be able to provide service for the public.

And capital must be bid for in an open market where it has many other opportunities. If the people want the use of this capital in their electric railway service the bid must be whatever the conditions of the money market make necessary. Therefore the question really is what return will induce the capital in the open market to accept your bid. If it's an 8.32 per cent return, then it's 8.32. If it's only 7.32 so much the better. But under certain industrial conditions the return needed to secure the capital may even be 9 per cent or more, and if that's the rate that's the rate, and it must be met or your electric railway company must go without, which means a reduction of service.

Now the electric railway business is one of many hazards and fluctuations of which the layman seldom thinks. A disastrous trolley car collision like that at North Branford, Conn., the other day, or the more recent ones in Pennsylvania and in Virginia, or an accident like that at Niagara Gorge a few weeks ago where many lives were lost, may even bankrupt a company with judgments for damages. The risk from flood, from fires, from business depression or disaster to manufacturing plants and the like, seriously damage the electric railway receipts, and capital takes this into account. Just at present traffic is large because of general industrial activity. But this is not a permanent condition. Courts and public service commissions all over the country have many times declared that a rate of return of 8 per cent on the actual value of the property used in the public service is a fair average return. But if 8 per cent is to be the average, the return in years of activity like the present must be above 8 per cent to offset the years of business depression when the return is, say, 5 or 6 per cent, to say nothing of providing against disasters of the kinds spoken of above.

The point to be made clear is simply this: that under any kind of ownership, either public or private, capital has to be used to provide service, and the cost of getting that capital has to be met. The companies are petitioning for increased fares simply because they cannot without more income, get capital to provide service. The ultimate cost to the riding public is the same whether the exigency be met by increase of fares or a charge for transfers.

It must be remembered that an electric railway line is never finished. It is always building or replacing or extending, and it has to have a constant supply of capital each year just as much as it has to have a supply of coal or oil or wire or cars. Whatever their market price may be the company must meet it or stop running, and it's just the same about procuring a supply of capital.

If the Public Service Commission, convinced that to keep up service the companies need more income, should grant an increase but not increase enough to meet the situation, the public will be no better off than before. If your boy needs a suit of clothes and the cheapest suit that can be had costs $5, it won't help the naked boy to offer the clothing man $2.

The whole question resolves itself into a very simple business proposition: Are the companies getting enough income to keep up a good public service and pay a fair return on the capital actually used in the business? If not, it is the function of the commission to find out what the correct return to the companies is and to take the necessary steps to see that they get it. To do less would cause the public to suffer through the necessary cutting down or loss of service.

Fellow directors of Philip J. Kealy in the Kansas City Athletic Club recently presented him with a silver-mounted saddle and bridle, for his use as colonel of the 3d Regiment, Missouri National Guard. Colonel Kelly is on leave of absence from his duties as president of the Kansas City Railways.

Legislative Relief Is Imperative

President Sullivan Tells Massachusetts Investigating Commission that Railway Burdens Must Be Lightened to Avoid a Crippling of Service

THAT electric railway service in Massachusetts is suffering from malnutrition and that the public may look forward to crippled accommodation, if not a complete breakdown of transportation facilities, unless relief is secured through legislative action, is the prediction made by P. F. Sullivan, president Bay State Street Railway. This statement was made in an address on Sept. 5 before the members of the commission to investigate street railways, appointed by the 1916-17 Legislature.

"After thirty years' experience in electric railway operation," declared President Sullivan, "I warn this commission that unless relief is thus obtained that will result in reduced transportation expenses and coincidently permit fare schedules based on service rendered, the public must look forward either to a discontinuance of service or else to operation by the State."

FIVE-CENT FARE AN ERROR

The original error made by electric railways, President Sullivan said, was that a uniform fare was established, regardless of local conditions and without taking into consideration the changes of time. The lone and illogical argument in favor of the nickel is that it is a convenient coin. Its use as a measure of transportation cost is contrary to good business and to economic law. Unfortunately, however, there has been a kind of unexpressed belief on the part of the public that economic law does not apply to electric railway service.

Continuing, President Sullivan said:

"Cities and towns expect an unchanging and uniform rate for the electric railway fare, but do not expect and do not have a uniform rate of taxation, or a uniform rate for gas, electricity, water and other necessities the cost of producing which is governed by changing conditions. But who stops to think that the electricity necessary to operate miles and miles of transportation lines increases in cost with the increase in the price of coal just as inexorably as does the cost of the electricity used in a parlor lamp? Yet this item is but one of many things which have increased the cost of electric railway service. The Boston-Nahant steamers were discontinued this summer because the price of coal, with no increase of fare permissible, made the operation of the line impossible without loss. Had the steamers plied, transportation would have been provided for less than cost. Electric railways are in this very predicament. In many localities transportation is being furnished for less than cost. This cannot last. An electric railway is no more a charitable institution than is a restaurant or a grocery store."

ORDER FOR NEW CARS HELD UP BY LACK OF CAPITAL

Mr. Sullivan went on to tell how the Bay State Street Railway recently ordered 200 new cars of the prepayment type, hoping that with this additional equipment the service might be improved. When authority was secured for issuing $2,500,000 of serial coupon notes at 6 per cent, it was found impossible to make the sale. Capital had gone on strike. It became necessary to organize a car trust to take over the car contracts and lease the cars to the company. This plan was approved by the commission, and the company is now placing the new cars into service as rapidly as they are delivered.

PASSENGERS CARRIED AT FIFTY CENTS EACH

The Bay State system, President Sullivan stated, operates in ninety cities and towns. Previous to present high prices, the lines in some cities were operated at a profit, others at a loss. All the lines were under one management, well organized, careful, resourceful; yet the results varied as much as the localities varied. In one locality—the line between Wilmington and Billerica Center, 6½ miles long—the cost of carrying a passenger is 50 cents. It requires the carrying of a great many additional passengers on a profit-making line to offset this loss, and when the various returns from all the points are averaged, the company finds itself furnishing railway transportation as a gift, so to speak.

CLEVELAND SYSTEM IS NO GUIDE

Refuting the claim of those who maintain that the Cleveland system can be profitably adopted by other localities, President Sullivan pointed out that there is no comparison between Cleveland and the principal cities on the Bay State lines. From 1890 to 1917 the population of Cleveland increased 186.9 per cent, while the average increase of Springfield, Worcester, Fall River, Brockton, Lynn and Lowell, was 90.2 per cent, and the population of these six Massachusetts cities is less than that of Cleveland alone. Moreover, Cleveland has the advantage of wide streets, making construction and operation much less of a problem than is the case in the crooked and narrow streets of the historic New England municipalities.

Furthermore, notwithstanding that the standard of service is not up to that in many other cities, the people of Cleveland have been so persistently told that they have the "best system in the world" that they believe it, and calmly put up with inconveniences—longer distances between stops, etc.—that would otherwise draw adverse criticism. President Sullivan also said that the present generation is in reality enjoying transportation in Cleveland at less than cost, but that this must be paid for by the next generations, when new equipment, right of way, etc., must be provided.

THE PROBLEM IS SERIOUS

In summing up, President Sullivan pointed out that increased rates alone will not solve the problem, as there may come a time when increased rates will not be followed by a corresponding increase in income. Rates should be kept low; but to keep them low, relief must be given from taxes and other operating burdens.

Should this relief not be secured, it may become necessary for the communities to take over and operate the railways in Massachusetts, if the public is to receive adequate service. If the properties should be taken over by public authorities, they could be operated by private companies, *i.e.*, under public ownership and private operation. But this would result in serious complications, and the adjustment between towns and cities, each with its own conditions, would greatly interfere with efficiency.

In reply to questioning Mr. Sullivan told the commission that he favored the relief of the railways from paving charges and taxation. The latter would amount to $600,000 a year. Jitney regulation, he said, was also essential. He also recommended that all labor disputes be referred automatically to the Public Service Commission, and that in entering electric railway service every employee be required to sign an agreement to this effect. All powers now exercised by boards other than the Public Service Commission should be transferred to the latter. Furthermore, the companies should be reimbursed for their investment in community improvements, such as street widening, paving, bridges and grade-crossing abolition, in amounts which the commission should determine.

Why Not a Commercial Department?

It Is Just as Necessary for an Electric Railway as for a Manufacturer and Largely for the Same Reasons

BY M. B. LAMBERT
Assistant Manager Railway Department, Westinghouse Electric & Manufacturing Company

THE more one thinks about the problems confronting the electric railways to-day, the more he is impressed with the fact that the railways should be organized somewhat similar to the manufacturing industries. The problems before both are of three kinds, namely, commercial, engineering and production.

The manufacturers produce machinery and supplies; the railways produce transportation. The commercial department of the manufacturer sells the product; the commercial department of the railways should sell its product (transportation) to the public. This duty in both cases should embrace every phase of the selling problem, including a study of the necessary price (or reasonable fare) which the company should secure for its product.

With the manufacturing company, the cost of everything which the company as a whole must carry is known and is reduced to percentages to be added to the cost of its product, and if the total reaches an amount that the trade will not bear, the commercial department confers with the engineering department and the production department to determine what reductions in manufacturing cost are possible with a given lump sum development charge. The recommendations of the commercial department are then placed before the management for action.

For many years the commercial departments of the electric railways have not had to concern themselves with the price of their product. It has been fixed by law, and aside from what the legal departments have done to effect a change, the railways have done little or nothing, or at least, have accomplished little. Considering the question from purely a business standpoint, the average man in the commercial department of a manufacturing company would say that the commercial men in the electric railway industry have not been on the job. In fact, it is somewhat difficult to tell, on many properties, who represents the commercial interests of an electric railway. On some it is the president who takes a lively interest in the every-day commercial problems and signs the notices posted in the cars and printed in the newspapers. On others, a publicity man does this. On still others, it is the claim department which cares for complaints, etc. In other words, on the average electric railway the organization is similar to that of a manufacturing company except that the sales department is omitted. Some manufacturing companies at times have tried to get along without regular commercial departments, but all now recognize their necessity.

The writer has made it a habit, during the last few years, in the various towns and cities visited and whenever opportunity offered, to ask different residents whom he has met about the local railway, and has found that the vast majority knew nothing about the conditions under which these roads are trying to make both ends meet. On the contrary, the general impression is that the only interest the railway company has is to cut expenses, run worn-out cars and make all the money it can out of the town.

WHY NOT A RAILWAY COMMERCIAL DEPARTMENT?

The object of mentioning these things is to introduce this question:

Would it not pay each railway to maintain a commercial department to acquaint its patrons with the company's product, to conduct the right sort of publicity and, generally, to keep in touch with the public, much as the commercial department of a manufacturing company keeps in touch with consulting engineers, architects, etc., who have connections or influence in the purchase of the manufacturer's product?

As previously mentioned, it is also the function of the sales department to keep the engineering and production departments constantly alert in the matter of reducing costs to meet competition, increase profits and develop business. The function of the commercial department of a railway would be similar. It would have nothing to do with the daily routine operation of the road, excepting when production (*i.e.*, transportation) did not come up to the guarantees given to the customers. But it would be its function to bring pressure on the engineering and maintenance departments to find ways and means to reduce costs, and when all efforts were exhausted along these lines and an insufficient margin of profit still existed, it would be up to the sales department to get a higher price for its product.

I recently visited a small town where eight or ten cars are operated, the headquarters of the company being about 20 miles away. The superintendent in charge of the property has other duties and visits this particular line probably once a week. For the remainder of the time it is in charge of a local man who operates certain trips himself daily.

The investment represents probably $200,000, which is not far from the average investment in the other large business enterprises in the town. Imagine now whether any other of these enterprises would leave its entire business in the hands of a dozen employees without responsible head. If the Town Council desired any change there is no one locally with the railway of commercial training with whom dealings could be had. I conversed with one or two of the trainmen and, as usual, was told (of course confidentially) that all they heard from those higher up was "cut down expenses," etc. Imagine, again, what chance that property has if it should go before the Town Council and ask for a reduction in taxes.

The point about this story is this: Would it not pay the company to have a good experienced man in that community to take part in its various civic affairs and be the business man in charge of that $200,000 investment? Or, if it could not afford to pay for the entire time of such a man, ought it not to pick out some prominent local man in some other line of business who could give a share of his time to looking out for the commercial interests of the railway company?

Of course, I realize that the problems confronting the electric railway and those of the manufacturer are not identical. The parallel is not complete in all respects. But the commercial questions on the two are at least analogous and should be susceptible of somewhat the same treatment.

COMMUNICATION

Sleeve or Ball Bearings for Motors?

Sept. 10, 1917.

To the Editors:

I have read with interest the editorial in your issue of July 21 entitled "The Possibilities for Anti-Friction Bearings," in which you say that the industry is at last becoming aroused to the value of anti-friction bearings. At present, I admit, the value is somewhat of a hopeful character; that is, everybody hopes the anti-friction bearing will be a success. But the growing favorable opinion regarding the value of these bearings is largely the result of effective exploitation on the part of the bearing manufacturers and a desire on everybody's part to make anti-friction bearings a success.

Coming right down to cases, what is there in the anti-friction bearing that will justify the extra inherent cost of about $20 per motor, as compared to motors equipped with up-to-date sleeve bearings?

A great deal is said about the saving in cost of inspection due to prolonging the lubricating period from some twenty to thirty days up to six months or a year. As a matter of fact the presence of the sleeve bearing on the axle means that the oiler goes to the motor and performs the oiling operation just as frequently as before, and the only saving that can be charged up to the anti-friction armature bearing is the time involved in opening, filling, gaging and closing, plus the saving in lubricant. This is a very small percentage of the total time and expense of oiling a car equipped with armature and axle bearings of the sleeve type.

Again, increased gear and pinion life is claimed with the anti-friction armature bearing, but we know that 75 per cent of the error in center distance existing with the sleeve type axle and armature bearings must be charged to the axle bearing, and this is left unchanged, so that again only a small proportion of the maximum saving over present standard equipments is actually gained.

It is claimed that the anti-friction bearings will materially reduce the number of armatures now damaged, due to getting down on the pole pieces, but this failure is very infrequent on motors equipped with up-to-date sleeve bearings, and where it does occur it is almost always directly traceable to neglect.

It would also appear that the life of carbons and commutators would be slightly bettered, but here again worn axle bearings are the cause of most of the vibration which results in the deterioration of these parts.

Much is made of the lesser friction in the anti-friction bearing. This is true, however, only of starting friction, as at a comparatively low speed the friction of the so-called anti-friction bearing is actually greater (as proved by exhaustive tests) than the friction of the sleeve-bearing type bearing. There is here, however, a possibility of some service of definite advantage by a reduction of peak load where the frequent starting of a large number of equipments may produce a most serious condition in the particular operation.

The anti-friction bearing, to be an enduring feature of railway equipment, must show a definite financial saving to assist the railways in finding a way out of their present financial condition. There are no reliable data at hand from which general conclusions can be drawn regarding the comparative cost, including renewals, over a long period for anti-friction and sleeve-type bearings.

The editorial says that before bearing makers can go much farther with regard to present motors, they must secure more material and moral support, and continues: "It is up to the railways themselves to break away from traditional styles of motor armature bearings." This, of course, is true only if there is definite gain in the new types over those proven by long service.

It is my impression that before ball bearing makers can logically expect more material and moral support, they must assume responsibility for the brunt of possible expenditures by protective guarantees better than any they have ever yet been willing to offer. At present their best guarantees cover design, material and workmanship of their product for one year. Experience proves, however, that one year of successful service fails to demonstrate conclusively the fitness or money-saving capability of an anti-friction bearing. A strict adherence to this limited guarantee on the part of anti-friction bearing makers places the burden of responsibility either upon the customer or upon the motor manufacturer. It is evidently illogical for the motor manufacturer to bear the brunt of this development when the superiority of the innovation over his standard apparatus is still in doubt. It is also illogical for the customer to be expected to go in on a large scale on a new development when the ultimate profit, if successful, will revert to the manufacturer of the new article. Therefore, instead of its being up to the railways to break away, I claim that it is up to the anti-fraction bearing maker to give a guarantee that will protect the ultimate customer up to the point where the success of the anti-friction bearing is beyond all question.

It may be questioned whether it is right or wrong for the electric railway trade to expect the complete protection referred to above. The practice, however, has gained considerable headway, and the operators look to the manufacturers of equipments to make good anything that can be suspected of being defective, regardless of the length of time it has operated. If the advent of ball bearings into the electric railway field would be an entering wedge to break up this practice, it would be worth all it costs. You will see the justice of this argument if you will consider for a moment that the electric railways pay what it costs to manufacture, sell and keep sold electrical equipments. Therefore, any over-liberal policy in caring for apparatus simply distributes over all electric railways the cost of troubles that may be local, whereas a strict adherence to contract terms makes each railway stand squarely on its own feet.

It looks as if anti-friction bearings would have to be made a success, because both equipment manufacturers and railway operators have committed themselves to this development. I expected to see the development more gradual so that errors could be corrected and the new development inaugurated without intolerable expense. At present the movement is going faster than sound business principles would dictate, this being due, as already stated, to an artificial demand created by advertising campaigns on the part of anti-friction bearing makers.

You will be serving the interests of all parties to this development if you bring out clearly, by further discussion in your columns, the fact referred to above that the electric railways will ultimately pay for whatever this development costs.

In conclusion, it seems to me that if the makers of anti-friction bearings cannot afford to make guarantees of duration longer than one year, it is because the risk is too great. If it is too great at this introductory stage of the development, then it is too great to permit the operation of large numbers of motors so equipped, and unless practically all the bearings are successful for periods far in excess of one year it will be impossible to justify the first cost and the cost of renewals. ENGINEER.

Annual Meeting of Electric Railway Section N. S. C.

Well Attended Sessions Held in New York City in Connection with Sixth Annual Safety Congress

THE keynote of the papers and discussion at the meeting of the electric railway section of the National Safety Council, held in New York City on Sept. 12, 1917, was the necessity for discipline as the basis of successful safety work. The two sessions which comprised the meeting were held in the Hotel Astor and were attended by about fifty electric railway representatives. Edward C. Spring, Lehigh Valley Transit Company, Allentown, Pa., chairman of the section, presided. Space limitations prevent the publication of a full report of the meeting but abstracts of the principal papers will be given in a later issue. On account of the necessary absence of several of the scheduled speakers there were some deviations from the program printed in last week's issue of this paper.

COMMITTEE REPORTS

For the committee on membership G. O. Smith, H. L. Doherty & Company, stated that the net membership is now 139 electric railway companies. Starting with fifteen members less than three years ago the growth has been rapid, with a gain of forty-nine the first full year and seventy-five the second year. The prospects are excellent for securing a membership of 200 before the next meeting.

Mr. Smith also reported for the committee on safety education, of which H. W. Clapp, Columbus Railway, Power & Light Company, Columbus, Ohio, was chairman. He said that a large number of special bulletins have been sent out during the year just closed. In commenting upon this report Chairman Spring advised greater economy in the distribution of printed matter, by sending it only to those members likely to be interested.

PAPERS AND DISCUSSION

In place of the paper which was to have been presented by H. W. Clapp on "What Does the Safety Worker Want the President of His Company to Know?" Chairman Spring opened a general discussion of this subject. He said that it is the duty of the president to insure co-operation among heads of departments in this matter of safety. This the president cannot do unless he is personally interested. C. B. Scott, manager Bureau of Safety, Chicago, Ill., said that the basis of accident reduction is discipline which depends on the executive of the property.

Mr. Scott next digested a report on the extent and causes of collisions between electric railway cars and automobiles. This was based on data furnished by nearly fifty roads and covering about 19,000 accidents. The work was begun by Capt. H. A. Bullock, now "somewhere in France," who carried it on until he went into service. Mr. Scott had arranged the data in tabular form, but explained that the report must be considered only as one of progress.

The first formal paper read was by H. V. Drown, general claim agent Public Service Railway, Newark, N. J., who spoke on "Co-operation Between the Claim and Transportation Departments." H. A. Nicholl, general manager Union Traction Company of Indiana, Anderson, Ind., followed with a paper on "Some Methods of Securing and Sustaining the Co-operation of the Trainmen in Accident Prevention Work." Both papers were extensively discussed. Abstracts of these papers and of Mr. Scott's report, with the discussion, will appear in a later issue of the JOURNAL.

RESULTS OF ELECTION

The day's work of the electric railway section closed with a brief business session. The nominating committee, comprising V. J. Waltz, Toledo Railways & Light Company, Toledo, Ohio; C. L. Turner, H. L. Doherty & Company, New York, and H. B. Adams, Aurora, Elgin & Chicago Railroad, Aurora, Ill., presented the names of the following who were unanimously elected:

Chairman, Julien H. Harvey, Kansas City (Mo.) Railways.

Secretary, J. C. Davidson, Denver (Col.) Tramway.

Chairman membership committee, R. S. Metzger, Toledo Railways & Light Company.

Chairman committee on safe practices, J. H. Pratt, United Railways & Electric Company, Baltimore, Md.

Chairman committee on safety education, H. W. Clapp, Columbus Railway Light & Power Company, Columbus, Ohio.

Chairman committee on program, A. J. Van Brunt, Public Service Railway, Newark, N. J.

A resolution of best wishes to Capt. H. A. Bullock, former chairman of the section, was passed with expressions of regret that he could not be present. Another resolution authorized the chair to appoint a committee of three to confer with representatives of the national steam and electric railway, and automobile associations with respect to standards for grade crossing protection. G. O. Smith was appointed chairman with authority to select his associates.

EQUIPMENT and MAINTENANCE

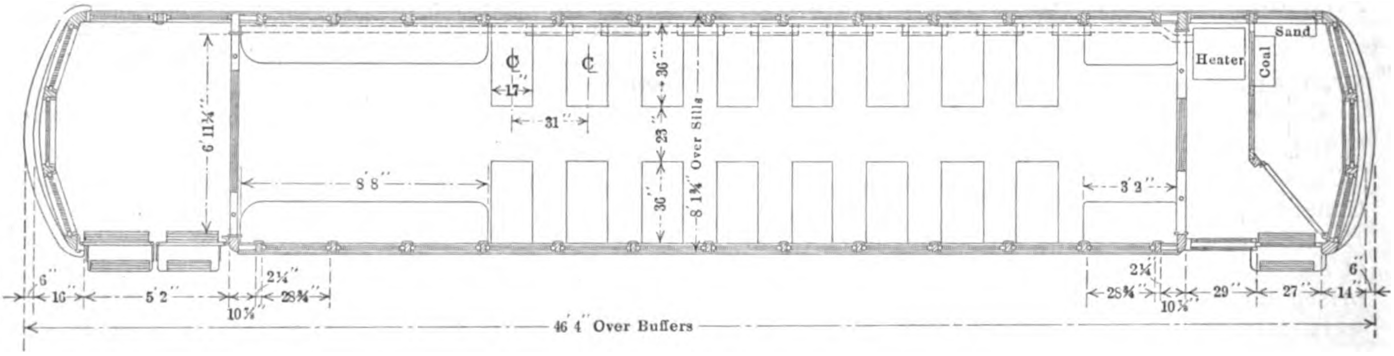
HAVE YOU A GOOD WAY OF DOING A JOB?
—*Pass It Along*

These Articles Have Been Selected to Provoke Thought and Stimulate Discussion. All of the Technical Departments Are Represented

The New Standard Hodenpyl-Hardy Car

Design with 33-Ft. Bodies, Closed Vestibules, Open Bulkheads, Arch Roof, Semi-Steel Construction, Weighing 38,000 Lb. Complete with Four-Motor Equipment

Hodenpyl-Hardy & Company, Inc., have practically selected as standard a 33-ft. car body as best suited to the conditions of their larger city properties. Fifteen cars of this type have been delivered to the Grand Rapids, Mich., and ten to the Akron, Ohio, railways. In general, these cars are designated as the 33-ft. type, the bodies being 33 ft. long over the corner posts and 46 ft. 4 in. long over all. The construction is the composite type, with steel underframe and steel sides up to the window rail, and with a wooden superstructure and arch roof. On account of the hilly conditions in both Grand Rapids and Akron the cars were equipped with four motors. These are GE-204 type. The trucks have a 4-ft. 6-in. wheelbase and 33-in. wheels, and are Standard O-50 type.



FLOOR PLAN OF NEW HODENPYL-HARDY CAR WHICH HAS A SEATING CAPACITY OF FORTY-EIGHT

The interior layout is shown in the accompanying drawing. It comprises an open bulkhead construction and an arrangement of cross seats and longitudinal seats which facilitate the ingress and egress of passengers. The bodies are designed for pay-within, single-end operation and equipped with doors for closed vestibule operation. The rear entrance and exit doors are of the folding type, with folding steps, and the front exit is a sliding door with folding step. The rear exit doors fold outward and the entrance doors fold inward, and all are manually operated by the conductor from his position at the rear bulkhead, where the two door-operating levers are carried on a center stanchion. The fare box is located on the stanchion just in front of the conductor as he faces the rear, and the clock register, arranged for foot operation, is placed overhead on the bulkhead inside the car body. The rear platform is generously dimensioned to allow for a rapid loading and get-away, and for fare collection after the car has started. A partition on the front platform provides a cab for the motorman in which all the control equipment is installed, and also the coal box and one sand box for the left-hand rail only. These are narrow wooden boxes lined with galvanized sheet iron. The heater is installed on the platform, just behind this partition. The sliding door at the front end of the car is manually operated by the motorman.

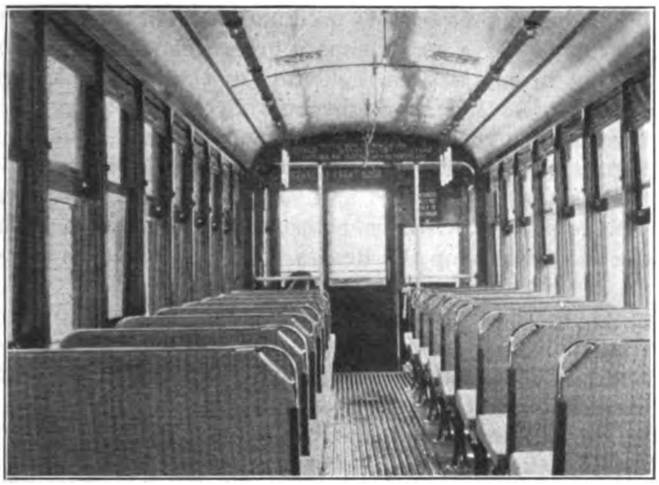
The sixteen cross seats, the two six-passenger longitudinal seats at the rear, and the two two-passenger longitudinal seats at the front give a total seating capacity of forty-eight. This capacity is attained with a car weight as follows:

Body	18,000 lb.
Electrical equipment	6,463 lb.
Trucks	11,400 lb.
Brakes	1,361 lb.
Heater	400 lb.
Total weight	37,624 lb.
Weight per seated passenger	784 lb.

The general dimensions of the cars, in addition to those shown on the accompanying plan drawing, are as follows:

Height bottom of sill to top of roof	8 ft. 5¼ in.
Height floor to underside ceiling	7 ft. 6 in.
Top of rail to bottom of side sill	31 5-16 in.
Side posts, center to center	31 in.
Seat, bottom length	35 in.
Seat, back height	30½ in.
Rail to first step (front and rear)	17 in.
First step to platform (front and rear)	14 in.
Platform to car floor (front and rear)	11 in.

The interior of the car is finished in mahogany, with buff-colored headlining. Eighteen 23-watt plain-bulb lamps without shades are installed over the seats. The



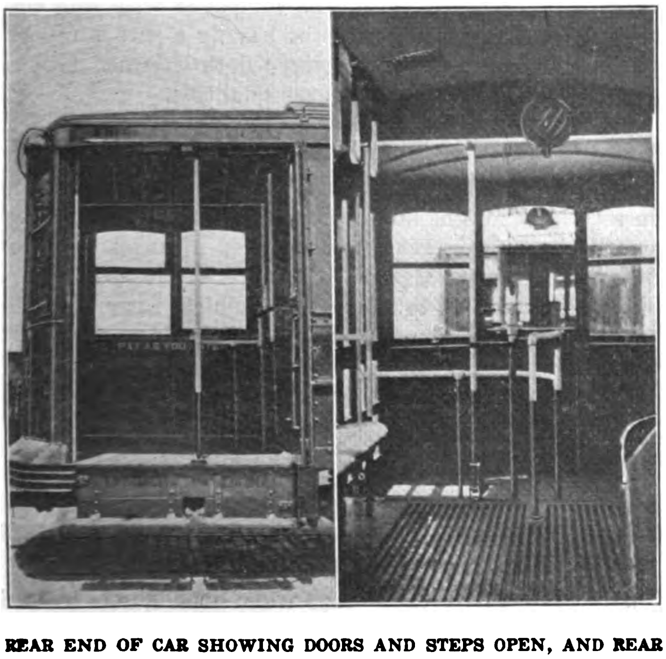
INTERIOR VIEW SHOWING FRONT END OF CAR

wood-sash windows are arranged to raise, and the window guards on the outside are divided up in two window sections. All the vestibule sash are arranged to drop into the dash, except the right front window, which is stationary on account of the destination signs. The upper sashes on all windows are stationary.

The superstructure is almost entirely of wood construction. The side posts are made of 2¼-in. x 4-in. lumber, and the corner posts are 4 in. x 7 in. The bulkheads are 5 in. thick and of composite construction. The ⅞-in. x 1¾-in. white-ash carlines are bent in one piece and reinforced by nine ½-in. x 1½-in. steel carlines.

The outside of the vestibule is covered with No. 14-gage steel, shaped to cover the bumper. The inside vestibule panels are also made of No. 14-gage sheet steel which is finished to match the interior woodwork. The motorman's glazed partition extending part way across the front platform is 4 ft. 9 in. wide. This is equipped with a suitable curtain on the inside and a bronze window guard on the side toward the car body. An electric marker is placed on each side of the rear vestibule above the windows and set into the end framing so as to be nearly flush.

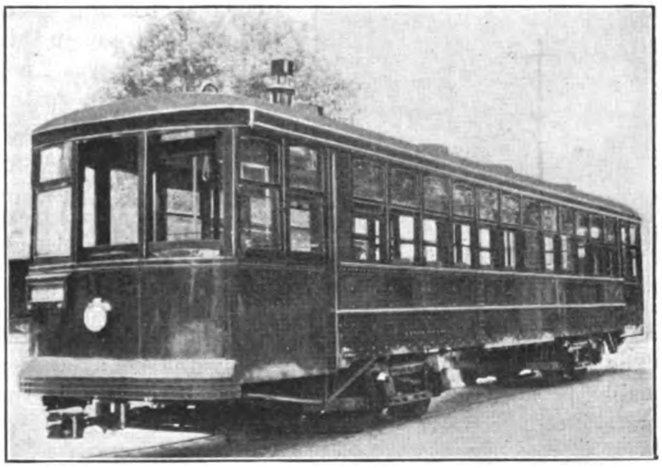
The main side members of the steel underframe are made of 5-in. x 4-in. x ⅜-in. angle irons riveted to the bottom edge of a ⅛-in. x 36-in. patent level steel plate which is continuous from corner post to corner post. A ⅜-in. x 3-in. flat iron is riveted along the top edge of the side plate. The center sill is made up with an 8-in. 11¼-lb. channel laid flat with the flanges extending downward. The 10-in. 15-lb. channels which form the end sills are placed with the flanges extending outward and are securely riveted to the built-up side sills by means of special steel castings and ½-in. steel rivets.



REAR END OF CAR SHOWING DOORS AND STEPS OPEN, AND REAR PLATFORM STANCHION AND RAIL ARRANGEMENT

The principal members of the built-up type bolsters are 1-in. x 8-in. steel plates. A 4-in. 5¼-lb. channel is placed on each side of the bolsters which are placed at 20 ft. 6-in. centers. In addition to these cross-members, there are also six 4-in. channels across the body between bolsters. These channels are all laid flat and are riveted to the center and side plates by means of gusset plates.

The platform knees are of the open-truss type construction with I-beam spreaders riveted between the 4-in. 5¼-lb. channels. The center platform knees are made up of 3½-in. x 6-in. x ⅜-in. angle irons which extend from the bumper back to the end sills.



NEW CARS FOR GRAND RAPIDS AND AKRON

The car bodies were built by the St. Louis Car Company, and a list of the miscellaneous equipment on the cars was published in the rolling stock column of the ELECTRIC RAILWAY JOURNAL for June 16, 1917, page 1123.

Concrete Slab Below Track No Advantage in Gravel and Sand Soil

T. C. Roderick, chief engineer Grand Rapids (Mich.) Railway, recently took up a piece of track 100 ft. long which had been installed twenty years before as a test installation to prove the value of a concrete slab below the track. In this case a 6-in. slab of concrete was poured, and on top of this 2 in. of light gravel placed for tamping. The ties used were of oak 6 in. x 8 in. x 7 ft. in size, and the space between them was filled with concrete. This track was installed in 1897 with 7-in., 77½-lb. Wharton tram girder rails. When it was taken up the ties were found to be in a condition which would warrant their use for some time yet, but this condition was no better than that of ties in use for the same period in adjacent track constructed without the concrete slab. No advantage could therefore be ascertained for this type of construction where the soil conditions provided a gravel and sand base, as was the case here. Mr. Roderick thought that if the soil had been clay the concrete slab construction might have shown a prolonged life for the ties and general track condition.

Displaced Feeder Cable Carried Temporarily on Span Wires

When it becomes necessary to get heavy feeder cables out of the way to permit building operations, this may be done safely by simply shoving the cable out on the span wires and tying it there in some temporary manner, according to James Scott, superintendent of overhead Cleveland Railway. The accompanying halftone shows an instance in Cleveland where a 1,000,000-circ. mil cable was taken care of in this manner. It was not necessary to remove the poles, but the cable location had to be changed to allow the work on a new building to progress without interference. The span wires are ½-in. standard steel cables, 100 ft. long and spaced about 100 ft. apart. The extra load placed upon them by the heavy feeder cable is not sufficient to particularly jeopardize the safety of the overhead construction.

HEAVY FEEDER CABLE CARRIED ON SPAN WIRES TEMPORARILY

Mazda Car Lamps as Voltage Regulators for Incandescent Headlights

The Author Shows Why They Are Well Adapted for Use as Headlight Resistors

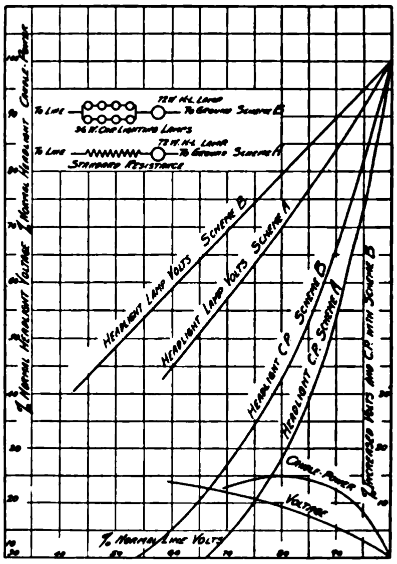
BY J. R. MCFARLIN
Electrical Engineer Electric Service Supplies Company, Philadelphia, Pa.

Incandescent headlights, whether employed for city, suburban or interurban service, possess among other advantages those of low first cost, very low operating and maintenance costs, and desirable operating conditions. One disadvantage is that under moderate line voltage drops the projected candlepower is somewhat more reduced than in the arc headlight. Where voltage drops are severe, however, the incandescent headlight will afford some light even under the worst conditions.

Many attempts have been made to design a voltage regulator for incandescent headlights, but of these none has up to the present time come into general use. Aside from voltage regulators there are two general schemes for supplying power to the headlight from the trolley, as follows: (1) It may be connected directly in circuit between the trolley wire and ground in series with resistance to allow proper voltage across, and current through the headlight bulb. (2) It may be connected in series with the Mazda lamps used for car illumination.

The headlight resistors used under the first plan have approximately a zero temperature coefficient, hence do not act in any way as regulators of the headlight bulb voltage. As the headlight bulb itself has a positive temperature coefficient it tends to prevent the voltage impressed upon it from decreasing directly in proportion to the line voltage and so acts in a manner as a voltage regulator. For purposes of comparison with the second scheme the first will be considered as comprising a totally unregulated circuit.

Where the headlight is operated in series with the car lamps, the most common combinations are as follows: (1) 36-watt headlight bulb in series with four 36-watt series car-lighting bulbs; (2) 46-watt headlight bulb in series with four 46-watt series car-lighting bulbs; (3) 46-watt headlight bulb in series with two parallel circuits of four 23-watt series car-lighting bulbs; (4) 72-watt headlight bulb in series with four 72-watt series car-lighting bulbs; (5) 72-watt headlight bulb in series with two parallel circuits of four 36-watt series car-lighting bulbs; (6) 94-watt headlight bulb in series with four 94-watt series car-lighting bulbs, and (7) 94-watt headlight bulb in series with two parallel circuits of four 46-watt series car-lighting bulbs.



VOLTAGE AND CANDLE-POWER CURVES FOR INCANDESCENT HEADLIGHT

Since the temperature coefficient of resistance of a tungsten filament lamp is highly positive, the headlight bulb connected according to the second plan will have a certain inherent regulation as compared with one connected in series with a resistor having a zero temperature coefficient. Below are given data obtained from a typical test made to show these qualities.

RESULTS OF TEST

For the test a 72-watt, 115-volt Mazda "B" filament in a G-25 headlight bulb was burned in series with two parallel circuits, each consisting of a series of four 36-watt, 115-volt, Mazda "B" lamps. The results are shown herewith in tabular and graphical form. In the table the several columns show the following quantities, all values being given in per cent and 100 per cent representing normal operating conditions.

E_h = voltage across headlight bulb.

I = current through headlight bulb.

CP_h = candlepower of headlight.

E_{lc} = impressed line voltage when headlight is burned in series with Mazda car lamps.

E_{lr} = impressed line voltage when headlight is burned in series with standard headlight resistance.

Readings were taken first with E_h at 115 volts and

TABULATED COMPARISON OF RESULTS OF HEADLIGHT TESTS
Per Cent Values

E_h	I	CP_h	E_{lc}	E_{lr}
100.00	100.00	100.00	100.00	100.00
95.65	97.53	85.50	96.13	97.47
91.31	94.92	72.50	91.96	94.79
86.96	92.32	61.00	88.23	91.81
82.61	89.59	49.00	83.46	88.83
78.26	86.98	42.00	78.84	85.85
73.92	83.99	34.00	74.82	82.86
69.57	80.99	27.50	70.64	79.58
65.22	77.74	22.40	66.02	76.31
60.87	74.61	17.60	62.00	72.88
56.53	71.62	13.30	57.83	69.60
52.18	68.36	10.00	53.36	66.02
47.83	64.98	8.00	49.04	62.45
43.48	61.33	5.10	45.16	58.87

with successive drops of 5 volts to a minimum of 50, all other quantities being read simultaneously. The candlepower values were taken from curves which showed the relation of voltage and candlepower, and current and candlepower for the type of lamps used.

While the curves reproduced show relations under only one set of typical conditions it has been found from other tests that the data are sufficiently close to apply to any of those listed, as for instance, a 94-watt headlight bulb operating in series with two parallel circuits each consisting of a series of four 46-watt bulbs.

It will be noted that as the line voltage drops the headlight voltage throughout the range observed is considerably higher with the second plan than with the first. Likewise the candlepower of the headlight is considerably higher throughout the range. In the lower right-hand corner of the curve sheet the increased headlight voltage and increased headlight candlepower are shown graphically, indicating, for example, a 15 per cent greater candlepower at 80 per cent of normal line voltage with scheme (2) than with scheme (1). These curves were obtained from the four main curves by simply plotting the appropriate ordinate values.

The curves also show how much greater the line drop may be with one scheme than the other for the same headlight candlepower. For example, if when the headlight is operated in series with a standard resistance the line voltage drops to 76.3 per cent of normal, it might drop to 66 per cent, or 10.3 per cent more if it were connected in series with the car lamps, the candlepower being the same in the two cases.

PRACTICAL DETAILS OF THE SERIES SYSTEM

Besides its characteristics of voltage regulation, this method of burning headlights in series with the car lights has many other advantages, chief of which might be mentioned its high economy, as no power whatever is dissipated by series resistance, all being utilized either in illuminating the car interior or in the headlight. Then, too, apparatus has been devised and at present is on the market which makes this system so flexible in operation that no operating difficulties need be expected from it. There has been developed, for example, what is known to the trade as a "compensating lighting fixture." This is essentially a lamp socket and shade for the interior car lamps, the socket being equipped with a resistor having resistance equivalent to the bulb used, and an automatic relay to cut the resistor into circuit in case the bulb should burn out. Hence with the interior car lamps so equipped, a burnout of one or more does not in the least affect the normal operation of the headlight or the remaining car lamps in the series.

Again, the headlight bulb may burn out, or it may be desired temporarily to remove the headlight from a particular car, or the headlight may be carried from one end to the other. In either event means should be provided so that the interior car lamps would be unaffected in operation. This likewise has been met and satisfactorily solved by means of compensating or substitutional resistors.

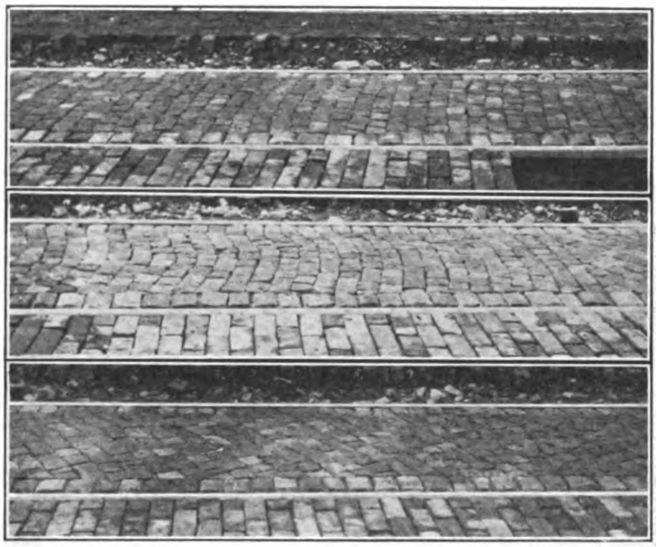
The scheme of burning headlights in series with interior car lights is in use by a large number of representative operating companies in various parts of the country all of whom report entire success with it. A typical application of the plan was discussed in the issue of the ELECTRIC RAILWAY JOURNAL for Jan. 27, 1917, page 171.

Experiment with Cube-Shaped Paving Blocks

BY D. P. FALCONER
Engineer Maintenance of Way, New York State Railways, Rochester, N. Y.

The maintenance of way department of the New York State Railways, Rochester Lines, has experimented with cube-shaped paving blocks laid in three different designs, which are shown in the accompanying illustrations.

For much of its paving this company uses Medina sandstone block, which is quarried in the vicinity. In order to use up a quantity of old blocks which were too small for regular pavement, these were recut into 3½-in. cubes. They were laid in rows at right angles to the track, in curved rows and in diagonal rows in order to determine if one method of laying was better than another. The track was of T-rail construction at the location where these blocks were used.



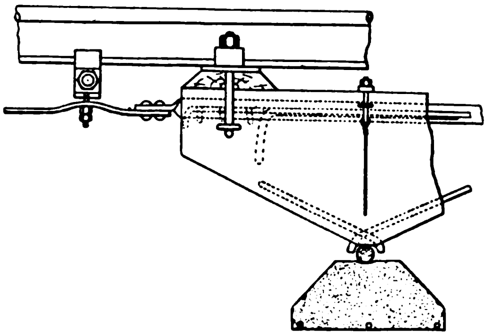
CUBE-SHAPED SANDSTONE BLOCKS LAID IN THREE DESIGNS

This paving has been in place for three years, it is still in excellent condition, and it was found that each of the three designs worked equally well. It is, therefore, not practical to use either the curved or the diagonal design as it costs more to lay them due to the interference of the tie rods with the blocks.

It was found that it was not an economical proposition to cut the old paving blocks into cubes unless a machine was used owing to the high cost of hand labor for this work. However, instances are common in which a company is not able to get bricks or standard blocks when wanted, and in these cases the using of the cubes cut from worn paving blocks is one solution of the problem.

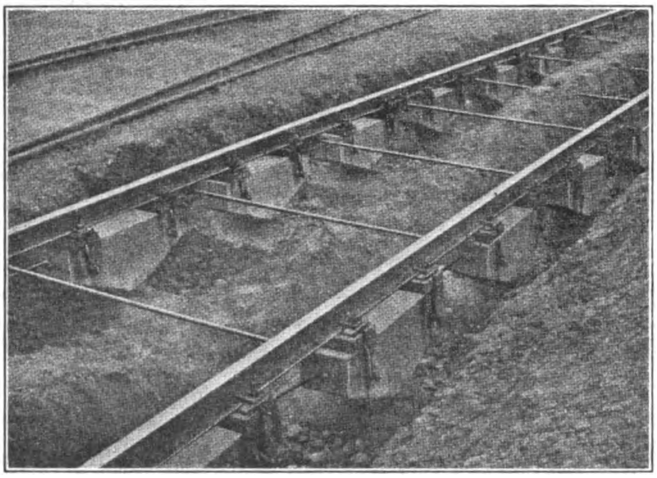
Longitudinal Rocking Ties Developed in Italy

Track construction using longitudinal ties of reinforced concrete installed so that they are capable of a rocking movement is being tried out in Italy on street railway and railroad lines. The details of construction are shown in the two illustrations. Interposed between the ties and the rails are blocks of hard wood which act as cushions and form the real support of the rail. These blocks are spaced about the same distance apart as the crossties which are generally used for track construction in this country.



DETAIL OF LONGITUDINAL REINFORCED-CONCRETE ROCKING TIE

The objects which were sought in developing this tie were to obtain a uniform elasticity, a more perfect alignment of track, a more exact maintenance of track gage, a resistance to canting at least equal to that possessed by lines having the usual construction, and less creeping of the rails. The system was introduced by Signor Olindo Valeri of Asti, Italy, and a description which includes the illustrations used herewith appears in a recent issue of the London *Engineer*.



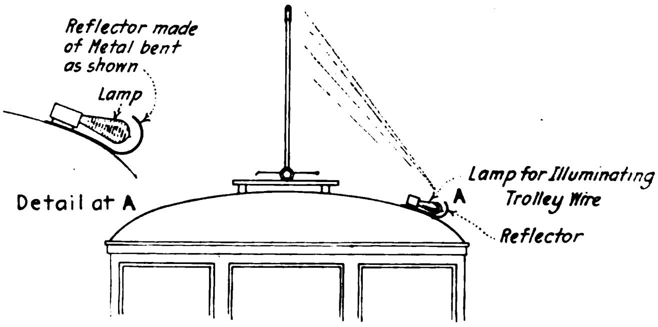
LONGITUDINAL ROCKING TIES BEFORE THE TRACK IS BALLASTED

Replacing Trolley Wheels by Aid of Roof Lamp

BY CHARLES A. SIBERTS

Chief Electrician Grand Rapids, Grand Haven & Muskegon Interurban Railway, Muskegon, Mich.

On the Grand Rapids, Grand Haven & Muskegon Interurban Railway, Muskegon, Mich., there are many points at which a change is made from third-rail to trolley wire construction. This of course necessitates placing the trolley wheel on the wire, which after dark is a hard job. We have, therefore, installed a lamp or the roof of each car as shown in the illustration. The roof lamp is connected with a three-way switch so that it can be substituted for the rear platform lamp which is in series with four other lamps. With this arrangement the glare of the platform lamp is eliminated when the conductor is trying to replace the trolley wheel. As the trolley wire and the third-rail overlap a short distance the car lights are supplied with current from the third-rail while the trolley wheel is being replaced.

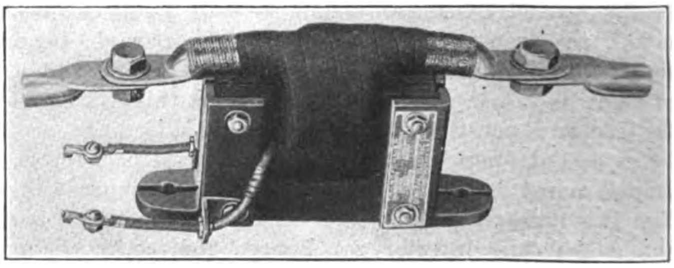

Reflector made of Metal bent as shown
Lamp
Detail at A
Lamp for Illuminating Trolley Wire
A
Reflector

ROOF LAMP TO FACILITATE FINDING THE TROLLEY WIRE

Since this roof lamp has been found so useful it would no doubt be a feasible plan to operate such a lamp from a storage battery on lines where the roadway is dark and the replacing of the trolley wheels is a troublesome task for the conductor.

Current Transformers for Tripping Oil Circuit Breakers

For the purpose of operating the tripping coil of oil circuit breakers the General Electric Company has developed special current transformers which are used directly or in connection with relays. In addition to the trip coil an ammeter may also be connected to the transformer when the trip coil does not require more than 70 volt-amp. at 5 amp.



TRIPPING COIL TRANSFORMERS

The illustration shows one of these transformers of the type having the capacity of 5 to 300 amp. This is equipped with a cast metal base for mounting on a flat surface, or on a pipe support. The higher capacity transformers for use on circuits carrying 300 to 800 amp. are constructed to be mounted on bus bars directly, the primary terminals being simply bare copper bars containing a hole for the bolt.

These tripping transformers are small and can be applied conveniently to many classes of installations in place of the usual series tripping coils used with oil circuit breakers.

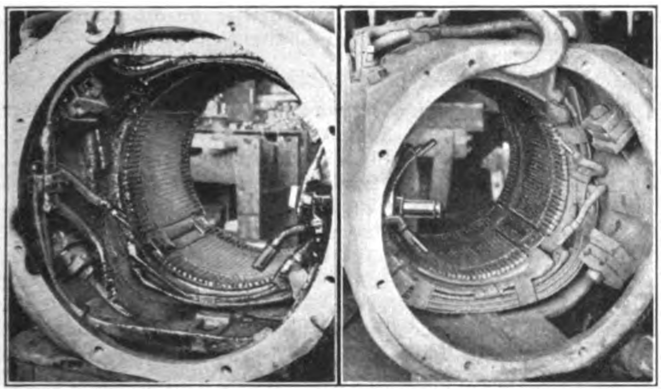
Location of Brushholder Rings Changed to Avoid Grounds

BY MAX PASSLER

Armature Foreman Spokane & Inland Empire Railroad, Spokane, Wash.

Some time ago our company experienced a great deal of trouble with the grounding of the brushholder rings on 600-volt, a.c., single-phase motors which were of the Westinghouse No. 132 and 133 types. In severe winter weather it was no uncommon thing to have four or five locomotives come into the shops in one day with this trouble.

The first of the accompanying illustrations shows the original location of the brushholder rings. The grounding of these rings was due to the large accumulation of carbon and copper dust from the commutator, and it was found that this could be avoided by placing the brushholder rings close against the field poles. To do this the cable is led in at the same point, but at the back of the nearest brushholder it passes over next to the field magnets, where it can pass around to the other brushholders without getting covered with dust from the commutator. The new arrangement is shown in the second illustration. This has done away with the grounding troubles, and it can be seen that a large space is left on the commutator end for inspection and cleaning, while in the original design this space was crowded with the brushholder rings and leads. The cost of the change has not amounted to more than $10 per motor.

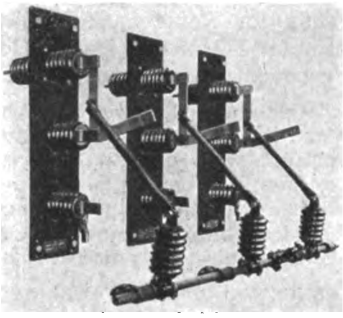


MOTOR FRAME SHOWING ORIGINAL LOCATION OF BRUSH HOLDER RINGS AND MOTOR FRAME IMPROVED BY REARRANGEMENT OF BRUSH HOLDER RINGS

The Interborough Rapid Transit Company, New York, N. Y., in filling vacancies made by employees who have entered military service, either by the draft or enlistments, will give preference to dependent members of the families of such employees.

Disconnecting Switches Having Manual Remote Control

It is often necessary to install high-tension disconnecting switches in locations where it would be difficult and dangerous to operate them by means of a switch stick. For such installations switches of the remote-control type, permitting all phases to be simultaneously opened and closed by means of a single operating lever can be used. A recent development of this type of switch, made by the Delta Star Electric Company, Chicago, Ill., is shown in the illustration. In this provision has been made for locking the switch blades in the open position.

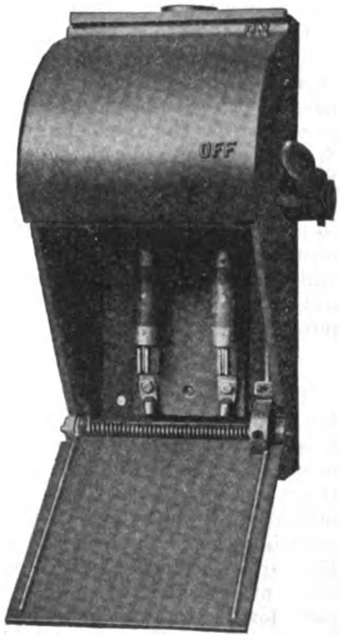


MANUALLY OPERATED REMOTE CONTROL DISCONNECTING SWITCHES

New Design of Safety Switch

For some time electric railway men have recognized that exposed knife-blade switches are a continual source of accidents to careless and unskilled employees. The procedure followed in making the so-called "safety" switches is to inclose the switch in a compartment which only authorized persons are to open, and to operate the switch contacts by a handle projecting outside the compartment. When there are fuses in connection with the switch it is esential to interlock the cover of the fuse compartment with the switch handle so that the cover cannot be opened except when the switch is in the off position.

These ideas have been embodied by the Westinghouse Electric & Manufacturing Company in the switch shown in the illustration. The upper compartment contains the knife-blade switch and can be opened only by removing two machine screws. This compartment need never be opened except when making connections or repairs, or for inspection purposes. The lower compartment houses the fuses and the cover is interlocked with the switch lever. Provision is made for locking the operating handle in the off position when this is desired.



SAFETY SWITCH OF NEW DESIGN

News of Electric Railways

Traffic and Transportation

Financial and Corporate Personal Mention Construction News

Kansas City Railways Problems

Vice-President Taylor Reviews Rehabilitation Work Already Completed—Makes Plea for Co-operation —Power Problem Being Solved

Following the strike of employees of the Kansas City (Mo.) Railways and the return of the men to work, it was necessary to maintain a service below the former level. The reduction in cars was due chiefly to the desire to allow sufficient current for at least partial operation of some large industries which had voluntarily made large sacrifices that the general public using electricity need not be disturbed.

Conference to Consider Power Supply

On Aug. 28 the acting Mayor, Albert I. Beach, at the suggestion of Clyde Taylor, vice-president of the Kansas City Railways, called a special meeting of officials of the two Kansas Cities. Included in the call were the members of the business men's committee that had helped to settle the strike, and the committee of plant managers which had worked out a schedule by which the peak load had been materially reduced.

At the meeting Mr. Taylor declared that the problems of the company were vital to the community and the community ought to help solve them. He referred to the increasing costs of the street railway and of other industries, and called attention to the fact that the street railway was giving more, rather than less, even under greater costs, than before.

R. L. Redpath, chairman of the business men's committee that had worked out a solution of temporary current shortage, declared that it had been a question of suspending operations wholly in many large industrial plants, or eliminating a few cars during the morning and evening. The prospect of the suspension of industry was touched on by several speakers as being far more serious than the temporary inconvenience of a car shortage. Statistics were presented by the street railway and the Kansas City Light & Power Company indicating that by Oct. 1 there would be an appreciable gain in capacity, and by Nov. 1 probably a complete restoration of service both of cars and of current to power users. The meeting delegated the industrial users' committee to confer with the board of control of the street railway as to the proportion of current, as equipment is put into service, that should be awarded for cars and for power users.

Critical Situation for the Company

The situation is indicated in the narrow margin to which the peak load morning and evening was figured. The large power users are taking only 1280 kw. during morning and evening. Nearly all have reduced their uses of current in these hours by 80 per cent, some by 95 per cent; many have put on night shifts for 50 per cent of their work, and all are reducing their day loads 20 per cent. In consideration of this large sacrifice, the railway reduced its cars, the number short on Aug. 27 being sixty-five, to save 2600 kw. on the peak load.

The railway is now producing 39,000 kw. The capacity of its plants, which it is expected will be fully restored by winter, is 50,000 kw. The light company is increasing its equipment, and by winter will be able to care for practically all its load except on peaks.

Mr. Taylor said that the system served two great municipalities where one for 5 cents may ride anywhere within their limits with a universal transfer. It is possible for passengers to ride 17 miles for 5 cents and many do so. The equivalent charge upon a steam railroad would be 43 cents.

Resumption of Service Ordered

Dunkirk Street Railway Held Not to Have Proved Lines Unprofitable Which It Was Seeking to Abandon

The Public Service Commission for the Second District of New York recently denied the application of the Dunkirk Street Railway, which is controlled by the Buffalo & Lake Erie Traction Company, for approval of its declaration to abandon certain portions of its belt line in Dunkirk and directed the company within five days after the service of the order to resume operation of its cars pursuant to the terms of its franchise. According to the opinion of the board, the Common Council had no authority to act in granting the company permission to remove its tracks or abandon any part of its franchise. This nullifies the negotiations which were in progress between officials of the railway and city officials and councilmen over a period of a year, together with the proceedings of the Council more recently in granting the company permission to abandon parts of its tracks in the belt line. It also serves to make inoperative the agreements made by the company about improvements. By the provision of the order the right is reserved to the company to offer further or different proof as to the necessity of the abandonment.

Opinion by Commissioner Barhite

The opinion in the case was written by Commissioner Barhite. He said in conclusion:

"The excuse for this application by the company is that the lines in the city of Dunkirk are operated at a great loss. By the evidence it appears that two different statements were issued from the office of the receiver within a comparatively short time. One showed a deficit of about $15,000 in the operation of the road for one year and the other a deficit of more than $21,000. At the hearing a statement was introduced which shows that the actual deficit for the year ended March 1, 1917, was $21,921. But this figure was based upon an assumed operating expense of 21.98 cents per car mile. I say assumed because the operating expense is based not alone upon the actual cost in the city of Dunkirk, but also rests upon the cost of operating from 90 to 100 miles of interurban road. No separate books have been kept for the city of Dunkirk. The cost of operation upon the interurban is a different matter from the cost of operation upon the city road.

"Before abandonment is sustained by this commission the people of Dunkirk are entitled to know whether the alleged deficit unavoidably arises from the operation of the road within the borders of the municipality or whether its connection with the Buffalo & Lake Erie Traction Company is responsible for its downfall.

"The Dunkirk Street Railway is a separate corporation and is intended to serve the public within the city of Dunkirk alone. Its future must be determined upon its own merits and not upon its connection with any other enterprise. The operation of the road has been illegally abandoned. Service must be resumed, at least until the petitioner makes out a proper case for the discontinuance of that service."

Service Resumed

The company has resumed service in accordance with the order, but it is regarded as likely that the case will be reopened by the company in an endeavor to establish that the line is being run at a loss. The members of the Merchants' Exchange and other citizens of Dunkirk opposed the abandonment of service as it was agreed to by the company and the Council.

First Philadelphia Hearing

Open Meeting Held Before Committee of Councils—Next Hearing Sept. 21

The first public discussion of the lease of the municipal high-speed lines to the Philadelphia (Pa.) Rapid Transit Company as proposed by Mayor Smith took place in the City Hall on Sept. 7 before the joint Councilmanic committee on finance and street railways. Joseph P. Gaffney, chairman of the finance committee, presided. He opened the meeting with a brief statement to the effect that the people of Philadelphia are to receive every opportunity to examine, criticise and discuss the lease. He urged and invited suggestions for improvement, and he emphasized that "this committee has no cut-and-dried policy," but wants all the information it can get, so that it may give Philadelphia the best possible kind of a transit agreement with the company. The hearing served as the occasion for a thorough discussion of the point raised by objectors that the lease guaranteed a 6 per cent dividend on the capital stock of the company. This charge was made by the objectors, and it was answered a number of times by Dr. William Draper Lewis, the Mayor's special transit legal adviser, who declared that not only does the document not guarantee the Philadelphia Rapid Transit Company a 6 per cent dividend, but that it guarantees the company no dividend whatever.

MR. TAYLOR TO BE ANSWERED

The most significant event of the hearing was a dramatic passage between A. Merritt Taylor, former director of city transit of Philadelphia, as the chief figure in opposition, on the one hand, and Chairman Gaffney and Dr. Lewis, on the other. Called upon to state his objections to the lease, Mr. Taylor declared his purpose to rest his case against the lease upon his published attacks upon it and to refuse to answer any questions or to make any further statement until his charges had been fully answered. Doctor Lewis disclaimed on the part of those who framed the lease the slightest intention to do any of the things alleged against the proposed contract, and made a pledge to take the initiative in reframing any of the provisions of the lease which might be found ambiguous or open to the interpretation which Mr. Taylor has put upon them. He suggested that at the next meeting Mr. Taylor submit in writing any questions he might desire to propound, embodying his charges and objections. Doctor Lewis said that he would make full oral answer to every question and supplement these with written answers. Mr. Taylor accepted this proposal, thus opening the way, according to the Philadelphia *Public Ledger*, "to that elucidation of the disputed points without which Councils and the public cannot be expected to reach an intelligent decision on this vastly important question."

Among others who appeared in opposition to the lease was John N. McGarvey, representing the Allied Business Men's Association of West Philadelphia. He read a statement of general objection, citing in particular the complaint that West Philadelphia did not seem to have received consideration proportionate to her importance as a section of the city. He said frankly that his association had based its attitude on the Taylor analysis of the lease and that it would be guided by Mr. Taylor's advice. Upon the request of Mr. Gaffney that Mr. McGarvey state his objections to the lease specifically and in detail, Mr. McGarvey declined to go beyond the general statement he had read.

REASONS FOR REJECTION OF PREVIOUS LEASE PROPOSAL

A long statement on the proposed lease was read by Dr. Lewis. He reviewed the reasons for the rejection of the Taylor lease in 1916. Dr. Lewis said that under the terms of the lease as now proposed the company assumed the entire burden by agreeing to postpone its dividend payments until all interest and sinking fund charges on the company's investment shall have been paid. Moreover, the burden on the taxpayer was relieved by removing the increase in the tax rate inevitable under the Taylor lease, according to Dr. Lewis, the car rider can now be called upon to assume the burden only to the extent authorized by the Public Service Commission.

The committee will hold another hearing on the lease on Sept. 21.

Amalgamated Meets in Providence

Pledges Support to Government—Of 80,000 Members, 3000 Have Enlisted for War Service

The fifteenth biennial convention of the Amalgamated Association of Street & Electric Railway Employees of America was opened in Providence, R. I., on Sept. 10. The first business transacted was the adoption of a resolution pledging to the support of the nation "unto the end" the 80,000 members of the association.

More than 300 delegates from all sections of the United States and Canada are in attendance at the meeting. A theater party and a Rhode Island clambake are the principal events held so far this week. The convention took practically all of the first day to organize and the various committees got to work with the matters placed before them. The headquarters are at the Crown Hotel. The sessions are being held in Infantry Hall. The convention will continue for ten days.

The resolution pledging the association to support the nation declared for woman suffrage. It was in the nature of a letter addressed to Dudley Field Malone, who resigned recently as collector of the Port of New York as a protest against the imprisonment of suffragists in Washington. That part of the resolution pledging the support of the Amalgamated to the government was as follows:

"As an organization we fully appreciate the situation which now confronts our government, and in this war we are standing by it loyally and will support it with our means and our lives unto the end. The evidence of this is in our records, which show that up to date more than 3000 of our members have enlisted and are ready for the battlefields of Europe. At the same time we appreciate that this is a struggle, as you have truly said, to establish a worldwide democracy, and if our nation is to be a leader in this great work we must set the example by having thorough democracy at home, and no nation can boast of being truly a democratic nation unless all persons of either sex within it, no matter how humble they may be, has the right to participate in the affairs of the government."

Strike Voted in Chattanooga

A strike of the trainmen of the Chattanooga Railway & Light Company, Chattanooga, Tenn., has been voted by the men. A statement over the name of E. D. Reed, general superintendent, has been addressed to the men. It is as follows:

"Three times this year the company has been placed in a defensive position by the leaders of the Amalgamated Association, and in every instance it has been sustained in the position it occupied by both outside and inside interests. Your own national leaders have twice upheld the company's position in its controversies. Again we face a situation whereby the association is openly defying the terms of its service contract. It is obvious that neither decency nor discipline will permit these continued disturbances, and the history of the past few months demonstrates again the truth of this company's contention that either the union is a source and a breeding place for continued dissensions or that the men are being badly counseled and woefully misguided.

"We have no interest in either the truth or the falsity of the above, other than to advise you that the company will not again treat in any manner with any organization that has so abused its privileges, and that if you desire to continue as an employee of this company, you will report to the superintendent of transportation and so advise him. We will assure you fair and impartial treatment and as good a wage at all times as the condition of the company will justify in return for loyal and continuous service on your part."

The men went out at 6 p. m. on Sept. 7. Some of them deserted their cars on the streets. Disorder followed almost immediately. On Sept. 11 two troops of cavalry and a machine gun company were sent from Fort Oglethorpe to preserve order. One of those reported to have been injured in the early disorder is S. A. Miller, chief inspector of the company.

Service to Cantonments

What Some Companies Have Done to Meet the Demands for Transportation and for Energy for Lighting and Power

The cantonment which was recently established on the single-track Annapolis division of the Washington, Baltimore & Annapolis Electric Railroad at Admiral, Md., has been officially designated as "Camp Meade." The camp site covers an area of approximately 8000 acres of land, 4000 of which are north of the tracks of the electric railway and 4000 south. The cantonment and drill grounds are located on the north side. The acreage south of the tracks will be used for maneuvering. The Baltimore & Ohio Railroad parallels the camp on the westerly side about 1½ miles distant and the Pennsylvania Railroad parallels the easterly side about 1 mile distant. The cantonment proper consists of approximately 650 buildings, occupying a space about 1 mile wide by 2½ miles long. The Washington, Baltimore & Annapolis Electric Railroad has double-tracked its line from Naval Academy Junction to and through the cantonment. This necessitated the constructing of approximately 5½ miles of track. The Baltimore & Ohio Railroad and the Pennsylvania Railroad have both entered into traffic arrangements to operate over the Washington, Baltimore & Annapolis Electric Railroad to the camp.

The company has recently purchased fifty-four trail cars from the Long Island Railroad and has also placed an order for eight electric locomotives. The railway has constructed a three-phase 33000-volt transmission line from Naval Academy Junction to the camp. This energy is there stepped down to 2200 volts for distribution. While the lighting did not require the installation of additional apparatus in either power or substations, the railroad load did, and the company accordingly increased its Bennings substation equipment by three 800-kva. transformers, Naval Academy Junction substation with one 750-kw. rotary converter and Scott Street substation with two 500-kw. rotary converters, with all necessary transformer and switching apparatus.

CONSIDERABLE TRACK CONSTRUCTED AT DES MOINES

The Des Moines City Railway and the Interurban Railway, Des Moines, controlled by the same interests, have built 3 miles of sidings on the 12-mile stretch between Des Moines and Camp Dodge. In addition, the companies have put in 4½ miles of permanent yard track and 3½ miles of temporary track for use for construction purposes. They have ordered one additional electric locomotive from the Westinghouse Electric & Manufacturing Company. The companies intend to handle the passenger business in trains, using eight or ten railroad coaches in a train hauled by an electric locomotive. The companies are also operating four steam locomotives on the line to handle the freight business. The Des Moines Electric Company has built a high tension line to the camp and will furnish the necessary light and power. There are three passenger stations in the camp and one terminal station in the city. At all the stations, the trains are run into an inclosure and the fares collected through turnstiles when the passengers are entering. As the passenger rush will come in the evening from 5.30 to 11.30, the companies will not operate any freight over the line at that time. During the period that the camp was under construction the electric railways hauled about seventy-five car loads of freight to the camp daily and transported 2500 workmen in the morning and evening.

LINE TO FORT RILEY IN USE SOME TIME

The Union Light & Power Company, Junction City, Kan., has 6 miles of track connecting Junction City, Kan., with Fort Riley on the west and this line connects about one-third of the west side of the new cantonment now being built. The line at Junction City has always been a small one and the company had only five motor cars, but has recently purchased five used trailers from the St. Louis Equipment Company. These ten cars will absorb all the power now available for railway operation. The company is prepared to supply electric current to the camp and has made a contract for 600 kw. The company has installed a 200-kw. rotary and has run an 8-inch flow line about 1 mile to the Smoky Hill River to give a better supply of water for condensing purposes. It has also built concrete storage for holding 2000 tons of coal under water, has purchased four new motor equipments, is increasing its boiler capacity about 1000 hp. and is making other minor general extensions, calling in all for the expenditure of about $100,000.

ROCKFORD LINE EXTENDED TO CAMP

As stated in the ELECTRIC RAILWAY JOURNAL of Sept. 8, page 410, the Rockford & Interurban Railway, Rockford, Ill., is building a 2¾-mile extension to a point on the new cantonment at Rockford. It is estimated by the company that it will take about twenty-five additional cars for service to the camp. These will be secured from other properties controlled by the holding company which operates the Rockford property. The company has just recently received thirteen new cars. They are double-truck city P. A. Y. E. cars. Additional cars may also be remodeled to go into this service. The company at Rockford purchases power from the Rockford Electric Company for lighting and power purposes.

The building and establishing of the United States military cantonment at Chillicothe will mean a considerable increase in business for the Scioto Valley Traction Company, Columbus, Ohio. The company believes that it will be able to handle the increased passenger traffic with its present equipment. The freight traffic, which is showing quite an increase, will probably tax the company's equipment to the limit and with this in mind, it is negotiating for the purchase of six additional freight trail cars, of the standard 40-ft. box car type. In addition to the above, the company has secured a contract from the government to supply current necessary for the operation of pumps for the water supply, the laundry and the refrigerating plant. A new line will be built from the main transmission line to the camp site. All the material for this work has been purchased.

At Montgomery, Ala., the Pickett Springs single-track line of the Montgomery Light & Traction Company passes through the proposed encampment and it will not be necessary to erect any other line to serve the camp. The company contemplated double-tracking the line, but on account of the length of time it would require and the scarcity of materials, it was decided that this was impracticable. Two more sidings have been placed on the line. The company recently purchased and had delivered to it six new steel pay-as-you-enter cars. The company is retying the track and ballasting it, and has ordered some new trolley and feeder wire. It operates the cars with trailers, in bunches of four, with a seven and one-half minute schedule.

HATTIESBURG TRACTION LIGHTS CANTONMENT

Hattiesburg, Miss., in which the Hattiesburg Traction Company, a subsidiary of the Cities Service Company operates, has been successful in securing one of the cantonments which the government is erecting. The cantonment is situated from 5 to 10 miles outside the city limits. The Hattiesburg Traction Company does not expect to extend its tracks to the camp, as the location of the training ground, 10 miles from the city, does not seem to justify the investment. The company is planning, however, to light the cantonment. This will necessitate the construction of a 22,000-volt transmission line approximately 10 miles in length. The service will consist in power for pumping water and current for lighting the buildings and grounds. The power station has ample capacity to meet the added load and no extensions will be made.

The government is establishing a cantonment at Waco, Tex., in McLennan County, the southwest terminus of the line of the Texas Electric Railway. This camp is known as Camp MacArthur. Approximately 6600 ft. of additional trackage will be built to serve this camp, two of the present city lines in Waco being extended to reach the camp. The company does not expect to purchase any additional equipment to take care of traffic. It will, however, rebuild and put into service several of its old cars, thus giving additional equipment for this service. The Texas Electric Railway purchases power from the Texas Power & Light Company and this latter company will make provision to serve the cantonment.

Women in Railway Work

Several Railway Operators State Their Attitude Toward the Use of Women if the Emergency Arises

A number of electric railway operating officials have made statements recently to the press with respect to the possible use of women by them in places formerly held by men if the war emergency and the changed economic situation which in some places has seriously depleted the ranks of the men should seem to make such a course advisable. Henry C. Page, general manager of the Worcester (Mass.) Consolidated Street Railway, is quoted by the Worcester *Gazette* as follows:

"We have not yet come to the place where it is necessary to use women as conductors, but the second draft will probably force us to do so, and judging by the conditions in the foreign countries and the way the women are serving there, it is quite apparent that our women could serve efficiently as conductors. Putting them on as motormen, of course, would come afterward, and only if we were tightly caught for workers."

Herbert Warren, vice-president and general manager of the Duluth (Minn.) Street Railway, recently engaged women for work outside of the office of the company in which female labor had never before been used. Among the duties which will be intrusted to some of these women is the cleaning of cars. Mr. Warren is reported to have said:

"We will have a private room ready for the accommodation of the women within a few days. Suggestions for fitting out the room for their convenience have been asked of the Young Women's Christian Association. We do not expect any difficulty in getting a crew of the women for the work. This is principally light work with the same pay as is now being paid men,"

According to the paper which quoted Mr. Warren the employment of women as conductors on cars is not to be adopted immediately, but applications have been received from a large number of women who desire to become conductors, since the announcement was made that the company was considering their employment as car cleaners and for other work.

Michael Conner, superintendent of the Danville Street Railway & Light Company, Danville, Ill., controlled by the Illinois Traction System, is another railway man who has expressed himself recently to the press with respect to the availability of women for certain classes of electric railway work. He is quoted as follows:

"I see no reason why women could not serve as conductors. They are capable and quick, and I apprehend no difficulty at all if it becomes necessary to employ them. To be sure, there is no shortage of men yet; and we will not seriously consider the employment of women until we are unable to secure men for these positions. But if the war continues, it will undoubtedly take a large number of our men and in that event I see no other way than to replace them with women workers."

Subway Ordinance an Election Issue

The Cleveland, Ohio, subway ordinance was defeated by a vote of fifteen to eleven in the City Council on Sept. 5 On demand of the committee which circulated the petitions, the ordinance will go to a vote of the electors on Nov. 6. Mayor Davis declared at the meeting that he was just as much in favor of a subway and street railway terminal now as he has ever been and that he will take part in the campaign for the ordinance before the election. The vote was partisan, except for one member, who voted with the administration forces for the ordinance.

On Sept. 10 a resolution was introduced in the Council proposing that plans for a subway and terminal station be placed in the hands of the city-planning commission. By a vote of fourteen to twelve it was decided to lay this on the table. Councilman McGinty, the author of the resolution, said that the ordinance, which will go to a vote of the electors at the fall election, will turn control of the proposed subway and street railway terminal over to a commission appointed under a state law and that control of the terminal by this commission will give it authority over the street railway itself. Other members of the Council contended that the people should decide whether or not they want a commission and that by submitting the new ordinance at the election they will have an opportunity to express their wishes.

Hearing on Loop Operation

Officials of the Brooklyn (N. Y.) Rapid Transit Company testified further on Sept. 7 at the continuation of the hearing begun on Aug. 20 by the Public Service Commission for the First District of New York with the purpose in view of inquiring into operating conditions in the Centre Street loop subway and ascertaining when it will be possible for the company to substitute steel cars for the wooden ones now in service on that short line. John J. Dempsey, superintendent of the elevated lines of the company, admitted that ninety cars were stored daily on two of the tracks in the Centre Street loop between the morning and evening rush hours. He claimed that such storage was unavoidable because operating conditions made it necessary to use at least two tracks eastbound in the evening rush hour, leaving only one open for westbound traffic. He explained the precautions that are taken to avoid fire. A. M. Williams, counsel for the company, said there was no objection to using steel cars and that 500 steel cars had already been ordered for other lines, but that changes were necessary on the elevated structure in East New York before it would be possible to use the steel cars on the Centre Street line. The commission's experts will investigate and report in two weeks.

Increase in Wages in Chehalis.—The North Coast Power Company, which operates an electric railway between Centralia and Chehalis, Wash., recently granted an increase in wages of 2½ cents an hour to platform men.

Increase in Wages in Oil City.—The Citizens' Traction Company, Oil City, Pa., has announced an increase of 2 cents an hour in the wages of motormen and conductors. The new scale ranges from 26 to 32 cents an hour, dependent upon the length of service.

Wage Request in Kansas City Formulated.—The new union of street railway employees in Kansas City, Mo., has formulated its proposed wage schedule, which is understood to have been forwarded to Detroit, for inspection by the national organization, before being submitted to the Kansas City Railways.

Municipal Railway Employees Strike.—The employees of the Edmonton (Alta) Radial Railway, operated by the city, went on strike on Sept. 2 to enforce their demands for an increase in wages. The Council made an offer alternative to the request of the men. The terms of the proposal of the city were considered by the men to be unsatisfactory.

Three New Chapters of American Association of Engineers.—The American Association of Engineers has granted charters to chapters in St. Paul, Indianapolis and Milwaukee. This makes a total of seven chapters which have been organized since the association was incorporated about two years ago. The total enrollment of the national organization is more than 2200.

Wage Award Accepted by Toronto Railway.—It was announced on Sept. 6 by R. J. Fleming, general manager of the Toronto (Ont.) Railway, that the company had accepted the award made by the board of conciliation appointed to consider the question of wages, hours, etc., between the company and its employees. The men are now receiving the increased wages. A summary of the award made by the board appeared in the ELECTRIC RAILWAY JOURNAL of Sept. 1, page 368.

Increase in Wages in Spokane.—The Washington Water Power Company, Spokane, Wash., increased the wages of its trainmen 2 cents an hour on Sept. 1. In May the company advanced wages 2 cents an hour. The men on the local lines of the Spokane & Inland Empire Railroad in Spokane are seeking an advance in pay. The average wage on these lines is 32 cents an hour. E. E. Lillie, superintendent at Spokane, is reported to have said that the matter will be considered in conference with the representatives of the men.

Preparing for Oakland Arbitration.—The first meeting of the mediation committee which was appointed to consider the proposal for new wages and changes in working conditions for the employees of the San Francisco-Oakland Terminal Railways, Oakland, Cal., was held on Aug. 30, at the city hall in Oakland. It was proposed to hold nightly meetings beginning Sept. 11, to investigate the claims of both sides. As a basis of settlement expert testimony will be taken as to the cost of living. The issues involved were reviewed at length in the ELECTRIC RAILWAY JOURNAL for Sept. 1, page 365.

Increase in Wages on Kansas Road.—The Joplin & Pittsburg Railway, Pittsburg, Kan., has entered into an agreement with the local Amalgamated Association under which the trainmen will receive 30 cents an hour the first year, 31 cents an hour the second year and 32 cents an hour the third year. This is an increase of 5 cents over the old scale. The men originally requested an advance of 10 cents. The first counter proposal of the company was for a raise of 3 cents. Some time ago the company readjusted the wages of its power employees. The settlement reached with these men was reviewed in the ELECTRIC RAILWAY JOURNAL of July 28, page 158.

Municipal Railway Wage Question Settled.—The finance committee of the Board of Supervisors of San Francisco, Cal., has passed upon practically all the wage matters affecting municipal employees which were before it. The first big problem the finance committee had to face was the petition for increased pay by the platform men of the Municipal Railway. The men were getting $3 for eight hours. They wanted $3.50. The Mayor and the Board of Works joined the men in the request just as it was ready for passage by the committee. The members of the committee were doubtful at first about the ability of the system to operate at a profit with the advance in effect, but finally decided the matter in favor of the men.

Strike in Meridian.—The trainmen in the employ of the Meridian Light & Railway Company, Meridian, Miss., went on strike recently. A flat scale of 22 cents an hour had been in effect. The men demanded 26 cents. The men rejected an offer of 23 cents an hour made by the local management without consultation with the home office of the company in New York and turned in their cars as a means of enforcing their demands. Later they agreed to return to work, pending advices to the local management from the New York office. The period for which the men agreed to remain at work temporarily under the old scale was one week. The matter was finally settled within a few hours of the period of grace under an agreement calling for 25 cents an hour.

Wage Adjustment Conditional on Fare Changes. — The trainmen in the employ of the Laurel Light & Railway Company, Laurel, Miss., have returned to work after having been out on strike for a week. The men will receive immediately an increase in wages to 20 cents for the first six months, 22 cents for the second six months and 24 cents thereafter. The settlement was affected in conference with a committee of the business men of Laurel and will include finally an increase in the city fare to 6 cents with strip tickets and changes in the interurban fares. As soon as these fare changes have been formally approved by the Council and are put into effect by the company, the wages of the men will be further advanced to a scale calling for 22, 24 and 27 cents based on the length of service.

Day Service Normal in San Francisco.—Service on the lines of the United Railroads, San Francisco, Cal., was almost normal on Sept. 11. The company is ready to operate on night schedule if it receives full night police protection and hoped to resume regular night service again by Sept. 15. The police force has been greatly increased recently and strike disturbances have practically disappeared. Company officials state that the striking car men, in groups and individually, are asking that they be taken back and restored to their former positions. The city started negotiations with the Ocean Shore Railroad officials on Sept. 11 in an endeavor to arrange for hourly service on this line to the Excelsior and Glen Park districts, which still are without adequate car service.

One Philadelphia Contract Signed.—Jerome H. Louchheim, president of the Keystone State Construction Company, has announced that his firm has signed two of the delivery loop contracts for the Philadelphia high-speed lines. The contracts signed are for the Locust Street section to cost $1,713,715, and the Arch Street section to cost $1,575,760. The other contracts which had been awarded to the Keystone State Construction Company for the Broad Street sections are held up for the present in hope of better conditions as regards material delivery. As noted in the ELECTRIC RAILWAY JOURNAL of Sept. 8, page 408, the Philadelphia Subway Contracting Company still has under consideration the matter of signing the awards made to it, while Smith, Hauser & MacIsaacs, New York, rejected their award on the basis of the present economic situation.

Washington Companies Complain About High Costs.—On Sept. 4 representatives of practically every electric railway in the State of Washington appeared before the State Board of Equalization at Olympia and complained to the effect that materials, labor and other costs had gone up; that the lines had not been able to raise rates, and that the situation was very serious. The companies also protested against the competition of the stage lines, jitneys and automobiles. They all asked for reductions in their taxes. Among the companies represented at the meeting were the Everett Railway, Light & Power Company; Pacific Traction Company; Puget Sound Traction, Light & Power Company; Tacoma Railway & Power Company; Western Washington Power Company; Pacific Northwest Traction Company; Puget Sound Electric Railway; Walla Walla Valley Railway, and the Washington Water Power Company.

Civic League Reports Against Proposed Settlement Ordinances in St. Louis.—The Civic League of St. Louis, Mo., on Sept. 7 submitted to the public utilities committee of the Board of Aldermen information and reports on street railway settlements in other cities similar to the proposed mill tax compromise and franchise ordinances in St. Louis, indicating that such compromises were generally unsatisfactory and often resulted in further complications. The league probably will endeavor to have the Board of Aldermen employ a franchise expert to advise it relative to the proposed ordinances. Louis F. Budenz, secretary of the league, has announced that an organization composed of twenty or more civic and ward improvement associations will issue a report urging the defeat of both of the proposed settlement ordinances in St. Louis. These organizations have agreed to invoke the referendum on the ordinances if either one of the settlement grants which are now under consideration is passed by the Board of Aldermen.

Program of Association Meeting

Chamber of Commerce of the United States

The war convention of American business, under the auspices of the Chamber of Commerce of the United States of America, will be held at Atlantic City, N. J., Sept. 18-21. Its purpose is to consider: (1) The duty that business owes the government in war; (2) how may the business of the country render greater service in winning the war; (3) ways and means by which business may most readily adjust itself to the conditions produced by the war; (4) for what readjustments after the war business must prepare. There will be an address on the first day by Secretary of War Baker, who will speak as president of the Council of National Defense and will indicate what services business men can render to the government in connection with its prosecution of the war. There will also be addresses by Secretary of the Interior Lane, Frank A. Scott, chairman of the War Industries Board, and George M. Reynolds, president of the Continental & Commercial Bank of Chicago. The second day will be devoted largely to group meetings of the Retail Trade Conference and special meetings of the Foreign Trade Council. On the third day the subjects of banking and finance, foreign trade, industrial relations, food and fuel, will be discussed. The convention will close Sept. 21.

In the evenings there will also be addresses. Among others scheduled at the evening meetings are Boris Bakhmeteff, Russian Ambassador, Herbert C. Hoover and Lord Northcliffe, chairman of the British Mission.

Financial and Corporate

Annual Reports

Brandon Municipal Railway

Comparative figures of operation of the Brandon (Manitoba) Municipal Railway for the last four years ended June 30 follow:

	1914	1915	1916	1917
Passenger car-miles..........	269,679	269,736	235,281	305,878
Fare passengers carried......	916,723	782,011	627,739	839,375
Earnings per car-mile (cents)	16.44	13.33	12.43	12.20
Average fare per revenue passengers (cents)	4.91	4.52	4.52	4.45
Operating expenses per car-mile (cents)	18.90	10.53	12.18	10.61
Total earnings	$44,344	$35,969	$29,258	$37,323
Total operating expenses.....	$50,972	$28,395	$28,660	$32,451
Deficit	$6,628	......	......	......
Net earnings from operation..	.....	$7,574	$598	$4,872

According to the foregoing, the passenger traffic and the net earnings showed a substantial gain in the last fiscal year. It should be observed, however, that the decreased revenue for 1916 was due to the system being closed down for ten weeks during January, February and March, as noted in the ELECTRIC RAILWAY JOURNAL issue of Nov. 11, 1916, page 1037. The 1917 decrease in the average fare per revenue passenger was due to the City Council granting a four-hour increase in time on the workmen's tickets. This was granted in February and has been a failure. The earnings per car mile decreased further after the extra time was granted.

The increased expenses of 1914 over other years were partially due to the cars being operated on the two-man system for the first eight months. To make a fair comparison the wages of conductors at $7,678 should be deducted, which would make operating expenses for 1914 total $43,293.

Puget Sound Traction, Light & Power Company

The Puget Sound Traction, Light & Power Company, Seattle, Wash., has filed its report with the Washington Public Service Commission for the calendar year ended Dec. 31, 1916. The report covers the electric railway light and power utilities of Seattle, power in Tacoma, and railway, light, power nad gas in Bellingham. The three interurban lines, the electric railways in Tacoma and the electric railway, light, power and water companies of Everett, are not a part of the Puget Sound Traction, Light & Power Company, but are controlled by it.

The annual reports formerly were for the fiscal years ending June 30. They are now made out by calendar years. The last period of normal traffic, that is, before automobile and jitney competition had noticeably affected traffic, was covered in the report of June 30, 1914. Comparison of the two reports—1916 with 1914—shows a decrease in operating revenues, stationary operating expenses, a decline in traffic, a decreased average rate of fare and an actual increase in service.

Revenues from the operation of railway properties were reduced from $3,926,517 in 1914 to $3,297,367 in 1916, a loss of $629,140. On the operating expense side, however, the reduction was only $15,866 in the same period. At the same time the number of passengers carried per annum declined from 106,214,389 in 1914 to only 89,413,079 in 1916. This is a loss of 16 per cent in traffic which can reasonably be placed on automobile and jitney competition.

But while the company was sustaining these losses the reports show that service, as measured in car miles, was increased. Car miles increased by 352,962 in 1916 as compared to 1914. The car miles in 1914 were 13,447,047 and 13,800,009 in 1916. In other words, a decline in traffic was met by an increase in service.

The average rate of fare in 1914 was 3.62 cents. In 1916 it was 3.58 cents. The average number of passengers carried per car per mile in 1914 was 7.9 and in 1916 it was 6.4. Regular fare passengers dropped from 77,007,953 in 1914 to 66,027,760 in 1916. There were 19,967,058 passengers carried on transfers and 3,816,596 free passengers carried in the latter year. Taxes for the company for the year aggregated 582,879, while the total for all the companies under its control in the Puget Sound district was $804,653.

Reasons for Fort Wayne Default

Circular to Security Holders of Fort Wayne & Northern Indiana Traction Company Reviews Problem of the Company

The conditions which contributed to the default in the payment of interest due on Sept. 1 by the Fort Wayne & Northern Indiana Traction Company, Fort Wayne, Ind., to which brief reference was made in the ELECTRIC RAILWAY JOURNAL of Sept. 8, page 414, are reviewed at length in the circular which was sent to the security holders. As stated previously it is hoped that the necessity for the appointment of a receiver may be avoided. The circular says that within the next two years $1,400,000 should be expended in new capital, and that this sum cannot be obtained except by the reduction of the fixed charges. To this end it is proposed to reorganize and recapitalize the Fort Wayne & Northern Indiana Traction Company and to reduce the bonded debt, particularly that of the Fort Wayne & Wabash Valley Traction Company and the Lafayette & Logansport Traction Company. The circular follows in part:

CONTRIBUTING FACTORS

"Since 1910, there has been a succession of unfortunate events in connection with this property. In 1910, the Bluffton accident occurred, with very heavy damages. In 1913 the flood which swept over Indiana and Ohio caused a reconstruction expense of $200,000. In 1915 the jitney seriously affected the earnings of the company. In the same year a strike occurred, accompanied by a boycott lasting seven months and entailing a loss to the company of approximately $250,000.

EXPENSES OUTSTRIP INCREASES IN EARNINGS

"The increased gross earnings have been more than exhausted by the increased cost of operation and the reports for the last three months have shown continual deficits. The increased cost of coal alone for six months as against the preceding year was $84,369. It is to be remarked, too, that apart from increased operating expenses, the rates of carrying passengers in the cities have been kept the same by law, and the interurbans, without regard to cost, have not been allowed an excess of 2 cents a mile per passenger. Since the organization of this property in 1904 the wages of the motormen and conductors have been advanced six times. Had it not been for the generally fair disposition of the community as a whole and of the public press, the property would have been long since financially ruined.

$1,400,000 NEEDED FOR IMPROVEMENTS

"Circumstances have, as outlined, been unfortunate. It has been impossible during the last six months, in view of the pressure of current obligations arising from the expenses of the strike, and the increased cost of operating and maintaining the property, and because of large additional expenditures for improvements imperatively required, to accumulate the interest accruing upon the bonds of the Fort Wayne & Northern Indiana Traction Company and upon the bonds of the Fort Wayne & Wabash Valley Traction Company, and upon the collateral trust notes of $1,200,000.

"Nor under all of the existing circumstances could banking accommodations be made to secure the money necessary to meet such interest obligations and tide over the present emergency. Inquiry by bankers into the situation has shown the necessity for some protective capital to provide for immediate improvement of the existing equipment and further extension of the power plant. Within the next two years there should be expended in new capital at least $1,400,000. This money cannot be obtained except by a reduction of the fixed charges.

"Upon two occasions the stockholders and others interested in the company have provided for the protection of the property in its development, and furnished the sums requisite for the semi-annual interest upon its principal issue of bonds. While those principally interested will co-operate in the proposed reorganization, these gentlemen are unwilling, apart from others interested, to take further serious financial responsibility, and a default in the payment of interest must therefore occur upon the three classes of securities on Sept. 1, 1917."

Robert M. Feustel, of Sloan, Huddle, Feustel & Freeman, consulting engineers, who was elected president of the company in January, 1916, issued a statement to the public as follows:

"The directors of the company have been working on the financial problem for the past six months. It was apparent to the directors that the revenues were not sufficient to meet the increasing operating costs. Additional money was needed for improvements and yet sufficient funds to pay the fixed charges on money already invested were not available after operating expenses were paid. The first aim of the directors has been to make sure that all unsecured creditors of the company were fully protected. The company has been reducing its floating debt for the past six months and is now in a position where all accounts can be taken care of out of earnings.

"A committee will be formed at once and will push vigorously the formulation of plans for a financial reorganization of the company. This will mean a sacrifice on the part of the present security holders to obtain a plan which will provide new money needed for improvements; the reorganization, however, should not affect the plans of the company to give increased and improved service to Fort Wayne and other cities.

"It will be noted in the letter sent to the security holders that the company has suffered unavoidable financial losses, but with the co-operation and good will of the public we expect not only to render satisfactory service, but to make a fair return to the investor as well. My short experience in Fort Wayne as president for this company gives me every confidence that the public will co-operate with us in this problem."

The Fort Wayne & Northern Indiana Traction Company operates 81 miles of city line and 139 miles of interurban line. The interurban lines connect Fort Wayne, Huntington, Andrews, Wabash, Peru, Logansport, Lafayette and Bluffton.

Providence & Fall River Line Sold

Road to Be Scrapped by the Purchaser Who Bought It in at Foreclosure

The Providence & Fall River Street Railway, operating a line 12½ miles long between Providence and Fall River, known as the "Snake" Line, was sold at public auction at noon on Sept. 12 at the Swansea carhouse, to Carl Andrén, 45 Oliver Street, Boston, Mass., for $68,000. The sale was made by the Industrial Trust Company, Providence, trustee for the bondholders, under a decree entered in the United States District Court at Boston.

The company was incorporated under the laws of Massachusetts in 1901. In 1911 a branch running between Warren and Swansea was discontinued. The company has twenty-five cars and purchases its power from the Narragansett Electric Lighting Company, Providence. J. F. Shaw is president of the company; C. C. Pierce, vice-president, and A. W. Clapp, secretary and treasurer. The company reported for the year ended June 30, 1916, gross earnings of $50,734, operating expenses of $42,099, and net earnings of $8,635. The fixed charges were $14,017, making a deficit for the year of $5,382. The bonded debt of the company was $165,000. The capital stock was $165,000. A committee of bondholders representing $157,000 of the $165,000 of bonds acted in the matter of the court action in Boston.

Carl Andrén, the purchaser of the property, is proprietor of the Carl Andrén Company, car equipment engineer. He stated after the purchase of the road that it would be completely dismantled and thrown upon the junk pile within thirty days at the latest.

Tax Relief for Idaho Companies

$10,473 Saved to Boise Valley Traction and Boise Street Railway Through Reductions in 1917 Valuations

The State Board of Equalization at Boise, Idaho, has reduced the valuations of the properties of the Boise Valley Traction Company and the Boise Street Railway from $9,000 a mile to $5,000 a mile. The $9,000 a mile valuation was fixed in 1916. The total valuation of properties owned by the Boise Valley Traction Company was fixed that year at $707,130. The valuation as fixed for 1917 is $392,850. The company paid about $3 on the $100 of valuation in 1916 or $21,213 on the $707,130. The same estimate of $3 on the $100 is used in determining what the company shall pay in taxes next year on this year's valuation. On the valuation of $392,850 as fixed recently the tax is reduced to $11,785, a saving of $9,428.

Last year the valuation of the property of the Boise Street Railway was fixed at $62,730. This year the valuation is fixed at $34,850. The company paid $2,181 in taxes this year on the 1916 valuation. Next year it will pay $1,136 on the 1917 valuation. The saving is approximately $1,045.

In taking a rate of $3 on the $100 valuation as the basis upon which to compute the sum total of the taxes to be paid by companies, the tax levies made by the State, county, city, school districts and highway districts were totaled and averaged.

Chambersburg, Greencastle & Waynesboro Street Railway, Waynesboro, Pa.—The plan for the sale of the property of the Chambersburg, Greencastle & Waynesboro Street Railway to the Hagerstown & Frederick Railway has been declared operative. The Bank of Waynesboro has notified the holders of the preferred stock and the common stock of the Chambersburg, Greencastle & Waynesboro Street Railway to deposit their certificates. The terms of the sale have not been made public, but it is stated that the holders of the Chambersburg, Greencastle & Waynesboro Street Railway stock will receive about one-eighth of the purchase price in cash and the remainder in fifteen-year notes, bearing interest at 5 per cent per annum. In addition they will receive a bonus in the form of common stock of the Hagerstown & Frederick Railway.

Chicago (Ill.) Railways.—The Chicago Railways has filed a petition with the Illinois Public Utilities Commission asking permission to issue additional $2,230,189 of first mortgage 5 per cent bonds to cover special improvements.

Humboldt Transit Company, Eureka, Cal.—The Humboldt Transit Company has filed with the California Railroad Commission an application for authority to issue a 6 per cent note jointly with William Rand to the First National Bank, Eureka, dated July 31, 1917, for $20,000 and to issue $40,000 of first mortgage 5 per cent bonds as collateral security for the payment of the note. This note is to be issued to free the company from a similar note issued to the First National Bank, Eureka, under order of the commission made on Sept. 3, 1915.

Jacksonville & Peoria Railway, Jacksonville, Ill.—W. C. Fordyce, George L. Edwards and J. C. Van Riper, St. Louis, and C. A. Caldwell, Alton, Ill., are members of the bondholders' committee of the Jacksonville & Peoria Railway which has instituted suit against John J. Cummings, Plana, Ill., asking for an accounting of $500,000. The suit was filed in Chicago. The Jacksonville & Peoria Railway was thrown into the hands of receivers in Indiana three years ago. Mr. Cummings resigned from the committee, and then, it is charged, instead of carrying out a contract made with the other members to get sufficient capital to rehabilitate the road, he, with the American Trust Company, St. Louis, got control.

New Orleans Railway & Light Company, New Orleans, La.—A recent visit to New Orleans by a representative of H. L. Doherty & Company, New York, N. Y., gave rise to the rumor that that company contemplated taking over the New Orleans Railway & Light Company. The *Times-Picayune*, in a recent issue, said: "D. D. Curran, president of the New Orleans Railway & Light Company said there was nothing to the report. A. B. Patterson, New Orleans representative of Henry L. Doherty & Company, also denied there was anything to the report."

Pittsburgh, Mars & Butler Street Railway, Pittsburgh, Pa.—The Pittsburgh, Mars & Butler Street Railway has filed for record with the county recorder of Allegheny County a mortgage on its property given in favor of the Dollar Savings & Trust Company, Pittsburgh, as trustee, to secure an issue of $1,250,000 of bonds, the proceeds of which will be used for improving the road. The Pittsburgh, Mars & Butler Street Railway is the successor to the Pittsburgh & Butler Street Railway, the property of which was sold under foreclosure to R. H. Boggs last May. Mr. Boggs is president of the Dollar Savings & Trust Company. In addition he is president of the Pittsburgh, Harmony, Butler & New Castle Railway.

Tidewater Power Company, Wilmington, N. C.—John H. Nickerson, Jr., New York, N. Y., is offering $350,000 of Tidewater Power Company three-year 6 per cent general mortgage gold bonds dated Aug. 1, 1917, to yield 7 per cent. The bonds are redeemable at 101 and interest on sixty days' notice.

West End Street Railway, Boston, Mass.—The West End Railway recently sold to R. L. Day & Company and Merrill, Oldham & Company, Boston, Mass., an issue of $500,000 of 7 per cent thirty-year bonds. This is the second issue of 7 per cent securities to be sold by the road within a few weeks, it having previously disposed of $1,581,000 of three-year 7 per cent notes to Lee Higginson & Company.

Electric Railway Monthly Earnings

BERKSHIRE STREET RAILWAY, PITTSFIELD, MASS.

Period		Operating Revenue	Operating Expenses	Operating Income	Fixed Charges	Net Income
1m., July,	'17	$105,383	•$85,359	$20,024	$27,540	†‡$7,187
1 " "	'16	97,834	•76,352	21,482	27,831	‡†6,178
7 " "	'17	615,633	•539,548	76,085	193,023	‡†116,113
7 " "	'16	556,056	•464,850	91,206	178,491	‡†85,934

CONNECTICUT COMPANY, NEW HAVEN, CONN.

Period		Operating Revenue	Operating Expenses	Operating Income	Fixed Charges	Net Income
1m., July,	'17	$992,238	•$703,075	$289,163	$100,358	‡$211,358
1 " "	'16	932,505	•587,455	345,050	98,634	‡270,260
7 " "	'17	5,755,899	•4,491,762	1,264,137	675,354	‡715,300
7 " "	'16	5,428,057	•3,667,169	1,760,888	690,080	‡1,200,343

EAST ST. LOUIS & SUBURBAN COMPANY,
EAST ST. LOUIS, ILL.

Period		Operating Revenue	Operating Expenses	Operating Income	Fixed Charges	Net Income
1m., July,	'17	$314,202	•$219,015	$95,187	$64,757	$30,430
1 " "	'16	258,367	•151,584	106,783	62,987	43,796
12 " "	'17	3,418,246	•2,173,588	1,244,658	768,991	475,667
12 " "	'16	2,760,532	•1,642,212	1,118,320	751,943	366,377

NEW YORK & STAMFORD RAILWAY, PORT CHESTER, N. Y.

Period		Operating Revenue	Operating Expenses	Operating Income	Fixed Charges	Net Income
1m., July,	'17	$54,436	•$33,179	$21,257	$7,982	‡$13,321
1 " "	'16	44,930	•30,663	14,267	7,987	‡6,325
7 " "	'17	228,996	•204,045	24,951	55,890	‡†30,628
7 " "	'16	213,182	•173,964	39,218	55,887	‡†16,385

NEW YORK, WESTCHESTER & BOSTON RAILWAY,
NEW YORK, N. Y.

Period		Operating Revenue	Operating Expenses	Operating Income	Fixed Charges	Net Income
1m., July,	'17	$49,158	•$45,533	$3,625	§$5,649	‡†$1,083
1 " "	'16	50,044	•44,504	5,540	§6,015	‡591
7 " "	'17	323,604	•322,757	847	§52,338	‡†44,230
7 " "	'16	306,233	•348,873	†42,639	§61,970	‡†60,360

NORTHERN OHIO TRACTION & LIGHT COMPANY,
AKRON, OHIO

Period		Operating Revenue	Operating Expenses	Operating Income	Fixed Charges	Net Income
1m., July,	'17	$564,261	$339,142	$225,119	$61,602	$163,517
1 " "	'16	481,143	241,840	239,303	94,493	144,810
7 " "	'17	3,638,014	2,214,956	1,423,057	556,377	866,680
7 " "	'16	2,860,642	1,401,485	1,459,157	673,787	785,370

REPUBLIC RAILWAY & LIGHT COMPANY,
YOUNGSTOWN, OHIO

Period		Operating Revenue	Operating Expenses	Operating Income	Fixed Charges	Net Income
1m., July,	'17	$388,002	•$257,983	$130,019	$84,221	‡$56,142
1 " "	'16	326,707	•196,867	129,840	68,816	‡61,348
12 " "	'17	4,344,363	•2,749,919	1,594,444	923,281	‡714,354
12 " "	'16	3,674,096	•2,165,626	1,508,470	766,875	‡753,095

RHODE ISLAND COMPANY, PROVIDENCE, R. I.

Period		Operating Revenue	Operating Expenses	Operating Income	Fixed Charges	Net Income
1m., July,	'17	$610,130	•$419,110	$191,120	$122,947	‡$68,941
1 " "	'16	569,275	•371,502	197,773	120,688	‡78,599
7 " "	'17	3,439,820	•2,783,667	656,153	841,101	‡†100,391
7 " "	'16	3,297,887	•2,393,361	904,526	800,469	‡190,397

WESTCHESTER STREET RAILWAY, WHITE PLAINS, N. Y.

Period		Operating Revenue	Operating Expenses	Operating Income	Fixed Charges	Net Income
1m., July,	'17	$25,393	•$25,364	$29	$2,208	†‡$2,145
1 " "	'16	23,125	•22,400	725	1,815	†‡1,064
7 " "	'17	140,590	•162,065	†21,475	14,659	†‡35,936
7 " "	'16	141,660	•149,771	†8,109	12,373	†‡20,304

•Includes taxes. †Deficit. ‡Includes non-operating income. §Excludes interest on bonds, charged income, and paid by the New York, New Haven & Hartford Railroad under guarantee; also interest on notes held by the New York, New Haven & Hartford Railroad, not credited to income of that company.

Traffic and Transportation

P. F. Sullivan on One-Man Cars

President of Bay State Street Railway Explains Their Advantages to Trainmen

Under the heading "Why Every Bay State Employee Should Welcome the Efficiency Car," President P. F. Sullivan of the Bay State Street Railway gives the reasons to the trainmen in a recent issue of the company's publication. He says in part:

"I am going to talk to you frankly about the so-called one-man car which we have asked the Public Service Commission to permit us to operate on certain lines. There is only one reason why this type of car should be adopted: it will help us give the public better service. We may as well recognize at the start that every machine, no matter how much its introduction may have been opposed, that has helped men serve the public better has won its way to success. We are introducing the one-man car because in the cities where it has been thoroughly tested and tried out it has given such satisfaction that no longer is there a reason why fair-minded men should oppose it for any but selfish and anti-public reasons.

"You are interested, especially you blue-uniform men, in the charge that has been made that this car will throw some of you out of work. No man—and this I say to you as earnestly and as sincerely as I know how—no man who has been a true Bay State worker need ever fear that he will be thrown out because of the introduction of labor-saving machinery. And it must also be said on the other side that no true Bay State employee will ever oppose either by word or deed the introduction of equipment which will enable the company to render more satisfactory service to the public.

ONE-MAN CARS ARE OF BENEFIT TO ALL

"At the present time, when the company is facing the greatest financial crisis in its history, every loyal man in the employ of the company must be ready and willing to bring into the organization any man or any machine that will help cut unnecessary expenses, improve the service, and assist in any other way to make it possible for the company to give better service. The financial condition of the company at the present time is such that unless unnecessary expenses are cut, unless there is a greater display of willingness on the part of all employees to do more and better work, unless there is true co-operation all along the line, the company will find it necessary, in self-defense, to discontinue all of its non-paying lines. We hold that any order to continue to operate non-paying lines is confiscatory and therefore illegal, and we believe that the people of the State will back us up when we refuse to continue the operation of a line which costs us 40 cents for every 6-cent passenger carried. The law cannot compel you to work for $1 a day when your actual living expenses are $2.50.

"Should we discontinue operating all our non-paying lines, many men will be forced to leave our employ. We wish to avoid inflicting any hardship on those men. For that reason, and for the reason that we are trying to give the maximum service at the lowest cost, we are planning to substitute one-man cars for some of the present two-man cars and to use two one-man cars on some lines where we are now using one two-man car. This we are doing in the interest of better service to the public.

"Men are leaving the company nearly every day. The draft is taking many. Others have enlisted. Still others have gone voluntarily into other work. The one-man car does not mean the discharge of men who wish to stay. Do not let anyone make you believe anything to the contrary. You remember the old story of the goose that laid the golden eggs. Do not let anyone persuade you to let narrow selfishness warp your eyesight and keep you from seeing that in demanding too much you will only increase the danger of losing what you now have."

Portland Fare Hearing

Company Asks Increase Partly to Offset Higher Wages Requested by Its Men—Commission Suggests Decreased Service

As reported last week the Portland Railway, Light & Power Company, Portland, Ore., has petitioned the Oregon Public Service Commission for permission to increase its fares to 6 cents. The company declared that the increase is necessary if the advance in wages recently demanded by its platform men is to be granted. It was suggested by representatives of organized labor that an investigation be conducted by the commission to determine whether the company's revenues are adequate to meet the demands of the employees, and if not, that it be permitted to revise its tariffs sufficiently to meet the requirements of a higher wage scale and easier working conditions. Franklin T. Griffith, president of the company, appeared before the commission to urge that if the matter were to be taken up, it be done expeditiously, and that to save time the company's accounts be inspected by the commission's investigators before the day of hearing.

The first hearing was held in Portland on Sept. 6. President Griffith testified that service had increased 13.4 per cent over that of last year. Chairman Miller of the Public Service Commission stated that increased service may not be absolutely necessary and that, rather than increase the fare from 5 cents to 6 cents, because of increased operating expenses, the solution of the problem may be the reduction of service.

The first protest against the company's application for higher rates was made by members of Sumner Post, G. A. R., who threaten to aid in the restoration of jitney service in case the Public Service Commission decides to grant the increase.

The local branch of the Brotherhood of Railway Trainmen on Sept. 6 submitted to the Public Service Commission a resolution opposing the higher fares, declaring that the company is using the demands of its employees for a basic eight-hour day and a 16 per cent increase in wages as a subterfuge to influence the commission. This attitude is contrary to that of the employees of the company, who, on Sept. 5, requested the commission to allow the increase. The protesting trainmen claim that the company is amply able to grant the men's demands without increasing its income from fares.

Parades Conflict With Service

Denver Tramway Runs Advertising Before Parade Days to Notify Public of Its Attempts to Maintain Service by Rerouting Cars

An advertisement was run in the daily papers in Denver, Col., on the day before Labor Day calling attention to the attempt the Denver Tramway would make to maintain normal service through rerouting cars and splitting runs in order to serve the public despite the blockade resulting from the parade on the main car-line streets. The advertisement explained that the parade would cause an unavoidable interruption and delay to the service and listed the lines which would be re-routed and the course these cars would take. It is planned to run an advertisement of this kind just before every parade held in the town during the coming year. In commenting on the company's efforts to inform the public, J. C. Davidson, publicity manager, said:

"We had three purposes in running this advertisement; first, to make as many people as possible realize that all the rotten car service on Labor Day was not the fault of the tramway, but of the parade; second, to give some very useful information to the public in order to minimize the inconvenience caused by these re-routings; third, to create a public sentiment against parades on our three busy downtown streets and thus pave the way for action by city officials some time in the future to keep the parades off these streets where they cause so much mental anguish on the part of the tramway and corns and blisters on the part of the car riders whom the parade forces to become pedestrians."

Overcrowding Decision Revoked

Toronto Railway Upheld by Imperial Privy Council in Appeal from Decision Convicting It of Maintaining a Public Nuisance

The Imperial Privy Council has allowed the appeal of the Toronto (Ont.) Railway from its conviction by the Toronto Supreme Court for operating overcrowded cars. The action was originally taken against the company at the instance of the city under the public health act. The company was charged with maintaining a public nuisance by overcrowding its cars, and a conviction was obtained, notwithstanding arguments for the defence, which, while admitting the overcrowding, showed that, in law, it was not maintaining a public nuisance. This view was held by the Privy Council. In the Judicial Committee's opinion the wrong done was a civil one. The judgment reads, in part, as follows:

"The obligation of the appellants was a contractual obligation to the Corporation of Toronto. There was no duty to the public generally. These cars were on the street in recognition of a public right which the Ontario Legislature and the Toronto Corporation have thought it advantageous to interfere with. The cars were not less thereby the property of the appellants, which the public could only enter by invitation. Whatever conditions in the grant of the appellants' title the corporation had contracted for obtained merely between them and the appellants. The overcrowding was not a matter that affected the public as such, but only those members of the public who have obtained from the appellants licenses to enter the cars."

This matter has been before the courts in Canada for several years. It is said that the case in various phases has been a consideration in several municipal elections. It is also believed by some that it is not the desire of the city to have the situation remedied but that it wishes to influence public opinion during the last years of the company's franchise, with the intention of taking over the property.

Harrisburg Survey Completed

Bion J. Arnold Reports to Harrisburg Railways, by Which He Was Retained to Inquire Into Traffic Conditions in the Pennsylvania Capital

The work of Bion J. Arnold, Chicago, who for several months has been making a survey of the service rendered by the Harrisburg (Pa.) Railways for the company with a view to recommending changes for the improvement in the transportation facilities in Harrisburg, Steelton, and other nearby towns, has been completed. Many immediate betterments and a comprehensive plan of developments covering a period of years are outlined in Mr. Arnold's report. The report is a document of 125 pages of typewritten matter besides maps, diagrams and analytical and explanatory tables. That the survey will result in many immediate improvements in the service is assured by directors of the company. In many respects Mr. Arnold's recommendations are identical with the suggestions made by the Public Service Commission of Pennsylvania in a letter to Frank B. Musser, president of the company, as referred to in the ELECTRIC RAILWAY JOURNAL for Sept. 8, page 416.

The whole subject of electric railway transportation in Harrisburg and suburbs is treated in a broad and comprehensive manner, with consideration for the future, and the close relation between adequate service and a proper development of the city is indicated in several ways. The removal of the Union station from its present site to a point between Walnut and Market Streets is recommended together with a combination viaduct and concourse to solve the present Walnut Street bridge problem. The report also touches upon the widening of the Market Street subway and of Third and Walnut Streets and several other thoroughfares. Treatment of the problems in the Capitol Park zone could not be discussed definitely until the State and city plans for that district are in more concrete form, but it is urged that such matters as the removal of the Union station to Walnut Street and the question of a State or Walnut Street viaduct should be made the subject of immediate conferences on the part of representatives of the State, the city, the railroads and the electric railway.

A new through route to Steelton, by way of Second and Paxton Streets, as recommended by the Public Service Commission; improvement of the Nineteenth Street service to Steelton; rerouting of cars in Third Street; double tracks laid in Market Street and Third Street; the elimination of short stops; a cross-town line through the Herr Street subway development of the Nineteenth Street route to Steelton, and the widening of the Market Street subway are principal points of the many covered by the survey.

Bay State Special-Ticket Hearing

Company Shows Right to Change Rates Voluntarily Established—Some City Representatives Threaten Jitney Reprisals

At a hearing before the Massachusetts Public Service Commission on Sept. 6 relative to the petition of the Bay State Street Railway, Boston, to increase its rates on workingmen's and commutation tickets, representatives of sixteen outlying towns and cities from Fall River to Newburyport were present to remonstrate against the proposed raise. The consensus of opinion was that if the commission grants the requested increase the majority of the communities affected will encourage the operation of jitney lines.

Representatives of the company submitted that the reduced rates at which workingmen's tickets had been sold in the past were due to voluntary arrangement by the company and pointed out that neither the commission nor the Legislature had the legal right to fix class rates below the regular units of fare. This position, it was said, was clearly supported in a decision of the United States Supreme Court in the case of the Lake Shore & Michigan Southern Railroad vs. Smith.

In regard to commutation rates, the representatives of the company laid stress upon the fact that such reduced rates as had prevailed in the past were voluntarily established by the company to aid the development of certain communities. Now, when the company finds itself confronted with a situation where it is selling transportation for less than cost, it feels that it is justified in withdrawing the voluntary rates.

It was stated that after allowing for a 5 per cent traffic loss, the proposed increases in rates would mean a gain of $110,000 a year to the company.

Always Be Careful

That personal safety is dependent on the state of mind of the individual rather than upon any elaborate set of rules is cleverly portrayed in a recent issue of *Trolley News*, published by the United Railways & Electric Company, Baltimore, Md. The article entitled "Multum in Parvo" follows:

"Once upon a Time there was a Gathering at which Everybody was asked to Say Something that would be Helpful to Mankind in avoiding Accidents.

"The first Man to Talk explained very Fully the whole Theory of Accidents and traced their History from the Dark Ages to the Present Time. When He had finished He sat Down and Everybody applauded and was Glad that they had come.

"The next Speaker told of his long Experience in Safety matters and the peculiar Conditions He had Encountered at various Times. And He drew Diagrams and Maps on the Blackboard to show how Persons are Bowled over when they Fail to Observe the Standard Rules of Safety. At the Conclusion of his Talk He was Given a Rising Vote of Thanks.

"Then Another Man Talked for Three-quarters of an Hour, Illuminating His Speech by reciting a Poem of ten Verses. All He said would have filled a Book, and it was generally Agreed that He had handled the Subject better than Any of those who had preceded Him.

"The following Speaker presented a long List of Don'ts. It was 'Don't Do This,' and 'Don't Do That,' and when He had done there was Nothing except Playing Pinochle that Anybody could Do without being Badly Hurt. So He was given the Chautauqua Salute as He Smilingly resumed his Seat.

"Then there was a Serious looking Fellow who Said that He would not Only present the Matter from a New Angle, BUT that He would Prove every Word He said. He had a Model of an Auto, and one of a Cart, and a Car, and a Lamppost, and a Pile of Bricks, and a Yellow Dog, and a Wheelbarrow, and a Soap Box. He put them All together on a Table and Proved to the Satisfaction of his Hearers that the only Way to keep out of the Hospital was to Eat Breakfast in Bed and remain at Home the rest of the Day.

"There were Other Talkers and They were very Eloquent, and Said many Things that would benefit Mankind if they could be Remembered at the Right Time.

"And When Everybody Else had Stopped Talking, which was not until Very Late, a Small Quiet Man who had been in the Rear of the Hall slowly arose.

"'Well, Sir,' said the Chairman of the Meeting, 'We Shall be Glad to Hear Your Suggestion for the Protection of Humanity from Accident and Injury. What Have You to Say?'

"The Small Quiet Man Replied:

"'Always Be Careful.'

"Then He sat Down.

"ALWAYS BE CAREFUL.

"And That is the very Best Safety Rule that You, Dear Reader, can Adopt, and can Impress upon the Members of your Family and your Friends to Safeguard You and Them from Accident and Injury.

"Remember that it Applies at All Times and under All Conditions.

"ALWAYS BE CAREFUL."

Cars Crash on Ohio Road.—Several persons were injured in a collision on the line of the Northern Ohio Traction & Light Company at the "gorge" between Akron and Cuyahoga Falls, on the night of Sept. 9. One of the cars was stopped by its trolley leaving the wire and the other struck it from the rear.

Higher Rates Asked by N. O. T.—Application for higher power rates and passenger fares has been made to the Ohio Public Utilities Commission by the Northern Ohio Traction & Light Company, Akron, to put fares on a basis of 2 cents a mile and to increase power rates about 20 per cent. Higher costs of materials and labor are said to be the reason for the action taken.

Scranton Fare Increase Suspended.—Under an agreement reached by the Public Service Commission of Pennsylvania and the Scranton Railway, which has asked for a 6-cent fare, the company will suspend the increase for the time being. A hearing will be held within a few weeks on the several complaints filed with the commission. The new tariff was to have been effective on Sept. 7.

Service Interruption on Shore Line.—The failure of a turbine at the Saybrook power station of the Shore Line Electric Railway, Norwich, Conn., on Sept. 9 caused an almost complete tie-up in the service. The turbine was supplying practically all of the power since another turbine went out of commission some time ago. Only one car every two hours was operated on the lines where service was continued.

Accident on Public Service Railway.—Twenty-three persons were injured on Sept. 9, about 9 p. m., in an accident on the Public Service Railway, Newark, N. J., when a car ran into an open switch near Pensauken Junction, just outside of Camden, and turned over on its side. The motorman, in describing the accident, said that the arc light at the junction was not lighted and that his headlight went out a few feet from the switch. He immediately reduced the speed of his car but struck the switch at about half speed.

Collision on Schuylkill Railway.—As a result of a head-on collision which occurred recently on the Schuylkill Railway, Girardville, Pa., between Frackville and St. Clair, three people were killed and several others seriously injured. It is said that the northbound car failed to take the siding at St. Clair and instead attempted to make an extra block before the southbound car arrived. The latter had passed a car on the spur at Frackville and had proceeded toward St. Clair. The motorman of the southbound car died soon after the accident.

Car Crews Ask Passengers' Co-operation.—In all the cars of the United Railways, St. Louis, Mo., cards have been placed addressed to the public and signed by the motormen and conductors requesting that patrons be careful in boarding and alighting from cars and thereby help them win bonuses under the plan established by that company. The bonus system went into effect on Sept. 1, and was described briefly on page 165 of this paper for July 28.

Toledo Watching Ohio Rate Case.—The Toledo *Times* states that the Toledo & Indiana Traction Company, the Toledo & Western Railroad, and the Northwestern Ohio Railway & Power Company, Toledo, will increase their rates of fare to practically 2½ cents per mile, in case the recent decision of the Ohio Public Utilities Commission increasing the rates of the Western Ohio Railway to that basis stands. The *Times* regards that as a test case for all the interurban roads of the State.

Cities in New York to Fight Fare Increases.—The cities in New York State in which the electric railways have asked for a 6-cent fare are to have experts to handle their opposition. A recent conference of municipal attorneys in Syracuse was attended by E. W. Bemis, Chicago; F. W. Ballard, Cleveland; T. L. Sidlo, Cleveland, and J. C. Breckenbridge, New York. It was intimated that the cities would insist upon a physical valuation of the various properties concerned.

Ohio Electric Milk Schedules Suspended.—On Sept. 5 the Public Utilities Commission suspended the new milk transportation schedules of the Ohio Electric Railway, Springfield, for thirty days. They were to have become effective on Sept. 10. As stated on page 417 of this paper for Sept. 8, the new schedules provided that all milk and cream would be carried on freight instead of on passenger cars. The Greater Dayton Association, the Springfield Traffic Association and other organizations, as well as milk producers and distributers, protested against the change.

San Francisco Rate Hearing Postponed.—Testimony regarding valuations of the Southern Pacific Company and the San Francisco-Oakland Terminal Railways was taken at a hearing before the California Railroad Commission on Sept. 5. As announced in the ELECTRIC RAILWAY JOURNAL of Aug. 25, page 333, the companies made application to the commission for an increase in fares for its service between San Francisco and points in Alameda County. Further hearing on the application was put over until Nov. 12, when the Key Route's petition of a similar nature will be reopened. The application of the Key Route was noted on page 1116 of this paper for June 16.

Railway Seeks to Operate Buses.—An application has been filed with the Railroad Commission of California by the Peninsular Railway to operate auto buses from the Southern Pacific Depot near Palo Alto, Santa Clara County, to the most southerly barracks in the cantonment at Camp Fremont, San Mateo County. The Peninsular Railway operates an electric system 100 miles long in Santa Clara County and says that its purpose is to run buses to make direct connection with its interurban cars, Palo Alto city cars, and cars to Stanford University. The company proposes to operate Fadgl auto buses, each seating eighteen persons, and to charge a 5-cent fare.

New Traffic Ordinance in Dallas.—A new traffic ordinance became effective in Dallas, Tex., on Sept. 6, which gives the police department authority to regulate all vehicles on the city streets and touches in several particulars the operation of electric railway cars. According to its provisions cars shall stop on the near side so as not to obstruct traffic on intersecting streets; no vehicle shall stand at any street intersection nearer than 10 ft. to the property line of the intersecting street longer than is necessary to let passengers on or off, but on the near side of the street where cars stop no vehicle shall stand within 60 ft. of the property line; persons riding bicycles are prohibited from hanging onto any conveyance; and electric railway cars shall have right of way over all other vehicles except police patrols, fire equipment and ambulances. The front exit from electric railway cars will also be encouraged. At the request of the officials this was not written into the ordinance but was left for voluntary enforcement by the companies.

Personal Mention

Dr. H. R. McGraw has been appointed company physician for the Denver (Col.) Tramway to fill the vacancy made by the death of Dr. L. T. Durbin.

Edgar Watkins, attorney-examiner for the Interstate Commerce Commission, has resigned. Mr. Watkins will return to the practice of law.

R. W. Levering has been appointed to succeed Jack Abbott as superintendent of the Lafayette division of the Fort Wayne & Northern Indiana Traction Company.

J. N. Cadby, who for nearly ten years has been connected with the Railroad Commission of Wisconsin, has resigned from the commission and opened a consulting engineering office in Madison, Wis.

J. H. Botz, statistician and accountant for the Public Utilities Commission for the District of Columbia, has tendered his resignation. Mr. Botz will become associated with Andrew Sangster of Chicago in utility valuation work.

E. S. Myers, electrical engineer for the Fort Wayne & Northern Indiana Traction Company, Fort Wayne, Ind., has been appointed general manager of the Vicksburg Light & Traction Company, Vicksburg, Miss., to succeed O. H. Simonds.

E. E. Potts, general storekeeper of the Kentucky Traction & Terminal Company, Lexington, Ky., has been appointed purchasing agent of the Kentucky Traction & Terminal Company, the Lexington Utilities Company and the Lexington Ice Company.

W. P. Strandborg, publicity agent of the Portland Railway, Light & Power Company, Portland, Ore., has been elected secretary-treasurer of the Pacific Coast Advertising Men's Association. The next annual convention of the association will be held in Portland.

Edgar G. Deis, for the last ten years in the mechanical department of the Brooklyn (N. Y.) Rapid Transit Company as engineer of materials under W. G. Gove, superintendent of equipment of the company, has been appointed manager of the service department of the Railway Improvement Company, New York, N. Y.

O. H. Simonds, general manager and purchasing agent of the Vicksburg Light & Traction Company, Vicksburg, Miss., has been appointed general manager of the Dubuque (Iowa) Electric Company to succeed E. M. Walker, resigned. Both the Vicksburg and the Dubuque properties are controlled by Elston & Company of Chicago.

R. W. Spofford, general manager of the Augusta-Aiken Railway & Electric Corporation, Augusta, Ga., has been appointed to a position in the United States naval service and hereafter will devote only two days of each week to railway management. His duties will otherwise be in charge of Lewis Keim, purchasing agent of the company.

T. F. Grover received a beautiful silver loving cup from employees of the Terre Haute division of the Terre Haute, Indianapolis & Eastern Traction Company upon his departure to South Bend, Ind. Mr. Grover is now vice-president and general manager of the Chicago, South Bend & Northern Indiana Railway, as noted recently in this paper.

Bruce Cameron, superintendent of transportation of the United Railways, St. Louis, Mo., who it has been reported received an offer of a managerial position with The Milwaukee Electric Railway & Light Company, Milwaukee, Wis., will remain with the United Railways, according to an announcement made by Richard McCulloch, president of the company. More than 5000 employes signed a petition asking that Mr. Cameron remain in St. Louis.

Jack Abbott, superintendent of the Lafayette division of the Fort Wayne & Northern Indiana Traction Company, has resigned effective Sept. 15. He will take up farming, having recently acquired a big ranch in the Mississippi black bottom belt. Mr. Abbott is a graduate of the University of Alabama and of Cornell University. He was for a time connected with the Rome Railway & Light Company, Rome, Ga., and later became superintendent of the Jackson Railway & Light Company, Jackson, Miss. He has been superintendent of the Lafayette property since June, 1912, and has proved himself to be a very able executive.

John H. Lucas has retired from the presidency of the Kansas City Light & Power Company, Kansas City, Mo., and will be succeeded by J. F. Porter of Davenport, Iowa, as noted in this paper last week. Mr. Lucas has been connected with the electric railway and light companies in Kansas City for many years. He established the law firm of Johnson & Lucas in that city in 1879 and soon afterward became general counsel for the cable railway and continued with other companies as consolidations were effected, becoming counsel for the Metropolitan Street Railway in 1902. He was also legal adviser for the Kansas City Electric Light Company after its organization in 1884. He continued as legal adviser for both companies and subsequently served in the same capacity with the Kansas City Railway & Light Company, the successor company, but following the receivership of the Metropolitan Street Railway and the segregation of the railway and lighting properties in Kansas City he continued his service only with the light company with which he served as president.

William M. Casey, heretofore general superintendent of transportation of the Denver (Col.) Tramway, recently became associated with John A. Beeler, consulting engineer, New York City. He had been connected with the Denver Tramway since 1902. He was first division superintendent and in 1909 was promoted to the position of trainmaster in charge of traffic and discipline. Later he was made general superintendent of transportation. Mr. Casey is at present assisting in the service investigation on the Boston (Mass.) Elevated Railway. He was born in Ireland in 1870 and received his early education in Lawrence, Mass. In 1888 he went West and with a love for adventure enlisted in the United States Army, whose chief occupation then was subduing insurrections of hostile Indian tribes. Four years later he was employed by the Denver City Cable Company in the transportation department, and the following year was made carhouse foreman. His next connection was with the Denver Tramway. Mr. Casey's keen insight into human nature and his early experiences have been of great value in training others and in maintaining discipline.

T. E. LELAND

T. E. Leland, heretofore assistant general freight agent for the Bay State Street Railway, Boston, Mass., as reported last week, has been appointed general freight agent of the company. Mr. Leland's railroad work has been largely in the steam railroad field. He began as operator and agent for the Ohio Southern Railroad at Jeffersonville, Ohio, when sixteen years of age. After several promotions he became agent at Washington Court House in March, 1901, in charge of both freight and passenger business. His next connection was in the passenger department of the Denver & Rio Grande Railroad until 1906 when he became chief clerk to the local freight agent and superintendent of terminals of the Missouri Pacific Railroad at Pueblo. Following a short connection with the St. Louis Southwestern Railway the following year he re-entered the service of the Missouri Pacific with headquarters at Kansas City, becoming assistant local freight agent. Mr. Leland's electric railway experience began in 1909 when he was employed in the accounting department of the Metropolitan Street Railway, now the Kansas City (Mo.) Railways. He continued in that capacity until June, 1913, when he entered the service of the Bay State Street Railway as local express agent at Boston. Later he was made assistant general freight agent, his last position. Mr. Leland has a keen appreciation of the possibilities for development in the electric freight field.

E. M. WALKER

E. M. Walker has resigned as general manager of the Dubuque (Iowa) Electric Company, the position he has held for the last five years. During the first four years of this period the company was known as the Union Electric Company. Upon its purchase by interests represented by Elston & Company, Chicago, in 1916, it was reincorporated. Under Mr. Walker's management the gross earnings of the company, including both the light and railway properties, increased approximately 50 per cent; the number of lighting and power customers was nearly trebled, and most cordial relations have been maintained between the company, employees and the public. Mr. Walker has been one of the leading spirits in the commercial and social life of Dubuque, one of his recent achievements in this respect being the winning of a bronze and silver cup for selling more Liberty bonds than any other individual in the city. His sales totaled $85,000 and included 291 different subscriptions. He is chairman of the Red Cross work in Dubuque and has been active in the Dubuque Commercial Club and in other ways in civic affairs. Mr. Walker is well known for his activity in association work, having served as president of the Iowa section, N.E.L.A., and now is a member of the board of directors. In 1910 he was vice-president of the Iowa Street & Interurban Railway Association and he has served for two years as a member of the passenger traffic committee of the American Electric Railway Transportation & Traffic Association. From this it can be seen that Mr. Walker has been a popular leader among the railway and lighting operators of the State. He began his public utility work immediately after his graduation in 1897 from Williams College with an A.B. degree. After serving one year with the Lockport Gas & Electric Company he became connected with the Hyde Park (Mass.) Gas Company as secretary and assistant superintendent. Three years later he became general manager of the company. In 1893 he was appointed general manager of the Bristol Gas & Electric Company, Bristol, Tenn., and four years later he became general manager of the Citizens' Railway & Light Company, Muscatine, Iowa. This connection was followed by his appointment as general manager of the Union Electric Company and of its successor, the position he has just relinquished.

Obituary

George W. Travis, former claim agent for the Alton, Granite & St. Louis Traction Company, died at the St. Joseph's Hospital, St. Louis, on Sept. 10 at the age of fifty years.

Dugald G. Porter, manager in Rock Island and Moline of the Tri-City Railway & Light Company, Davenport, Iowa, died suddenly on Sept. 1. Mr. Porter was a son of Joseph F. Porter, formerly president of the Tri-City Railway & Light Company.

Lloyd D. Mathes, who has been general superintendent of the electric division of the Norfolk Southern Railroad since 1911, died of typhoid-pneumonia at his home in Norfolk, Va., on Sept. 5. Mr. Mathes was general manager of the Union Electric Company, Dubuque, Ia., now known as the Dubuque Electric Company, from 1903 to 1911. During this connection he was very active in the work of the Iowa Street & Interurban Railway Association, of which he served a term as president. Prior to that time he was general superintendent of the Trenton & New Brunswick Railroad. Mr. Mathes was a native of Memphis, Tenn., and gained his first experience with the Memphis & Charleston Railroad of that city. He was employed by the General Electric Company and the Westinghouse Electric & Manufacturing Company and later held important positions with electric railways in various parts of the country.

Construction News

Construction News Notes are classified under each heading alphabetically by States.

An asterisk (*) indicates a project not previously reported.

RECENT INCORPORATIONS

Galesburg, Rockford & Northern Railroad, Galesburg, Ill.—Incorporated to construct an electric railway from Galesburg to Rockford, through Bureau, Henderson, Knox, Lee, Ogle, Whiteside and Winnebago Counties. Capital stock, $200,000. R. J. Emery, 19 South La Salle Street, Chicago, is interested. [Aug. 18, '17.]

Wichita-Walnut Valley Interurban Railway, Wichita, Kan.—Incorporated to construct an electric railway from Wichita to El Dorado, thence to Augusta, Douglas, Rock and Winfield, where it will connect with the Southwestern Interurban Railway. The line will penetrate the big oil fields of Butler and Cowley Counties. Capital stock, $2,000,000. Charles Payne, secretary. [July 7, '17.]

***Okmulgee (Okla.) Traction Company.**—Incorporated to construct and operate an electric railway system in Okmulgee. Capital stock, $100,000, being 1000 shares of par value of $100 each. Incorporators, Elmer E. Feistel and A. K. Feistel, Tulsa, Okla.; M. M. Simons, Okmulgee, Okla., and R. Thurlow Bartlett and E. M. Buston, Portland, Me.

FRANCHISES

Kansas City, Mo.—The City & Leeds Railway has received a franchise from the County Court for the construction of an electric railway that is planned to connect Kansas City with some of the smaller towns of the county. The first parts of the road are to be built with money from the proceeds of land operations by syndicates now being formed. The Clinton Construction Company, Willard E. Winner, president, is arranging the syndicates and will build the road. Grading is now being done on 1 mile of line to be put into operation first within the limits of Kansas City to connect Leeds with the present terminus of the lines of the Kansas City Railways at Thirty-first Street and Raytown Road. C. H. Witthar, Independence, Mo., president. [Sept. 1, '17.]

Passaic, N. J.—The Public Service Railway will ask the City Council of Passaic for a franchise to double-track River Drive.

Cincinnati, Ohio.—The street railway committee of the City Council of Cincinnati has recommended the acceptance of the bid of the Cincinnati, Newport & Covington Street Railway for the Green Line route franchise for a period of twenty-five years . The fare is to be 5 cents with universal transfers in Cincinnati.

***Coatesville, Pa.**—Paul S. Stansbury, Coatesville, has purchased a trolley franchise recently granted to local capitalists by the City Council, which is to extend over the city streets to the iron and steel mills, a distance of about 2 miles, and then to proceed north to Honeybrook and other towns.

Greensburg, Pa.—The West Penn Railways has asked the City Council of Greensburg for a franchise for the construction of an extension of its West Otterman Street line from its present terminal to the borough line and the building of a switch at East Otterman and Main Streets.

TRACK AND ROADWAY

Calgary (Alta.) Municipal Railway.—About ½-mile of temporary track is being built by the Calgary Municipal Railway to the site of the new reservoir to haul gravel and other construction supplies.

Pacific Electric Railway, Los Angeles, Cal.—The Board of Public Works has let a contract for the erection of a reinforced concrete bridge over the tracks of the Pacific Electric Railway at West Boulevard and Sherman Way to W. M. Ledbetter, Los Angeles, at $24,957.

Pacific Gas & Electric Company, Sacramento, Cal.—A bond for $15,000 will be filed by the Pacific Gas & Electric Company for permission to operate in Vallejo.

Municipal Railways of San Francisco, San Francisco, Cal.—The contract for the construction of outer tracks for the Municipal Railways from Van Ness Avenue to Castro Street, on Market Street, was let by the Board of Works to James M. Smith for $36,960. The Board of Works asked the Board of Supervisors to appropriate this sum, besides $1,500 for a possible bonus; $2,500 for inspection; $61,525 for the purchase of track special work; $20,000 for trolley wires and poles on Upper Market Street; $150,000 for Lower Market Street construction; $90,000 for the line from the west portal of Twin Peaks tunnel to Twentieth and Taraval Streets; $46,500 to complete the tunnel, and $5,000 for freight and handling of materials, a total of $413,985.

Georgia Railway & Power Company, Atlanta, Ga.—Work will soon be begun by the Georgia Railway & Power Company reconstructing the Edgewood Avenue line between Piedmont Avenue and Jackson Street.

Des Moines (Iowa) City Railway.—President Emil G. Schmidt of the Des Moines City Railway states that unless the market for loans improves he will postpone all major improvements until after the close of the war. The program of improvements contemplated by the company included one entirely new line.

***Jenkins, Ky.**—The Consolidation Coal Company, Jenkins, is interested in the construction of an electric railway in Jenkins, to connect with Burdine, Dunham, East Jenkins. McRoberts, Fleming and Haymond.

Owensboro (Ky.) City Railroad.—Work will be begun at once by the Owensboro City Railroad on the construction of several miles of additional lines connecting with important suburbs.

Hagerstown & Frederick Railway, Frederick, Md.—Work will be begun immediately by the Hagerstown & Frederick Railway reconstructing its North Potomac Street line from Franklin Street to the Gray Gables, Hagerstown.

Brooklyn (N. Y.) Rapid Transit Company.—The Eastern Contracting Company, Brooklyn, has the contract for constructing this company's extension of the Metropolitan Avenue surface line from its present terminus at St. John's Cemetery, Middle Village, to Jamaica. It is expected that the line will be completed at the end of this month.

New York Municipal Railway, Brooklyn, N. Y.—The main portion of the new Broadway subway, Manhattan, was placed in operation under the direction of the Public Service Commission for the First District of New York, by the New York Municipal Railway on Sept. 4. The operation of the new line, as at present constituted, is in connection with the Fourth Avenue subway in Brooklyn and the Sea Beach branch for through service, with a short line service provided between Union Square and the station at Ninth Avenue and Thirty-eighth Street in Brooklyn on the Culver and West End lines.

***Cedar Point, Ohio.**—George A. Boeckling, president of the Cedar Point Company, plans to construct a railway to connect the Cleveland & Buffalo line docks and the Cedar Point resort grounds, about 1 mile.

Cincinnati, Ohio.—The street railway committee of the City Council of Cincinnati on Sept. 7 requested Street Railway Commissioner W. C. Culkins to investigate the advisability of track extensions on nine different routes and make recommendations according to his finding. The proposed extensions are as follows: McMicken-Main across the Hopple Street viaduct to Beekman Street; North Fairfield, from Beekman Street and Baltimore Avenue to Colerain Avenue; Auburn Avenue, from Erkenbrecker and Vine Streets, on Erkenbrecker and Dury Avenues, to Carthage; Madisonville, on Madison Road to Bramble Avenue; Crosstown to Coney Island and Mt. Washington on Beechmont Avenue; Sedamsville, from Anderson's Ferry to southwestern corporate line; John Street, on Quebec Road to Glenway and Seton Avenues; Warsaw, on Bridgetown Road to Harvest Home grounds, and double-tracking Central Avenue.

Columbus, Delaware & Marion Electric Company, Columbus, Ohio.—A contract has been awarded to B. F. Patterson for the relocation of 1½ miles of track of the Columbus, Delaware & Marion Electric Company. The track on North High Street from Clintonville, suburb of Columbus, to Stop 15 are to be moved from the side to the center of the highway, as required by the County Commissioners. Span construction will be used for the overhead system. The contract aggregates $35,000, but the company will do considerable work in connection with the change and the actual cost will be much more. Eli M. West, president of the company, placed the order for rails for this section of track more than a year ago.

Oklahoma Union Railway, Tulsa, Okla.—Official announcement has been made that this company's extension from Tulsa to Sapulpa, 15 miles, will be completed and placed in operation on Nov. 1.

London & Lake Erie Railway & Transportation Company, London, Ont.—It is reported that negotiations have been resumed with the St. Thomas City Council by representatives of the London & Lake Erie Railway & Transportation Company with a view to the sale of that portion of the line from St. Thomas to Port Stanley.

London (Ont.) Street Railway.—Plans have been approved by the Ontario Railway and Municipal Board for proposed additions to the London Street Railway.

Niagara, St. Catharines & Toronto Railway, St. Catharines, Ont.—This company will extend its tracks over the new Burgoyne bridge, across the old Welland Canal.

Philadelphia, Pa.—The Keystone State Construction Company has signed two of the delivery loop contracts for the city's high speed lines. Ground will be broken within three weeks. The contracts signed are for the Locust Street section, to cost $1,713,715, and the Arch Street section, to cost $1,575,760. The other contracts which have been awarded to the Keystone State Construction Company for the Broad Street sections are held up for the present in hopes of better conditions as regards delivery of material. It is expected that they will be signed later.

Columbia Railway, Gas & Electric Company, Columbia, S. C.—A contract has been awarded by the Columbia Railway, Gas & Electric Company for the grading on a 1¼-mile extension of the double-track line at Camp Jackson. The line will be extended from the present terminus at the camp, parallel with the camp for this distance. The line will be further extended when the government demands require it.

San Antonio (Tex.) Public Service Company.—The construction of an extension to Camp Travis is being contemplated by the San Antonio Public Service Company.

Tacoma (Wash.) Municipal Railway.—The first step in the extension of Tacoma's municipal carline to serve the newly developed tideflats area has been begun by the construction of the viaduct over the car shops of the Chicago, Milwaukee & St. Paul Railroad on the tideflats. Construction of the viaduct, which is being done jointly for the city and the railroad on force account by the Tacoma Dredging Company, will be the biggest job on the extension work. The city will build the viaduct approaches, and the railroad the viaduct proper. The western approach will be 600 ft. long. There will be two 500 ft. approaches, both with a 5 per cent grade on the east side. The viaduct will be 44 ft. wide over all, and will have room for the car track and a 24-ft. roadway. There will be a 400 ft. siding on the west approach for cars to pass. The other sidings will be on the ground level. The section of the viaduct to be built for the Chicago, Milwaukee & St. Paul Railroad will include nine spans, three of which will be 60 ft. long, and six 40 ft. long.

SHOPS AND BUILDINGS

Northern Electric Railway, Chico, Cal.—Fire recently destroyed the passenger and freight station of the Northern Electric Company at Target.

Detroit (Mich.) United Railway. — The new east side freight station of the Detroit United Railway at Monroe Avenue and Macomb Street, between St. Aubin Avenue and Dubois Street, has been completed and is now in use. The company has under construction a west side terminal on Fort Street, between Fifteenth and Seventeenth Streets, a portion of which will be ready for occupancy in a short time.

New York Municipal Railway Corporation, Brooklyn, N. Y.—Bids will be received by the New York Municipal Railway Corporation until Oct. 1 for the construction of trainmen's building, signal towers, circuit breaker houses and additional platforms and control facilities in connection with the Coney Island terminal. Plans and further information may be obtained at the chief engineer's office, 85 Clinton Street, Brooklyn.

Valley Railways, Lemoyne, Pa.—Property is being acquired by the Valley Railways at the west end of the Walnut Street bridge, Wormleysburg, and it is reported that the company will construct a carhouse and power station on the site.

Monongahela Valley Traction Company, Fairmont, W. Va.—This company will erect an addition to its recently completed terminal at Clarksburg for dispatcher's office.

POWER HOUSES AND SUBSTATIONS

Alabama Power Company, Anniston, Ala.—The power plant of Alabama Power Company at Albany is being enlarged and additional machinery installed. The old engine will be replaced by a new Corliss engine and two of the five boilers will be overhauled and rebuilt. The total cost of the improvements is estimated at $10,000.

Montgomery Light & Traction Company, Montgomery, Ala.—This company contemplates the construction of a substation equipped with five rotary converters with accessories.

Georgia Railway & Power Company, Atlanta, Ga.—A contract has been awarded by the Georgia Railway & Power Company to W. H. George, Atlanta, to construct a substation near the Ashby carhouse of the company to furnish light and power for that section of the city. A new substation is being built just beyond Buckhead to serve the new extension to Camp Gordon with power. The company is changing the anchor towers and insulators on the Tallulah transmission line to the suspension type at a cost of about $125,000.

Hagerstown & Frederick Railway, Frederick, Md.—A high-tension line, to carry a 33,000-volt current, will be built from Security to Waynesboro to supply the Chambersburg, Greencastle & Waynesboro Street Railway with current. The Waynesboro Electric Light & Power Company will construct the line from Waynesboro to the State line, a short distance north of Ringgold, and the Hagerstown & Frederick Railway will build the line from its plant to the Mason and Dixon line and join with the Waynesboro line there. The Waynesboro power plant may be abandoned in the course of a month or so after the new current reaches there.

Kansas City Light & Power Company, Kansas City, Mo.—This company has contracted with the General Electric Company for two 25,000-kw. generator units as the first unit for installation in a new power house designed for an ultimate capacity of 240,000 kw. Delivery on the first of these two machines is expected in January, 1919, and the other in August of the same year. Heretofore the Kansas City Light & Power Company has purchased its power from the Kansas City Railways. The latter's plants are badly overloaded and the lighting company is, therefore, proceeding to construct a power plant of its own which will gradually take over the load from the railway company's stations.

Kansas City (Mo.) Railways.—The Wyandotte County Commissioners have refused to grant the Kansas City Railways the privilege to erect cables on the new Central Avenue viaduct to connect the Kaw River power house with the power plant at Second Street and Grand Avenue.

Puget Sound Traction, Light & Power Company, Seattle, Wash.—This company will construct a four-story reinforced concrete plant, adjoining its present plant at Georgetown, at a cost of $200,000.

Milwaukee Electric Railway & Light Company, Milwaukee, Wis.—The Locomotive Pulverized Fuel Company, 30 Church Street, New York, N. Y., has received a contract from the Milwaukee Electric Railway & Light Company to equip the 2500-hp. boilers at its Oneida Street plant with apparatus for the burning of pulverized coal.

Manufactures and Markets

Discussions of Market and Trade Conditions for the Manufacturer, Salesman and Purchasing Agent

Rolling Stock Purchases Market Quotations Business Announcements

Deliveries on Supplies Improving

Manufacturers Furnishing Small Repair Parts Promptly—Railways with Annual Contracts Fortunate

Deliveries on many railway supplies are gradually improving, according to the president of an electric railway of medium size in an Eastern state. The speaker was in a good position to know because in addition to his executive duties he gives a great deal of attention to the purchases made by his company. Continuing, he said:

"There are a number of products such as trucks, steel wheels, girder rail, insulators, etc., on which the delivery situation remains unchanged but deliveries on the majority of railway supplies are better than for some time past. A number of manufacturers have advised that raw materials which have been on order for a considerable length of time are being received in larger quantities than heretofore, thus enabling the manufacturers to increase production and to fill many orders of long standing on the books of the various companies. The recent improvement in the car shortage situation is quoted by one manufacturer of steel rail products as being responsible for the good deliveries now being made by that particular company.

"Manufacturers of motors are making good deliveries on repair parts and other small miscellaneous repairs. There has been a great demand for these parts, and the manufacturers are keeping their bins well stocked. Rail bonds have for the most part been delivered out of stock and no difficulty has been encountered except where very large orders have been placed. Some railways which have been using a 36½-in. bond for the last few years are seriously considering the use of a 4-in. or 6-in. bond or of a welded joint. This has been forced upon them by the steadily increasing price of bonds. The 36½-in. bond which several years ago sold for about $45 per hundred is now quoted at about $130. Deliveries on special work have improved greatly in a number of instances. Frogs, switches and mates, etc., have been obtained in from sixty to ninety days where formerly from four to six months were required."

LABOR SITUATION DIFFICULT

Testimony from this speaker and other electric railway officials indicate that the high prices being paid for labor in and around the cantonments and munitions factories have caused a great deal of disorganization in the railways' forces. Certain street improvements and the laying of rail for extensions have been delayed in a number of instances on account of not having sufficient labor. The track department is not the only one which is facing a shortage of men. All departments are suffering alike, the worst shortage, however, being felt among the shop men and the employees of the track department. In former times, immigration helped to solve most of the labor troubles. Since the beginning of the war, however, there has been a noticeable shortage of labor in all industries.

RAILWAYS BUYING ON CONTRACT BASIS FORTUNATE

Some of the railways are particularly fortunate in having contracts on an annual basis for certain repair parts, brake shoes, lubricating oils, etc., and in a number of instances these contracts have several years yet to run. The contracts are being kept by the different companies involved although deliveries on axles, steel wheels or like products have not been made on the exact dates specified on account of inability on the part of the manufacturer to obtain raw materials. In every case, however, so far as is known, the railway has been taken care of with delivery of a part of the order at the time promised.

Increased Cost of Supplies

Figures from the Boston Elevated Railway Show Increases of from 4 to 400 per Cent in Three Years

The following table was filed on Sept. 6 by M. C. Brush, president, Boston Elevated Railway, with the Massachusetts Legislative Commission, in connection with the hearing it is conducting on electric railway fares in Boston.

BOSTON ELEVATED RAILWAY COMPANY
Bureau of Purchase
COMPARATIVE COSTS OF MATERIALS, 1914, AND AUGUST, 1917

	1914		1917		Increase, per Cent
Rails, girder	$38.80	G.T.	$52.80	G.T.	36
Rails, T.	33.94	G.T.	44.36	G.T.	30
Rail joints	38.80	G.T.	72.80	G.T.	87
Crossover, track	979.00	each	1,772.00	each	81
Switches, track	149.40	each	394.00	each	164
Mates, track	112.40	each	299.00	each	166
Frogs, track	112.00	each	251.00	each	124
Spikes, track	.0157	lb.	.0514	lb.	227
Tie rods	.0179	lb.	.0485	lb.	171
Tie plates, c.i	.0103	lb.	.0289	lb.	180
Tie plates, steel	.0145	lb.	.0495	lb.	241
Bolts, track	.0340	lb.	.0690	lb.	187
Bolts, track, O.K	.08	each	.18	each	125
Bolts, machine	85%-2½%	disc.	50%		241
Rivets	$0.0165	lb.	$0.0507	lb.	207
Axles	.0240	lb.	.0678	lb.	182
Wheels, c.i. (exchange basis)	.66	cwt.	1.325	cwt.	100—Market price today $1.75 cwt., incr. 165%
Wheels, steel, 33"	15.50	cwt.	27.25	cwt.	75
Castings, gray iron	.0240	lb.	.0370	lb.	54
Castings, gray iron	.0240	lb.	.05	lb.	108
Castings, malleable	.0345	lb.	.0769	lb.	123
Castings, steel	.0615	lb.	.238	lb.	287
Steel bars (mill shipment)	.0123	lb.	.0319	lb.	159
Steel bars (Boston stock)	.0165	lb.	.0510	lb.	209
Steel plates (Boston stock)	.0160	lb.	.08	lb.	400
Steel, tool, high speed	.50	lb.	2.50	lb.	400
Steel, tool, carbon	.055	lb.	.10	lb.	82
Brake shoes	38.61	M. miles	76.26	M. miles	97
Journal boxes	3.50	each	11.25	each	221
Springs, car	.0205	lb.	.0580	lb.	183
Gears	11.00	each	20.52	each	87
Pinions	3.65	each	6.66	each	82
Gear cases	10.00	each	19.85	each	98
Nails, cut	.0180	lb.	.0391	lb.	117
Boiler tubes	.097	ft.	.38	ft.	291
Tubular poles	.0243	lb.	.0469	lb.	93
Trolley tubing, brass	.15	lb.	.40	lb.	166
Trolley wheels	.45	each	.90	each	100
Copper trolley wire	.165	lb.	.39	lb.	136
Copper cable 2,000,000 c.m.	1,322.49	M. ft.	3,228.00	M. ft.	144
Copper bonds	40%-2½%-5%	disc.	10%		62
Signal cranks	$0.62	each	$1.10	each	77
Ash, 4"	72.00	M.	115.00	M.	60
Hard pine, prime	30.00	M.	62.00	M.	106
Spruce	23.00	M.	33.50	M.	46
Sand	.50	cu. yd.	.60	cu. yd.	20—Market price today, $1.00 cu. yd. incr. 100%
Stone, crushed	.97	ton	1.55	ton	60
Cement, Portland	1.62	bbl.	1.82	bbl.	12—Mraket price today $2.37 bbl. incr. 46%.
Rope, Manila	.11	lb.	.305	lb.	177
Rope, wire	70%	disc.	15%-12½%-5%		135
Tape, cotton, 1 in	80%	gross	$1.75	gross	118
Tape, asbestos	$0.34	lb.	1.30	lb.	282
Waste, white	.7½	lb.	.11⅜		52
Waste, wool	.12	lb.	.21¾		81
Tape, linen, ¾"	.35	gross	.95	gross	171
Webbing, cotton, 1"	.85		1.85	gross	117
Hose, linen fire, 2½"	.15¾	ft.	.315	ft.	100
Drills, twist, carbon steel.	75%-10%-5%	disc.	60%		87
Drills, twist high speed steel	$2.55	each	$9.64		278
White lead	.059	lb.	.12⅜		110
Linseed oil	.55	gal.	1.14	gal.	107
Shellac	.17	lb.	.57	lb.	235
Glue	.10	lb.	.30	lb.	200
Alcohol	.33	gal.	.90	gal.	172
Oil, engine	.1425	gal.	.225	gal.	58
Oil, cylinder	.23⅜	gal.	.24½	gal.	4
Oil, fuel	.0425	gal.	.065	gal.	53—Market price today 8c. gal., incr. 88%.
Gasolene	.14	gal.	.21½	gal.	53—Market price today 25c. gal., incr. 79%.
Motor control and lighting equipment for surface cars	2,450.00		No purchase Market price $5,500.00		124
Trailer car bodies and trucks	Purchased 1915 $2,199.00		No purchase Market price $5,400.00		145

Insulating Materials in Great Demand

Good Deliveries on Staple Lines—Increased Fuel Costs Create Demands—Government Orders Given Preference

Deliveries on fiber conduits, heavy fuses and other insulating products can be made in from three to five weeks. Deliveries on magnesia pipe covering are not quite as good. According to reports received from the Magnesia Association of America the shipbuilding program demands increasing quantities of magnesia pipe covering and blocks for insulating boilers and steam lines. The magnesia interests have arranged to give the government preference and while there may at times be some shortage due to extreme difficulty in securing labor and possibly due to poor deliveries of coal and coke, at the same time the industry is in reasonably good shape and will at least take excellent care of the needs of the government and of those large industries upon which the government is dependent for steel and munitions.

Owing to the tremendous industrial activities, steam plants and factories are being run on two or three shifts instead of on one so that everything subject to wear is deteriorating much more rapidly than heretofore. This accounts for a great many orders for maintenance materials which are being received regularly by the different companies. There is also a particularly large demand for pipe covering which has been brought about directly through increased fuel costs.

FACTORS AFFECTING INCREASED PRICES

Formerly much of the asbestos used in this country came from Canada. Asbestos was also shipped into this country from Russia and Norway. Under date of Aug. 9, 1917, however, the Norwegian government has, until further notice, placed an embargo on the exportation of asbestos of all kinds as well as on articles made of asbestos. As this supply has been cut off, American manufacturers are now dependent upon this continent for their raw material, and this has greatly increased the cost of asbestos. Many other factors can be mentioned which have caused the increase in the price of asbestos products, such as shortage of labor, increased fuel costs, car shortage and embargoes, in addition to the increased cost of mining.

EFFECT OF GOVERNMENT ORDERS FOR MATERIAL

Despite the efforts of the different companies to greatly increase their production on account of war demands, their resources will be taxed to the limit to furnish materials to all customers in case the government should place large orders. With the extraordinary high prices for materials and labor, it is not expected that nearly as much building will be done this year as previously and some of these stocks which usually go into buildings will be available for other purposes.

Industrial Service Department Established by National City Bank

In order to render the greatest possible service to its patrons among the manufacturing industries, the National City Bank of New York has established an industrial service department. This department will gather and disseminate new ideas about industrial methods and industrial conditions with a view to keeping its customers well informed upon all developments of interest, both at home and abroad.

The department is headed by F. C. Schwedtman, a vice-president of the bank, who has had much experience in industrial management. It is not the intention of the National City Bank to compete with the engineering firms who make a specialty of advice upon efficiency management, but rather to stimulate interest in the study of improved methods, and to give such information and counsel as can be rendered without charge.

Reports of 691 mills to the National Lumber Manufacturers' Association show that during the month of June these mills cut 1,499,000,000 ft. of lumber and shipped 1,581,000,000 ft., the largest volume ever reported during one month.

Coal Situation Unsettled

Government Price Does Not Affect Contracts Made Previous to Aug. 21—Big Demand but No Coal Available at $2 per Ton

As noted in the July 28 issue of the JOURNAL, a number of railways in the Middle West have combined forces and have purchased producing coal mines outright in order to insure an adequate coal supply for the coming winter. The majority of the railways, however, have not been so fortunate, and the separate companies must work out their own solution of the coal problem independently. It is true that while many of the railway companies are covered by contracts the continual decrease in production and the possibility of a large car shortage are factors which cannot be overlooked. Last winter a number of contracts were broken by the operators on the pretext of not having enough cars, and the railway men are not anxious to repeat the task of buying coal locally at prohibitive prices.

At the present time there is no bituminous coal available at government prices. Practically all of the operators have accepted contracts at prices considerably above $2 per ton and it is expected that these contracts will absorb the output of most of the mines for three to four months. The office of Dr. Garfield, the coal administrator, has announced that bona fide contracts made before Aug. 21 will not be affected by the prices fixed by the government. This is said to apply to contracts extending over a year.

COAL PRODUCTION INCREASES 6 PER CENT FOR PAST WEEK

The weekly coal statement issued by the United States Geological Survey shows that the nation's coal production has increased 6 per cent for the week ending Aug. 25 over the week ending Aug. 18, when a drop of 9½ per cent was noted, chargeable almost entirely to labor troubles. The ratio of tonnage produced to full time capacity was 68.5 per cent as compared with 62.5 per cent for the previous week. The recovery was largely due to the partial cessation of strikes in the Illinois field which raised the ratio for that State from 54.8 to 69.8 per cent.

NEW YORK METAL MARKET PRICES

	Sept. 6	Sept. 13
Prime Lake, cents per lb.	25¼	25½
Electrolytic, cents per lb.	25¼	25½
Copper wire base, cents per lb.	36	36
Lead, cents per lb.	10¼	9¾
Nickel, cents per lb.	50	50
Spelter, cents per lb.	8¼	8¼
Tin, Straits, cents per lb.	61	61⅜
Aluminum, 98 to 99 per cent, cents per lb.	47	43½

OLD METAL PRICES

	Sept. 6	Sept. 13
Heavy copper, cents per lb.	24	24
Light copper, cents per lb.	21	20½
Red brass, cents per lb.	19	18½
Yellow brass, cents per lb.	15½	15¾
Lead, heavy, cents per lb.	8½	8½
Zinc, cents per lb.	6	6
Steel car wheels, Chicago, per net ton	$42.00	$42.00
Old car wheels, Chicago, per gross ton	$32.50	$33.50
Steel rails (scrap), Chicago, per gross ton	$41.00	$41.00
Steel rails (relaying), Chicago, per gross ton	$55.00	$55.00
Machine shop turnings, Chicago, per net ton	$17.50	$18.00

RAILWAY MATERIALS

	Sept. 6	Sept. 13
Rubber-covered wire base, New York, cents per lb.	36	36
No. 0000 feeder cable (bare), New York, cents per lb.	36½	36½
No. 0000 feeder cable (stranded), New York, cents per lb.	33¾	33¾
No. 6 copper wire (insulated), New York, cents per lb.	33½	33½
No. 6 copper wire (bare), New York, cents per lb.	36	36
Rails, heavy, Bessemer, Pittsburgh	$38.00	$38.00
Rails, heavy, O. H. Pittsburgh, per gross ton	$40.00	$40.00
Wire nails, Pittsburgh, per 100 lb.	$4.00	$4.00
Railroad spikes, 9/16 in., Pittsburgh, per 100 lb.	$7.00	$7.00
Steel bars, Pittsburgh, per 100 lb.	$4.00	$4.00
Sheet iron, black (24 gage), Pittsburgh, per 100 lb.	$8.85	$8.85
Sheet iron, galvanized (24 gage), Pittsburgh, per 100 lb.	$10.05	$10.05
Galvanized barbed wire, Pittsburgh, cents per lb.	4.85	4.85
Galvanized wire, ordinary, Pittsburgh, cents per lb.	4.65	4.65
Cement (carload lots), New York, per bbl.	$2.22	$2.22
Cement (carload lots), Chicago, per bbl.	$2.31	$2.31
Cement (carload lots), Seattle, per bbl.	$2.65	$2.65
Linseed oil (raw, 5 bbl. lots), New York, per gal.	$1.25	$1.23
Linseed oil (boiled, 5 bbl. lots), New York, per gal.	$1.26	$1.24
White lead (110 lb. keg), New York, cents per lb.	12¾	12¾
Turpentine (bbl. lots), New York, cents per gal.	42½	44

ROLLING STOCK

Charleston Consolidated Railway & Lighting Company, Charleston, S. C., is reported to have ordered six double-truck cars.

Rockford & Interurban Railway, Rockford, Ill., noted in the ELECTRIC RAILWAY JOURNAL of Sept. 1 as being in the market for cars, has purchased five new 46-ft. end-entrance trailer cars from the St. Louis Car Company.

Michigan Railway, Kalamazoo, Mich., has ordered three new 46-ft. end-entrance trailer cars from the St. Louis Car Company for use in Battle Creek, Mich., in connection with the service to the army cantonment.

Montgomery Light & Railroad Company, Montgomery, Ala., has purchased six closed and three open cars from the Mobile Light & Railroad Company. These cars were needed for service to the cantonment located at Montgomery.

Springfield (Mass.) Street Railway and **Worcester (Mass.) Consolidated Street Railway,** noted in the ELECTRIC RAILWAY JOURNAL of May 5 as being in the market for cars, has ordered thirty cars from the Osgood Bradley Car Company, twenty for Springfield and ten for Worcester.

Colorado Springs & Interurban Railway, Colorado Springs, Col., noted in the Aug. 25 issue as having purchased ten one-man cars, has specified the following details for this equipment:

Number of cars ordered	11	Fare boxes	Johnson
Date of delivery	1917	Fenders	H-B Life guards
Builder	American Car	Headlights	Golden Glow
Type	One-Man Safety	Lightning arresters	G. E. electrolytic
Seating capacity	28	Motors	Two G. E.-258
Weight (total)	12,800 lb.	Seats	American Car
Air brakes	Westinghouse	Trucks	American Car
Designation signs	Hunter	Wheels	24 in. cast iron
Door mechanism	Safety Car Devices Co.		

TRADE NOTES

National Lumber Manufacturers' Association, Chicago, Ill., announces the appointment of John Lind as assistant secretary.

Railway Improvement Company, New York, N. Y., has received an order for 1100 Rico coasting recorders from the Twin City Rapid Transit Company.

Eugene J. Barney, formerly associated with the Barney & Smith Car Company, Dayton, Ohio, died at his home in that city on Sept. 4 at the age of seventy years.

Railway Utility Company, Chicago, Ill., has been awarded a contract by the United Railways & Electric Company, Baltimore, Md., for 1364 Utility thermostatic control equipments for regulating the heat in electric railway cars.

J. F. Anglin, formerly manager of the service department of the Railway Improvement Company, is at the reserve officers' training camp at Plattsburg, N. Y. He has been succeeded by E. G. Deis, formerly with the Brooklyn Rapid Transit System.

Arthur C. Sullivan, formerly sales manager of the Hensley Trolley Manufacturing Company, Detroit, Mich., has been appointed a sales representative of the National Railway Appliance Company, New York, N. Y., and will be connected with the Chicago office.

Samuel Swett, manufacturers' agent, importer and exporter, 149 Broadway, New York City, has recently been appointed the exclusive agent in the United States for George Cradock & Company, Ltd., of Wakefield, England, manufacturers of wire and wire rope.

Henry C. Campbell, who has been secretary to A. D. Joyce, general manager of sales and distribution of the Sherwin-Williams Company, has been appointed secretary to President Walter H. Cottingham. Edward Fiala, formerly an assistant in the paint and varnish sales department, has been named secretary to Mr. Joyce. Paul Hart, recently assistant advertising manager of the Wichita (Kan.) *Beacon,* has returned to the Sherwin-Williams employ in the advertising department.

Economy Electric Devices Company, Chicago, Ill., whose organization was mentioned last week, has elected the following officers: L. E. Gould, president and treasurer; Edward Wray, vice-president and F. J. Phelps, secretary. This company has established its headquarters at Room 1690, Old Colony Building, Chicago, and has become the sole distributor of the Sangamo Economy railway meter, a device for checking the energy and man performance of electric railway motor cars and locomotives. The new company has taken over the Economy meter engineering and service departments of the Sangamo Electric Company, manufacturer of the meter. Charles H. Koehler is chief engineer.

Sangamo Electric Company, Springfield, Ill., announces the opening of a Chicago District office in the Old Colony Building, in charge of C. H. Hurtt as district manager. In establishing this new office, the Sangamo Electric Company has made no change in the selling arrangements which it has had for many years with the Electric Appliance Company and the Federal Sign System (Electric) of Chicago, who will continue to handle Sangamo products exactly as in the past. Mr. Hurtt's office adjoins that of the Economy Electric Devices Company, which has recently become the exclusive sales agent of the Sangamo Economy railway meter.

St. Louis Car Company, St. Louis, Mo., has just shipped three new light-weight, safety cars to Albuquerque, N. M., and two to Aberdeen, S. D., both repeat orders of this type of car. The Aberdeen cars weigh 13,500 lb., seat thirty passengers and are arranged for double-end operation. Seven cars of this type were ordered in 1915 and three additional in 1916, and now three more this year. At Aberdeen two of these cars have been in use for over a year and have proven entirely satisfactory in spite of the extreme cold and heavy snow conditions which frequently prevail. That no serious trouble has been encountered because of the light-weight car under these conditions is evidenced by the duplicate order.

NEW ADVERTISING LITERATURE

Worthington Pump & Machinery Corporation, New York, N. Y.: Bulletin W-60-A, descriptive of its Worthington volute centrifugal pumps.

Moore Steam Turbine Company, Wellsville, N. Y.: Bulletin No. 3 describing and illustrating single-stage and multi-stage steam turbines and reduction gears

Hubbard & Company, Pittsburgh, Pa.: Supplementary bulletin No. 1, describing, illustrating and listing the prices of Pierce Presteel racks, brackets, side clamp pins and fuse block clamps.

Dayton Manufacturing Company, Dayton, Ohio: Bulletin 174, describing and illustrating vestibule door half-mortise latch. Bulletin 188 on "Pittsburgh" ratchet drop brake handle. Bulletin 207 on "Dayton" sash fixtures.

Russian Information Bureau, New York, N Y., with the co-operation of the American-Russian Chamber of Commerce, has issued its first bulletin, No. 1A, on the "Russian Market, Its Possibilities and Problems," by A. J. Sack, director of the bureau. This bureau, which has offices in the Woolworth Building, is established and supported by the Russian provisional government. Its purposes are to supply the American public with reliable information regarding economic, financial, political and cultural conditions in Russia.

NEW PUBLICATION

Transactions of the American Institute of Electrical Engineers, Vol. 35.—Published by the Institute, New York City. In two parts, 1924 pages. In paper, $10; in cloth, $11.50.

Of special interest to electric railway men are the following papers appearing in this volume of the A. I. E. E. Transactions: "Operation on the Norfolk & Western Railway," by F. E. Wynne; "The Liquid Rheostat in Locomotive Service," by A. J. Hall; "Chattering Wheel Slip in Electric Motive Power," by G. M. Eaton; "High Voltage D.C. Railway Practice," by Clarence Renshaw. Several papers on the supply of single-phase power from central stations, and on power transmission subjects bear indirectly on the traction field. The volume also contains in full the revised standardization rules and the preliminary report of the American Committee on Electrolysis.

"More Service, Less Cost" Issue

Electric Railway Journal

Published by the McGraw-Hill Publishing Company, Inc.
Consolidation of Street Railway Journal and Electric Railway Review

Volume 50 New York, Saturday, September 22, 1917 *Number* 12

The Story of the Light-Weight Frequent-Service Car

THE last twelve months have seen a very rapid increase in recognition by electric railway companies of the advantages of the light-weight frequent-service single-operator car. From small beginnings undertaken by far-sighted electric railway managers a few years ago, the use of this type of car has spread until now about 150 companies have cars with single operators in use or under order. These facts explain why our annual special issue is devoted to this subject. Briefly, its contents may be divided into two classes. The first tells what has been done in different cities with the light-weight frequent-service car. The contributed articles, which form the other class, outline the principles which underly such operation, and from them, to some extent at least, the future of this car in electric railway service may be determined. Of course, the present scarcity of labor is an impelling reason just now for the adoption of this car where it is suitable. This condition, in the view of many, is one which will probably continue for some years after the close of the war, so that the car is not one which should be considered as a war measure only. In fact, it had proved its desirability on a number of systems before August, 1914. The editors hope that this number will assist the railways in obtaining a better idea of the possibilities of the light-weight frequent-service car and so advance the cause of "More Service at Less Cost."

Government and Business Have a Reciprocal Responsibility

WHAT does business owe to the government? This is an important question in these days of war taxation, speeded-up production, price-fixing and the like. Hence it was most fitting that the Chamber of Commerce of the United States should have held a special convention in Atlantic City during the past week to learn how the government expects business men to aid in the successful prosecution of the war. We have been interested to note, however, that the reports of the convention have not been devoid of references to another question —what does the government owe to business? To this point government officials are too often not inclined to give much consideration. Yet they have a large responsibility along this line, for just as far as they impose needless handicaps upon business or fail to show an appreciation of business men's problems, they are themselves preventing the service which the nation needs. How similar this situation is to that which exists to-day in regard to the lack of support being given to the electric railway industry by municipal and state governments. Electric railways have a vital need of higher fares, but local officials, legislators and commissioners are slow to understand the urgency of the relief. It is time for communities to realize that the responsibility for a successful transportation system is not single.

Reasonable Rules Carefully Enforced Are Essentials of Safety

MOVING-PICTURE films, illustrated articles, buttons, posters, lectures and similar means have been used in the endeavor to interest railway employees and the public in the safety of each other and themselves. These methods are doubtless excellent, as far as they go, and as part of the safety propaganda they are essential, but if they are made the sole dependence to reduce accidents they will prove a disappointment. The real backbone of safety is discipline within the railway organization, which means the enforcement of rules designed to secure safe operation. To this there are two essentials. The first is reasonableness—the rules must be of such a character as to commend themselves to those to whom they are addressed as the best means of securing the results sought. If employees can have a hand in formulating the rules so much the better. If the advertising propaganda acts to make the enforcement of rules easy, its cost is well justified; if not, its effect will be evanescent. The second requisite concerns the management. The rules adopted should be enforced tactfully but strictly. These were the two outstanding conclusions of the New York meeting of the electric railway section of the

National Safety Council last week. To repeat a figure used before, the brass band in the safety movement may have its place but it must be as a complement of discipline and not a substitute for it.

The One-Man Car as a Traffic Promoter

During the past year there has sounded for the electric railways of the country no clearer message than that of the necessity for frequent service. Here appears a means for stimulating revenue that seems now to have definitely established itself as practical in its working, and in several communities of moderate size, where prospective short-haul passengers prefer to walk rather than wait for a car, the change from long to short headway has spelled no less than the difference between bankruptcy and prosperity. An increase of one-third in service has actually produced 60 per cent greater revenue.

Why the One-Man Car Is Economical

To speak broadly, the new movement for shorter headways, which applies practically to every community of moderate size throughout the entire country, and even to certain districts of large cities, has been brought about through the development of the one-man car with automatic equipment. This, at the present time, offers a peculiarly ready means for establishing the desired traffic conditions. Its first cost, even with the greatest elaboration in regard to the latest improvements, is surprisingly small—so low, in fact, that the investment may frequently be written off out of the increased earnings of four or five years. Its economy is positive, not only because platform labor is reduced, but generally because its introduction means the substitution of modern and efficient equipment in place of obsolete apparatus and permits improved conditions of operation in place of those imposed by old-style, open-platform, high-step, badly-designed car bodies that need only half an excuse to be scrapped. In consequence, we are devoting the major part of this issue to discussions of the one-man car and its equipment with the aim that attention may thus be drawn to the almost untapped source of revenue that exists in short-haul traffic obtained through short headways.

Emphasis, however, should be laid on the fact that the one-man car is a means to an end and not the end itself. Obviously the one-man car is still in a stage of development, and the future may well see extended changes in design. In addition it is, as at present utilized, not suitable for heavy traffic on congested lines, and if the principles upon which it was originally devised are to be applied to off-peak service in the large communities, a wholly new set of problems will be encountered. Possibly this will develop a one-man-two-man system of operation such as has already been introduced in several cases, or it may be that the small-car train, as suggested in the article by Mr. Hild, will prove the ultimate solution. Still another possibility is that the service may be supplemented by the operation of existing large cars.

The Field for the Small Car

The fact is that, as with most new inventions and improvements, the exact future field of the one-man car remains yet to be determined. It was developed originally for use on routes of light traffic, largely as a means toward economy in operating expenses. Then, stimulated in part by the hope of providing a successful competitor for the jitney, operators began to use it to give more frequent service at higher speeds on routes of moderate traffic. On such lines, the rush-hour requirements are usually moderate both as regards length and intensity, so that a small-capacity body may be adopted without imposing excessive penalty in the form of numerous tripper cars. As at present designed, on heavy traffic lines with short headways, the *raison d'etre* of the one-man car disappears.

Nevertheless, the localities where headways of at least ten minutes are the rule are numerous enough to permit saying that the electric railways that serve them constitute the real backbone of the industry. In addition, there are many of the larger properties that have lines with extremely thin traffic which may well be capable of expansion by frequent service. Even in sparsely-settled outlying districts, where no short-haul traffic is latent, there are opportunities for one-man car operation, since this offers direct economies in the form of reduced operating expense. The field for the new type of equipment, therefore, is a wide one even though it may not be unlimited, and within this field nothing at present before the industry offers greater opportunities for return.

Obviously all of the advantages of the light, quick-service car would be outweighed if its use involved an increased accident hazard. The actual result is exactly the reverse. The concentration of responsibility in a single individual placed where he can see everything that transpires, together with the provision of every device that will obviate the occurrence of mishap, insures the safest possible operating conditions. The earlier fear that at crossings, and particularly at railroad crossings, the one-man car would introduce a new hazard has now generally disappeared. It is evident that if it is necessary for a platform man to go forward to inspect the crossing to insure safety the motor-conductor can do this as well as a conductor on a two-man car.

To sum up, the modern one-man car is not a mysterious panacea for curing all railway ills, but rather a simple business proposition. On a line where the old-style standard cars are running only half filled, the modern one-man car can be substituted direct, and would thereby effect a saving sufficient to pay something like 50 per cent on the new investment, leaving ample margin for writing off the book value of the old equipment. Aside from new cars, many existing cars could be used for this service by providing them with automatic equipments that are characteristic of the new one-man designs. Even where old-style standard cars are operated at approximately full capacity, and where possibilities for developing short-haul traffic exists, headways may thus be cut in half without appreciably changing operating expense, and while the charges due to the new investment would be met by no more than a 20 per cent increase in traffic, a 50 per cent increase would be conceivable under the circumstances. These figures may appear startling, but for their confirmation we commend the reader to the articles which largely make up this issue.

Equipment of the Quick-Service Car an Important Feature

IN considering the economies of the one-man car it must be emphasized that proper design of its equipment is a prime essential. It is useless to expect that, by closing the rear end of an old-style car and taking off the conductor, satisfactory results can be obtained. Platform expense will be reduced, it is true, but it is quite possible and even probable, except on short lines, that the decrease in schedule speed will add to operating expenses enough to offset the eliminated wages of the conductor. In other words, the one-man system of operation involves penalties that must be minimized by improved design, the major features of which include low floor height, power-operated vestibule doors, rapid acceleration, air brakes and light weight. Without these qualifications the one-man car suffers from a serious handicap in schedule speed when compared with a similar car operated by two men. Even with them the one-man system of operation is still under a handicap on speed as compared with a modern two-man car with automatic equipment, but the handicap, owing to the reduced time loss at stops with all modern equipment, is minimized, and when compared with an old-style, two-man car, which the one-man design is usually called upon to displace, the advantage in schedule speed actually lies with the modern one-man car.

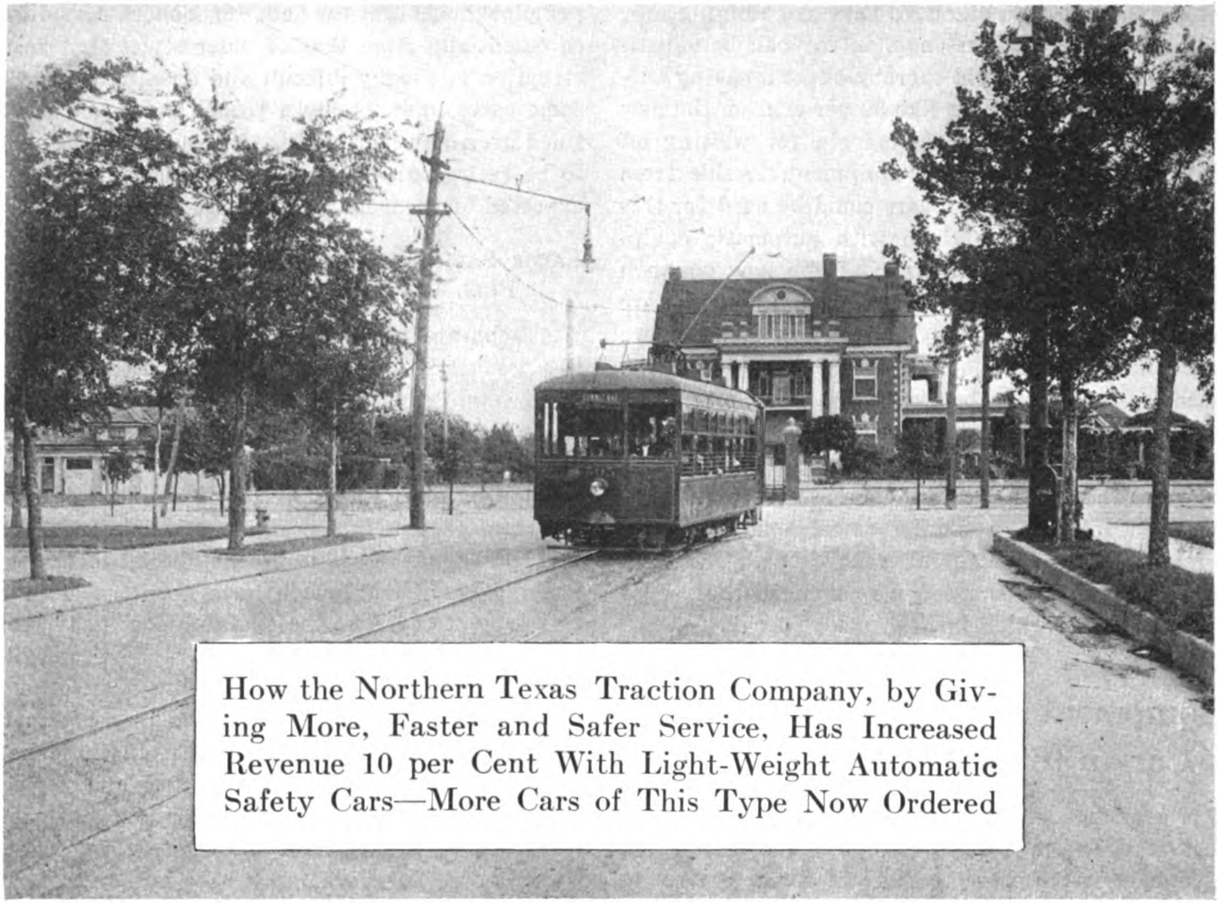
We do not mean to say that there are not instances in which present rolling stock can be converted for one-man operation. Several such are cited in this issue, including the Calgary, Alberta, municipal lines. Of course, some cars are suitable for remodeling and some are not, but the general principle holds that the "cut" of modern cars differs so essentially from that of older styles that reconstruction is usually difficult and unsatisfactory. In some cases undoubtedly a transition period can be tided over, however, permitting cars and equipment to be retired gradually, but too much must not be expected of them under such circumstances.

LABOR SAVING DEVICES ARE ESSENTIAL TO SECURE FULL BENEFIT OF ONE-MAN OPERATION

A separate section elsewhere has been devoted to a general study of the special equipment of the light-weight cars. This shows in detail how motors, controllers, brakes, trucks and other essentials contribute to time saving, to weight saving, to safety and to comfort. Rapid acceleration and braking are the chief factors in increasing schedule speed, and these are made possible by the special motors and braking equipment which have been produced for this type of car. As the operator does not have to wait for a signal to go ahead or to stop he can utilize these facilities to the full, allowing a duration of stop only sufficient to permit him to perform the duties incident to that operation. In these he is assisted by numerous devices for door and step control, fare collection and registration, etc. Attention is directed particularly to the safety features of these cars. They are inherently safe because but one mind is concerned in the operation, and the motor-conductor, being solely responsible, instinctively tends to do the safe thing in any emergency. But he must also be assisted by appropriate mechanism. For example, provision must be made for emergency stops so that if he instantly performs the act to set the stopping apparatus into action it will respond positively in the minimum safe time. Thus the operator will have the confidence needed to enable him to make the best possible speed with his car.

The advent of the new car has naturally proved very stimulating to inventors and designers, as is illustrated in the equipment section and elsewhere in this issue. The motor-conductor's functions are so numerous that he must have every facility for performing them with minimum effort and with maximum reliability. From the present rate at which safety cars are being ordered or reconstructed from older types it is evident that successful devices will have a larger sale. Hence the appeal is not only to inventive talent but to commercial instinct as well. It is safe to predict that the equipment of these cars will be developed to meet the demands made upon it by the transportation department; in fact, it may even take the lead by showing what modern apparatus can do if given a chance.

Fort Worth's Revolution in Service



How the Northern Texas Traction Company, by Giving More, Faster and Safer Service, Has Increased Revenue 10 per Cent With Light-Weight Automatic Safety Cars—More Cars of This Type Now Ordered

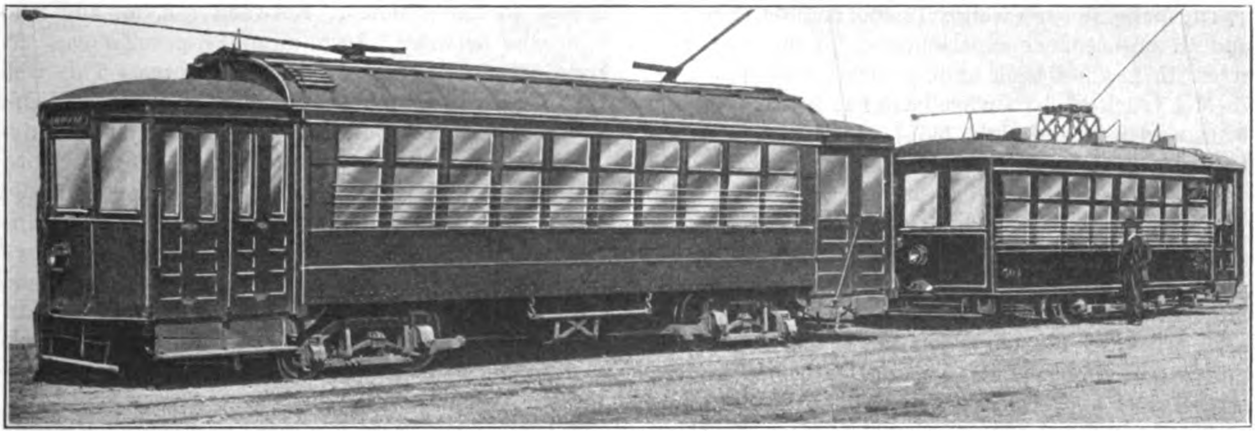
Residential Section Served by Summit Avenue Line

TO the Northern Texas Traction Company, Fort Worth, Tex., belongs the credit for the first extended and thorough trial of special light-weight cars designed for rapid service and equipped with automatic devices for safe handling by one operator. While the so-called "one-man" car is by no means new, the combination of all the foregoing features in a "safety" car involves unique factors and advantages. The results accomplished by these cars have been so impressive that one of the many railway men who visited Fort Worth to study their operation well expressed the prevailing opinion when he said: "This is not street railroading; it is a new kind of business."

There is something about the Forth Worth pioneering that will inspire the operators of electric railway properties with a new faith in their profession. It is not the mere substitution of a car with one operator for a car with a motorman and a conductor. It is far more than that. It is a frank recognition of the fact that old standards of car service must go by the board; that the American public, educated by the swifter, more comfortable private automobile, has set new transportation standards which the electric railway must satisfy or else relinquish its position as the people's common carrier.

The day when an electric railway figured on the largest possible car has gone by. The day when it must figure on a larger number of safer, faster and more attractive cars is here to stay. The railway which thinks it can fool itself and the public by nailing up the rear vestibule and discharging half the platform men is not going to get very far with either the public or its men. It must show, as Fort Worth has shown, that its first thought is "more service" and not "less expense." This can be proved to the satisfaction of the public and the employees only through replacing the existing large cars by an adequate number of small cars, which must be new or be equipped with modern automatic safety devices so that they will fit the job. In these days of world-wide warfare and unprecedented demands for labor, the fact that the small cars can be readily handled by one operator is an advantage that accrues to the public as well as to the railway, and this advantage will not be questioned by the public if it gets what it is after—safer, quicker and more abundant service.

The jitney years—1915 and 1916—were as hard



Summit Avenue Line—Displaced Car (in Front) and New Safety Car (in Rear) at Fort Worth

on the Fort Worth company as on many other properties. The jitney finally withdrew from this field as it did elsewhere in many cases, but it left behind the lesson that infrequent headway has no place in a city where walking distances are short and private automobiles many.

Experience in many places had shown that the jitney could not live and that the private automobile had less effect on revenue if the service was increased, say 50 per cent or more. But how could the railways afford to keep up the better service and make money?

Consideration of this problem led to the design of an entirely new type of car which would take such complete advantage of every development in car design and car-operating devices that more cars could be operated at less cost with respect to power and maintenance requirements, and that one man would be easily able to operate the new cars faster and more safely than the old standard cars could be operated by two men. In the Birney car the dream has come true. Hereafter this car will be standardized for light-weight car conditions on Stone & Webster properties from the smallest to the largest.

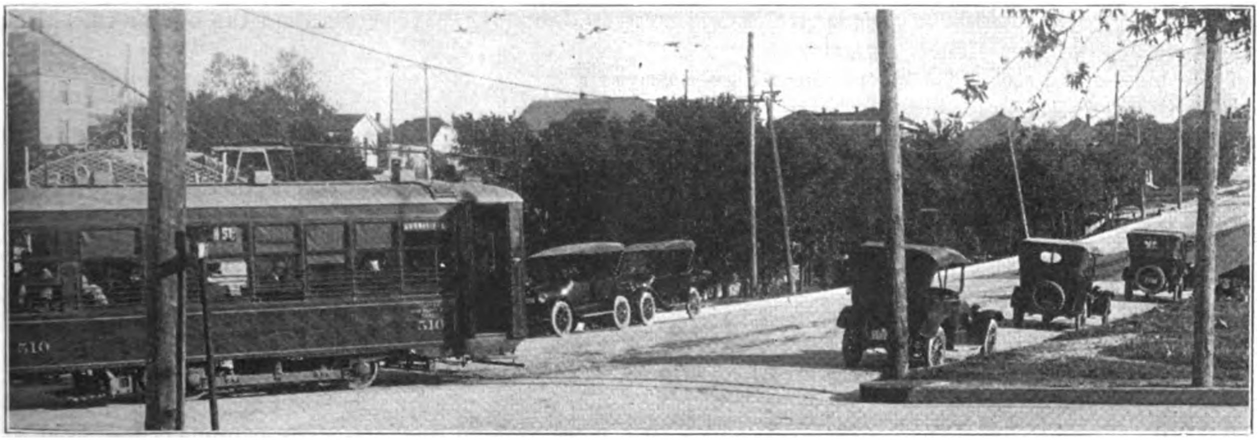
THE CONSTRUCTION OF THE CAR ITSELF

The Birney car has been described and it has been exhibited, but description and exhibition do not tell the story. The accompanying interior and exterior views will help the reader to visualize the car. One must ride in it, however, to appreciate the possibilities of starting and stopping at the rate of 3 m.p.h.p.s. with no jerking or excessive vibration. One must ride to see how the operators on a single-track line make their time points. One must ride to see how quickly the car is stopped, the door opened, the passengers gotten in or out, the money placed in the box, the transfers issued, the door closed and the getaway made. One must ride to appreciate many other things that appeal, each in its way, to the railway man, the car operator and the rider.

To refresh the reader's memory, the main facts concerning the first ten double-end cars at Fort Worth are recapitulated:

Length over all	27 ft.	9½ in.
Length of platforms over dasher	4 ft.	6 in.
Length over body corner posts	17 ft.	9½ in.
Width over sheathing	7 ft.	6 in.
Width over all	7 ft.	10 in.
Rail to floor	2 ft.	3 in.
Rail to roof	9 ft.	9 in.
Seat and post spacing	2 ft.	4½ in.
Width of entrance and exit doors (in the clear)	2 ft.	6 in.
Aisle width		20 in.

It is to be noticed that in the subsequent adoption of this car as a standard, the over-all width of the car has been increased 2 in. to allow a 22-in. aisle, thus reducing the liability of congestion and allowing freer access to the rear platform, which is used by smokers.



Summit Avenue Line—The Safety Cars have Their Share of Severe Grades and Curves in Fort Worth

The present cars weigh 13,400 pounds complete, and all maintenance experience so far indicates that strength has not been unduly sacrificed. The Brill 78-M-1 truck of 8 ft. wheelbase has 24-in. cast-iron wheels with Hess-Bright ball-bearing journals. The proved value of anti-friction bearings in permitting higher acceleration and lower energy consumption points to their use on all future cars of this type. The two GE-258 motors, rated at 25 h.p. each of 600 volts, used with K-63 controllers easily withstand the tremendous rates of acceleration as shown for level track in the curve on page 475. Likewise, the Westinghouse DH-16 compressor takes good care of door operation as well as braking. The cars originally had but one trolley pole. Now they have two, each with a Keystone catcher, so that the operator does not have to leave the car at turn-backs.

DIVERS PEOPLE SERVED BY THE SUMMIT AVENUE LINE

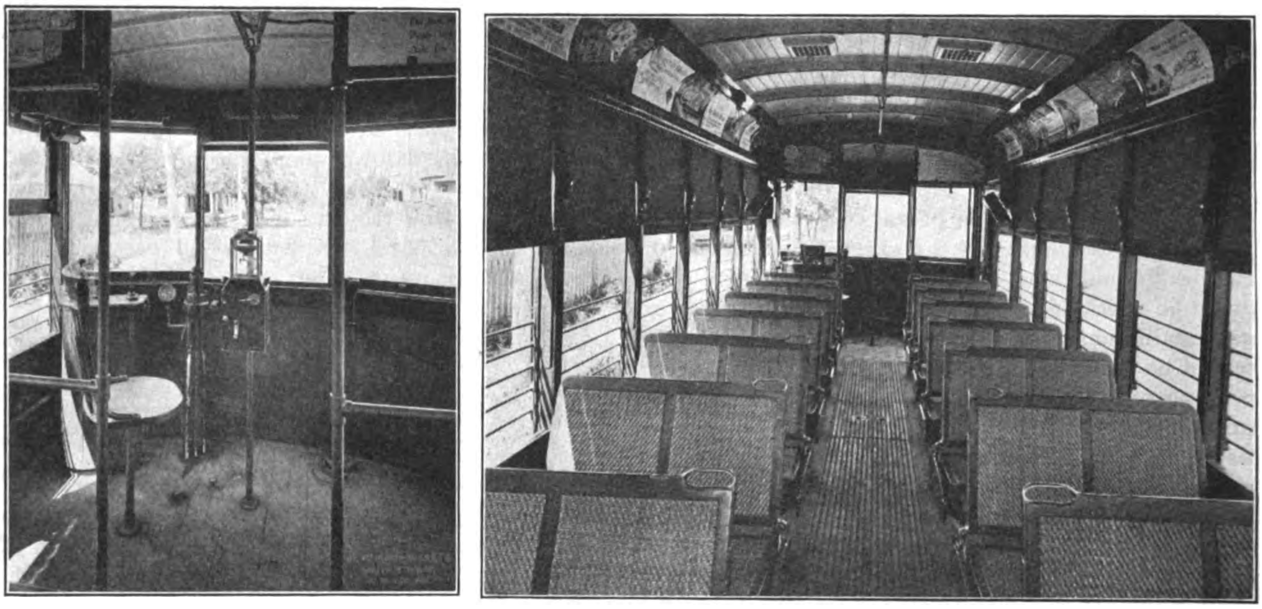
The Summit Avenue line was selected for initial trial of the new car, beginning Nov. 1, 1916, because of its diversified traffic conditions. It is estimated that about 10,000 people are served by the cars on this line. They comprise the workers in the business district, the people in a high-class residential section and those in a settlement of poorer workers. An idea of the varied character of the districts served may be secured from the illustrations on page 475. If the cars were satisfactory under the conditions of the Summit Avenue line, it was thought, they would be a success almost everywhere.

THE KIND OF SERVICE OFFERED

On Nov. 1, 1916, all of the double-truck cars on Summit Avenue were removed and the new cars installed. The headway from 8.30 a. m. and 3.30 p. m. and from 8 p. m. to midnight was cut from fifteen to ten minutes. Between 7 a. m. and 8.30 a. m. and between 3.30 p. m. and 8 p. m. it was cut from seven and one-half to five minutes. This was accomplished not alone by raising the maximum number of cars from six to eight, but also by raising the schedule speed 12.5 per cent (8.9 m.p.h. to 10 m.p.h.). This means that the round trip of 6.64 miles is now made in forty instead of forty-five minutes. With the five-minute service, the operators have to make seven meets on this line. A Nachod headway recorder at the center of the line is an encouragement to uniformity of headway. A specimen record is reproduced on page 476. The average haul is just 2 miles.

A typical comparison of service follows: Regular trips raised from 146 to 210; extra trips from fifty-four to ninety; regular car-hours from fifty-four to seventy-four; extra car-hours from twenty-one to thirty-four; regular car-miles from 485 to 698; extra car-miles from 179 to 299.

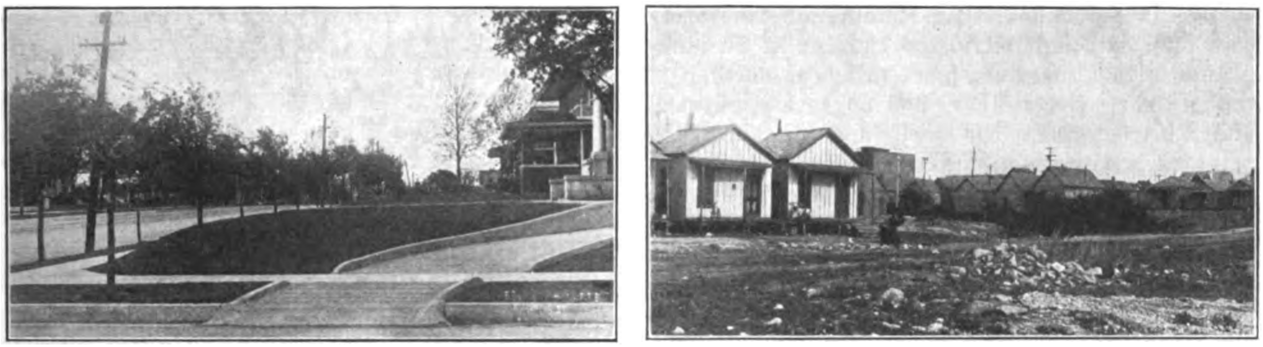
Incidentally, it may be mentioned that the high rate of acceleration gives the cars a bucking power which enabled them to weather an 8½-in. snowfall in January, 1917, better than the bigger cars were able to do.



Summit Avenue Line—Operator's Equipment of Fort Worth Safety Car, and Interior View

PRELIMINARY PUBLICITY—THE PUBLIC RESPONSE

When the new cars were received and made ready for service, the company decided that any extended advertising of their merits was undesirable. It was thought to be best to put the cars in service and let them speak for themselves. So all that was done was to distribute a four-page pocket pamphlet to the riders of the Summit Avenue line just a day ahead of the change. The people were told that they were going to have "More frequent, more rapid, more safe, more up-to-date service" and that judgment was up to them. The pamphlet, the front of which played up these points, contained explicit



Summit Avenue Line—Both High-Class Residences and Poorer Quarters Are Served by the Safety Cars on This Fort Worth Line

instructions as to fares, transfers, use of platforms and alighting.

That such publicity and the cars themselves have impressed the public is shown by what the patrons to-day tell inquisitive strangers. The remarks are of this order:

"I don't use my auto any more in making calls on Summit Avenue."

"I used to get many a lift on a friend's auto while waiting for a car, but now I am aboard these little whizzers before my friends show up."

"I wish they would put this car on other lines."

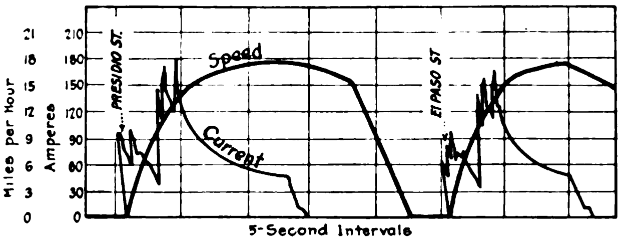
It will be noticed that the public sees clearly that it has been provided with more and better service and that it hardly stops to consider whether there is one operator on the car or two.

FARES, EMPLOYEES, STOPS AND COSTS

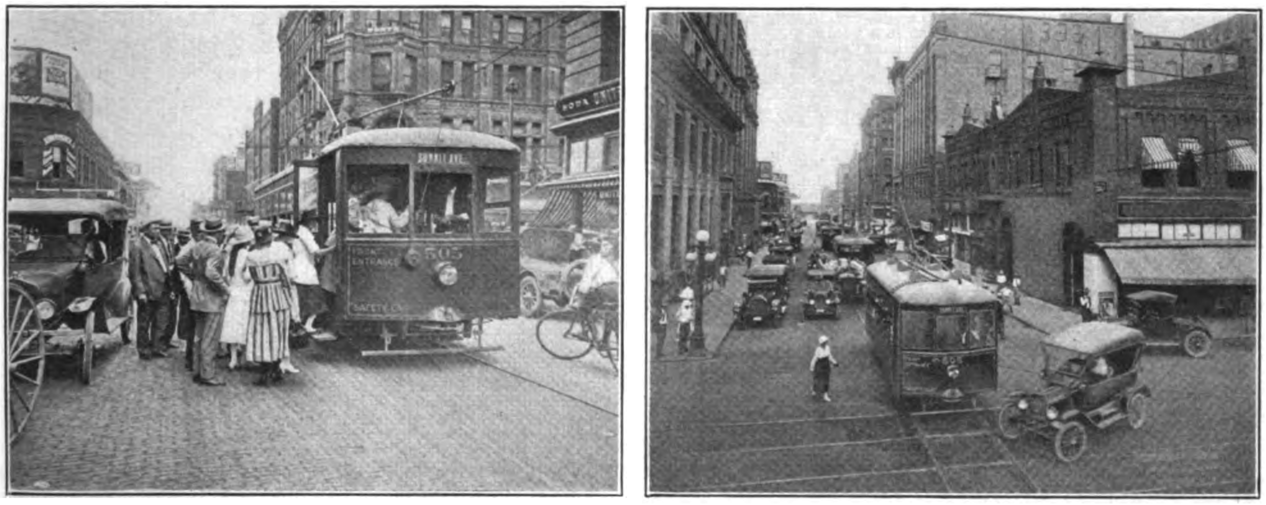
The cars are equipped with Johnson fare boxes for single registration of cash and with pedal-operated International R-10 registers for tickets and transfers. The operator does not cancel these at the time of collection, nor does he make out a separate ticket and transfer envelope for each trip. His trip sheet, shown on page 476, gives the number of fares counted by the fare box and register for each trip, and at the end of his run all tickets and transfers are deposited in one envelope. To date, the results have been excellent.

Transfers are pulled by the operator from a pad in his pocket. They are issued on payment of fare. The co-operation of the public can be shown in no better way than by the fact that about 85 per cent of the passengers tender the exact fare. Not more than 20 per cent of the riders call for transfers, one reason being that the downtown terminus is in the heart of the city within easy walking distance of stores, offices, etc.

In beginning safety-car service on the Summit Avenue line, the company selected its most active men for operators—not men who were the most robust but men who were the most alert. This was done because Summit Avenue was a test line and also was considered more difficult to operate than other lines. A general exercise of this care in selecting operators would not call for any material



Summit Avenue Line—Current Per Car and Speed-Time Graphs, Showing Extraordinary Acceleration of 3 m.p.h.p.s.



Summit Avenue Line—Typical Views of Traffic in Fort Worth's Business Section change in personnel. The running of the safety cars may be compared to the running of an automobile in that there are more things to do than in the ordinary electric car, but no severe physical effort is required. The doors and steps are air-operated and the hand-brake is only a standby.

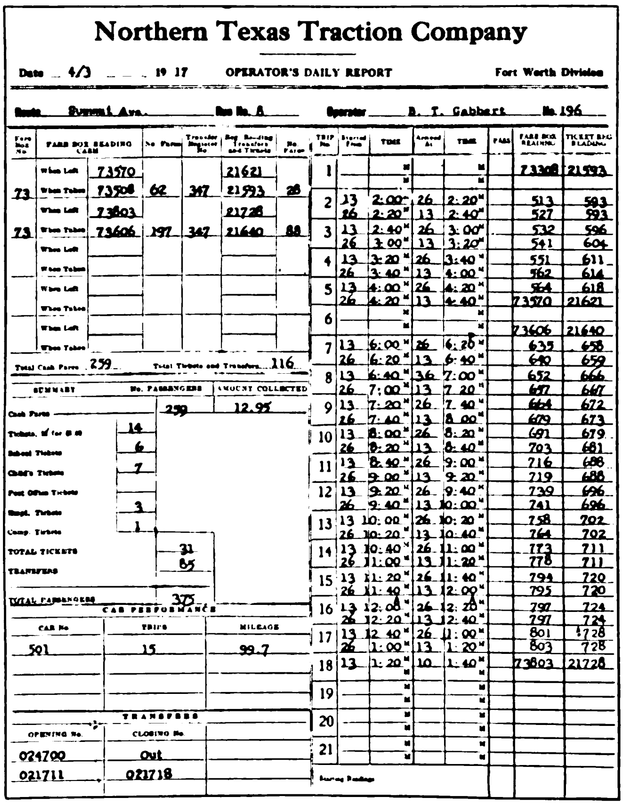
For handling cars on the Summit Avenue line the operators are divided for four morning runs, four evening runs and four split runs. The men are not required to work as many hours as regular motormen and conductors, but they receive at least as much pay for their day's work. On Jan. 15, 1917, after two and one-half months of operation, the operators were told that if they wished they could go back to their old runs without prejudicing their standing. Not one man went back. Ten to fifteen men from other lines are now on the waiting list.

Every car has in the front vestibule beside the entrance a frame containing a card with the name of the car operator. This is gratifying to the men and helps to make the service more personal in character. No badge numbers are used.

A comparison of the old and new cars with regard to stops shows the following for a typical run:

	Old Car	New Car
Total trips	18	22
Total car-miles	59.6	72.8
Total ton-miles	1,135	562
Total passengers	490	346
Total stops	323	326
Stops per 100 passengers	66	94
Stops per 100 ton-miles	29	58
Stops per car-mile	5.4	4.5
Stops per trip	17.9	14.8

The smaller number of stops per trip of the new cars is a material factor in the increased schedule speed. As far as the time of stops for loading and unloading is concerned, the new cars are faster than earlier types because of the low step, the air-operated doors and steps, the easier entrance and exit, and the remarkably high rate of acceleration which permits a very quick return to full speed. The extra time required for positive opening and closing of doors is negligible and is fully compensated for by the elimination of step accidents.



Northern Texas Traction Company

Date 4/3 19 17 OPERATOR'S DAILY REPORT Fort Worth Division

Route Summit Ave. Run No. 8 Operator B. T. Gabbert No. 196

Fare Box No.		Fare Box Reading Cash	No. Fares	Transfer Register No.	Reg. Reading Transfers and Tickets	No. Fares
	When Left	73570			21621	
73	When Taken	73508	62	347	21593	28
	When Left	73803			21728	
73	When Taken	73606	197	347	21640	88
	When Left					
	When Taken					
	When Left					
	When Taken					
	When Left					
	When Taken					

Total Cash Fares 259 Total Tickets and Transfers 116

Summary		No. Passengers	Amount Collected
Cash Fares		259	12.95
Tickets, [illegible]	14		
School Tickets	6		
Child's Tickets	7		
Post Office Tickets			
Empl. Tickets	3		
Comp. Tickets	1		
TOTAL TICKETS		31	
TRANSFERS		85	
TOTAL PASSENGERS		375	

CAR PERFORMANCE

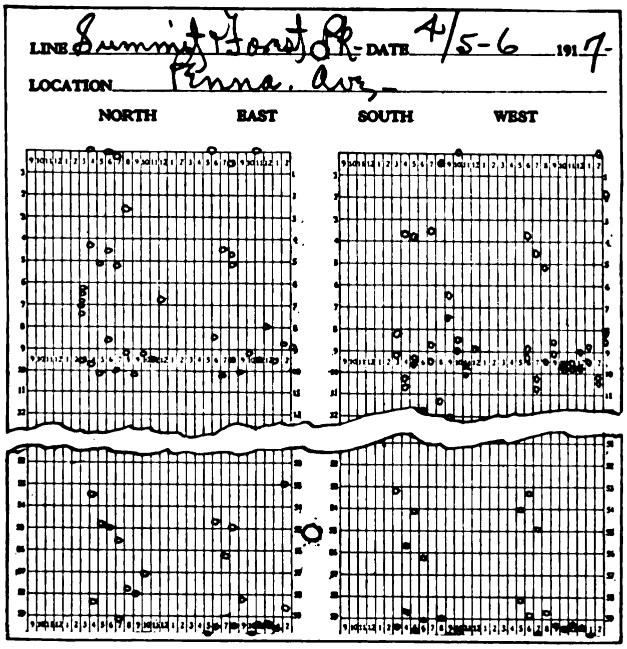
Car No.	Trips	Mileage
501	15	99.7

TRANSFERS

Opening No.	Closing No.	
024700	Out	
021711	021718	

Trip No.	Started From	Time	Arrived At	Time	Pass.	Fare Box Reading	Ticket Reg. Reading
1		M		M		73308	21593
		M		M			
2	13	2:00 M	26	2:20 M		513	593
	26	2:20 M	13	2:40 M		527	593
3	13	2:40 M	26	3:00 M		532	596
	26	3:00 M	13	3:20 M		541	604
4	13	3:20 M	26	3:40 M		551	611
	26	3:40 M	13	4:00 M		562	614
5	13	4:00 M	26	4:20 M		564	618
	26	4:20 M	13	4:40 M		73570	21621
6		M		M			
		M		M		73606	21640
7	13	6:00 M	26	6:20 M		635	658
	26	6:20 M	13	6:40 M		640	659
8	13	6:40 M	36	7:00 M		652	666
	26	7:00 M	13	7:20 M		657	667
9	13	7:20 M	26	7:40 M		664	672
	26	7:40 M	13	8:00 M		679	673
10	13	8:00 M	26	8:20 M		691	679
	26	8:20 M	13	8:40 M		703	681
11	13	8:40 M	26	9:00 M		716	688
	26	9:00 M	13	9:20 M		719	688
12	13	9:20 M	26	9:40 M		739	696
	26	9:40 M	13	10:00 M		741	696
13	13	10:00 M	26	10:20 M		758	702
	26	10:20 M	13	10:40 M		764	702
14	13	10:40 M	26	11:00 M		773	711
	26	11:00 M	13	11:20 M		778	711
15	13	11:20 M	26	11:40 M		794	720
	26	11:40 M	13	12:00 M		795	720
16	13	12:00 M	26	12:20 M		797	724
	26	12:20 M	13	12:40 M		797	724
17	13	12:40 M	26	1:00 M		801	728
	26	1:00 M	13	1:20 M		803	728
18	13	1:20 M	10	1:40 M		73803	21728
		M		M			
19		M		M			
		M		M			
20		M		M			
		M		M			
21		M		M			
		M		M			
Starting Readings							

Summit Avenue Line—Copy of Report for Day's Work Made by Safety Car Operator in Fort Worth



Summit Avenue Line—Headway Recorder Record, Showing How Car Spacing Is Maintained in Fort Worth

(The twin circles are due to overlapping cars of the Forest Park line.)

The following table gives boarding and alighting periods for passenger groups from one to nine:

Passengers in Group	Time in Seconds			
	Boarding		Alighting	
	Total	Per Pass.	Total	Per Pass.
One	6.4	6.4	4.0	4.0
Two	8.6	4.3	5.6	2.8
Three	10.8	3.6	7.6	2.5
Four	12.4	3.1	9.2	2.3
Five	16.2	3.2	11.4	2.5
Six	18.4	3.1	13.6	2.3
Seven	23.0	3.3	16.0	2.3
Eight	26.8	3.4	18.4	2.3
Nine	31.0	3.4	21.6	2.4

While the safety car seats twenty-nine passengers, it has handled in emergencies as many as sixty-five riders—giving the almost incredibly low weight of 206 lb. per passenger.

The figures below are based on ten days' operation (Nov. 2 to Nov. 11, 1916, inclusive) of new cars compared with eleven days' operation (Oct. 20 to Oct. 30, inclusive) of old cars:

	Operating Averages	
	Old 18-Ton Cars	New 7-Ton Cars
Average car-miles per day	647	1,099
Average kilowatt-hours per day	1,559	1,088
Average watt-hours per car-mile	2,410	990
Average ton-miles per day	12,199	7,498
Watt-hours per ton-mile	128	145
Average passengers handled per day	4,035	4,541
Average passenger-miles per day	7,787	8,764
Watt-hours per passenger-mile	200	124
Average seat-miles per day	25,065	31,871
Watt-hours per seat-mile	62	34

NOTE—All energy figures are based upon substation readings.

The present energy consumption is materially less than that shown in the table, for through the use of Rico coasting recorders the average coasting has been raised to 30 per cent. It is interesting to add that the air used for operating doors, steps and brakes requires 3 kw.-hr. per 100 car-miles or 30 watt-hours per car-mile.

REVENUE INCREASE OF 10 PER CENT

It is clear that the new cars will show a reasonable return upon their cost without credit for salvage from old equipment and with possible charges for completion of amortization of investment in this equipment. The question remains: To what degree has the public shown its appreciation by more riding?

In a way it is difficult to answer this definitely because the increased business has been due to several causes, such as better times, eliminated jitneys and drafts from nearby lines. Yet, when all allowances are made, it is fair to say that of the $992 increase in revenue (18.4 per cent) shown for November, 1916—February, 1917 as compared with corresponding months the year before, at least half or say 10 per cent was caused entirely by the better service—26.4 per cent more car hours and 34.1 per cent more car miles. Such an increase combined with a decrease in the cost of operation and maintenance is the most hopeful sign of a new day in electric railroading.

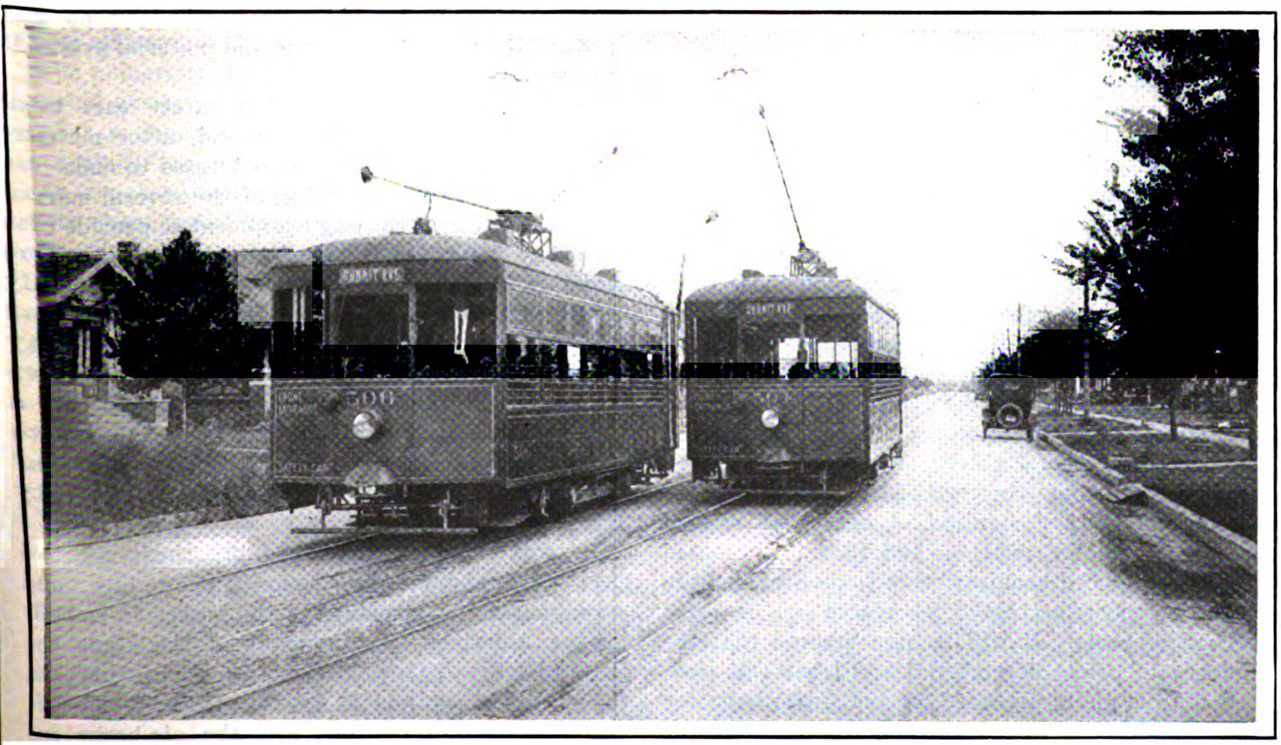
PLANS FOR THE FUTURE

The public approval and the financial success of the original ten cars above described have led to the prompt ordering of fifteen more of the same type for further improvement in service.

These two purchases by no means measure the extent to which the new transportation standard will be adopted in Fort Worth. Radical changes require time; the characteristics of each district served and to be served must be studied; the organization must be conserved and adapted to the new methods of operation. Rolling stock, much of which is comparatively new and modern and representative of a large investment, cannot be lightly cast aside.

A considerable proportion of the passenger equipment of any large city system is used for rush-hour service and to replace regular cars undergoing repairs, painting, etc. The efficiency of such equipment, which is used only a small part of the time, is not of vital importance. The officials of the Fort Worth company have made a study of its standard single-truck cars and believe that some of them can profitably be equipped with the necessary automatic devices and otherwise fully adapted to serve as auxiliaries to the new light-weight cars. They may weigh nearly twice as much as the new cars, but the cost of moving the excess weight and the greater wear and tear on the roadbed during a few hours of the day should be less than the added fixed charges on entirely new lighter cars.

It is by no means impossible that traffic studies may disclose some situations where double-truck cars may also be similarly adapted and used, thereby further preserving existing investment. The problem of developing a proper economic balance between new and old equipment by such means is one which will require careful, continued study in the light of experience with the light-weight safety car. It will be a different problem for each community to which such studies are applicable.



Summit Avenue Line—Two Safety Cars Passing on Turn Out

The Design and Development of the Safety Car

It Was Suggested by the Success of the Jitney Bus—It Is Contributing to Progress in Car Standardization

By C. O. Birney

Stone & Webster, Boston, Mass.

THE circumstances leading up to the design, development and introduction of what has come to be known as the safety car date from the winter of 1914 and 1915, which period witnessed the more or less general introduction of the "jitney" in Southern and Southwestern cities. The writer was at Fort Worth, Tex., for a time during that period and observed the startling effect on street railway operation produced by that competitive form of transportation. Notwithstanding the fact that the Northern Texas Traction Company, operating at Fort Worth, was well supplied with equipment, modern in every respect, and was giving the best possible service, the popularity of the service offered by the jitney bus was such that the street cars were operated with greatly reduced patronage and receipts. This loss in itself was, of course, startling and the suddenness with which it occurred and also the rapidity with which it grew were such as to afford ample grounds for a most pessimistic view of the future of the street railway industry.

THE JITNEY BUS GAVE THE CUE

A careful analysis of the seemingly attractive features offered by the jitney bus indicated that the people appreciated the higher average speed and the more frequent service which were characteristic of the bus service, and it was but a short step to the conclusion that if the street railway business were to survive it also must offer these same attractive elements. To provide those elements, with the type of car equipment and under the methods of operation then considered standard in this country, would have involved an expenditure for equipment and facilities which could not by any means have been justified, particularly in view of the jitney bus competition. It was recognized at once that radical changes would be required, and that if increased speed and reduced headway were to be provided the operation must certainly be placed on a more economical basis. It will be remembered that the tendency in prices of material and labor was even at that time plainly upward, so that little hope for economy was offered in those commodities under the methods of operation then prevailing. This tendency has since grown to proportions then undreamed of.

As a result of investigation it became apparent that the very desirable elements of increased speed and reduced headway readily combined themselves with the operation of light-weight units of proportions smaller than had been considered standard up to that time. Furthermore, the proposition of operating a unit of relatively small capacity offered hope for additional economy in that the car could, if properly equipped, be operated by one person. Our efforts were accordingly directed at once toward the design and development of such a car unit. It is significant that our determination as to the proper course of development at that time lay along lines which offered more room for effecting economy than did any other in the street railway business. In other words, the economy to be derived from the reduced cost of propelling the car and the reduction in platform expense were much greater than could have been assured by improvements and efficiency in any other part of the street railway organization. That situation still holds good, particularly on account of the high cost of labor and material prevailing at the present time.

The proposition of operating safety cars was taken up by Stone & Webster and, after mature consideration, the writer was instructed to make an investigation as to the ability of the several manufacturers of street railway equipment to provide the necessary apparatus. The problems facing the street railway managements were placed squarely before car builders, and while the development was then in a very early stage, nevertheless hearty co-operation was received. The manufacturers mentioned hereinafter concurred in our idea that a tremendous effort was to be put forth to prove to the public that street railway transportation was after all the best transportation for general city service.

It was finally determined to construct two cars as a sample or demonstration cars, and arrangements were made for the bodies to be built by the American Car Company of St. Louis, the trucks by the J. G. Brill Company of Philadelphia, the electrical equipment by the General Electric Company of Schenectady, and the air-brake and safety-control equipment by the Westinghouse

Traction Brake Company of Wilmerding, Pa., all of the parts to be assembled at the American Car Company shops.

CARS FOR DIFFERENT CITIES BUILT IN SAME PATTERN

While these cars were under construction the following were ordered: Ten for Fort Worth, Tex.; four for Bellingham, Wash.; three for Everett, Wash., and one for Keokuk, Ia. The two sample cars were placed in operation in Seattle, Wash., and Everett, Wash., respectively, with the result that it was soon evident that in order to secure a fair test of the new idea of car operation, as well as the apparatus involved therein, it would be necessary to equip some one line with cars of this type so that the operation could demonstrate its qualities. For this purpose the Summit Avenue line in Fort Worth, Tex., was selected, and safety-car service was inaugurated there on Nov. 1, 1916. Its success was so complete and the outlook so promising that Stone & Webster have since placed orders for 159 new cars of the same type for use on properties which they manage. These cars are being built from the same designs, patterns and templates, notwithstanding the fact that they are to be used in different cities.

A remarkable condition has developed with respect to car construction as evidenced by the fact that the term "standard safety car" is now frequently used. It is a fact that very rarely have any two railway operators selected the same type of car; and furthermore, very rarely has the same operator selected any given type of car twice in succession. Our aim in the production of the safety car was to provide one which could be operated on any street railway property. On account of the same considerations which warranted Stone & Webster in placing orders for 159 of such cars, it is apparent that the numerous requirements of individual operators could easily be grouped and treated in such a way that a single type of car would be applicable to many different properties. Pursuance of that idea in our case paved the way for simplicity in car construction, promptness in delivery and great economy in the purchase, not only of the cars themselves, but of spare parts required for storeroom stock. There is no reason why car builders should not be able to build such cars in bulk like automobiles, leaving it to the electric railway engineers of the country acting together to propose improved standards.

LESSONS FROM THE FORT WORTH INSTALLATION

The actual operation of these cars in Fort Worth has demonstrated that increased average schedule speed with decreased headway and more economical operation can be secured in practice. These were the elements which prompted the development of the safety car. Following the inauguration of successful operation of this type of car, and as a direct result of the widespread consideration being given to it, many ideas have been advanced with respect to extending its field. Observation of the results attained at this time indicates that a lightweight car of larger proportions and still controlled by one person may materialize in the immediate future, and this is especially true at present when, as a result of the national stress, the conservation of man power becomes not a question of economy to the street railway industry but rather a patriotic duty. Suggestions have also been made relative to operating a considerable number of small units in trains in order to avoid congestion in city streets. It is not believed that this will prove popular or profitable, for the reason that once a number of the small units are coupled together they become, in loading and unloading characteristics, very much the same as a single large car. They thus lose the advantageous features of the small unit with less work to perform, which is capable of getting over a given piece of track quickly. As a general proposition, the smaller the car unit the more flexible is the car service, and the question as to whether a sufficiently large number of small cars can be operated through certain streets in a city depends largely on the track layout. Certainly the economy now secured in the operation of this type of car justifies more extensive track facilities in the center of a city than was justified by the large cars heretofore used. There is obviously a time in the growth of any city when it may be necessary to get away from the idea of operating all of the cars on some one particular street. While the operation of relatively small-capacity safety cars is not now necessarily coupled with the growth of the respective cities, it is an increase in service and therefore demands provision for eliminating congestion.

SAFETY CARS SUCCESSFUL UNDER PROPER OPERATING CONDITIONS

The expansion of safety-car operation into general city service has been much more rapid than was the case with the many other innovations. Its extensive use, however, must come under a process of careful thought with respect to its direct application. Coincident with its introduction, there have operated a considerable number of restraining influences brought about by city councils, state legislatures, state commissions, etc. Notwithstanding this, however, there is no instance where the success of the operation has not followed when the railway operator was possessed of a sufficiently broad vision to share part of the economy secured with the public in the way of better car service and with the car operators in the form of increased wages.

In general it may be said that the best method of inaugurating the new form of service is by means of new cars especially built for the purpose, sufficient in number to equip some one line in any given city, so that the meritorious features of their operation may stand out unhampered by restrictions involved in older types of cars. At any rate where this method has been followed there has not been a single instance in which economy of operation and success have not been realized.

The "Quick Service Car"

By F. W. Hild

General Manager Denver (Col.) Tramway

The Writer Believes that This Type of Car Has a Place in Cities of Medium and Larger Size, but Considers that for Such Cities Two or Three-Car Trains Will Be Necessary During Rush Hours — Other Suggestions Are Made

IN these critical days of the electric railway industry those who are charged with the responsibility of directing and financing these properties find themselves faced with difficulties which in variety and magnitude are experienced in perhaps no other industry. This has necessitated study of the various problems with an anxious care that must in the end result in good for the industry.

These difficulties are partly due to the fault of the electric railways themselves through the unwitting mistakes of the earlier operators or pioneers in the industry and also partly to causes entirely beyond the control of the railways.

In the former group are such things as over-expansion on many systems and also the old agreements to carry passengers for abnormally long distances for excessively low rates of fare, whether or not this resulted from the expansion of the city limits or the operation of the universal transfer. Still another is the failure generally among electric railway properties to recognize the need to provide adequate depreciation and renewal funds out of earnings. As the result of these things, on many such electric railway properties, particularly in the western part of the United States where over-expansion has been more general, the companies have been "selling goods below cost" and are therefore on a precarious economic basis.

Mr. Hild's Recommendations

1. **Multiple-unit control with automatic acceleration.**
2. **Vestibule connection affording passageway between cars even while in motion.**
3. **Further simplification in some of the accessories used on the cars.**
4. **Still further provisions for the comfort and convenience of the car operator.**

In the second group of difficulties and in addition to all the foregoing are those adverse forces which the electric railways could not fully control, such for example as the diversion of transportation revenue by reason of the marvelous development and growing use of the automobile. Another is the heavy burdens laid upon the utilities through the various forms of taxation, and finally there are the enormously increasing costs of labor and materials. The second group has, of course, super-imposed its burdens upon the first group with the result that the economic position of the industry as a whole is seriously menaced.

If electric railways as developed in this country were but a passing phase of transportation, the problem would be of serious concern perhaps only to the investor in railway securities, but such cannot be the case and no discussion seems necessary to show the absolute economic necessity, now and for the indefinite future, of these properties and their immense importance to every community and to every citizen. Manifestly, the obvious and most sweeping remedy is a higher unit of fare sufficient to enhance the revenues to meet all expenses including an adequate return to the investor, and quite properly this is receiving the major consideration of the thoughtful and influential members of the electric railway fraternity.

In the meantime, the growing necessities of the situation have caused the highly able and inventive genius with which the industry is so generously endowed to seek by various means to increase revenues and to reduce operating costs, and it is the purpose of the writer briefly to discuss one important phase of this endeavor.

The jitney experience with its inroads upon electric railway revenues served to focus attention upon the automobile as an important potential competitor in urban, suburban and interurban transportation, and it has come to be appreciated that the diversion of electric railway revenues has not been confined to the pay jitney but is being accomplished also in surprisingly serious amounts by the privately-owned automobile. The experience of Denver, which fortunately has been free from the jitney pest, may serve in a measure to illustrate the effect of the privately-owned automobile on railway revenues.

A careful and exhaustive study by the traffic engineering staff of the Denver Tramway has served to develop certain data relating to automobiles and their competition which are believed to be fairly close to the facts and at least conservative as to the future. In the study it was assumed that saturation would be reached when there were eleven automobiles for each 100 of the population. With due allowance for other factors which would affect tramway revenues, certain conclusions were derived as shown in the table and the chart on the next page.

ESTIMATED REDUCTION IN PASSENGER EARNINGS DUE TO AUTOMOBILE COMPETITION

Denver Tramway, City Lines

Year	Autos in Denver	Reduction in Railway Passenger Earnings	
		Per Auto	Total
1911	3,190	$50.00	$160,000
1912	4,000	45.00	180,000
1913	4,968	41.50	206,000
1914	6.120	39.00	238,000
1915	8,575	37.40	320,000
1916	12,200	36.00	440,000
	Estimated		
1917	16,000	35.00	560,000
1918	19,900	35.00	696,000
1920	25,200	35.00	882,000
1922	28,700	35.00	1,010,000
1924	30,700	35.00	1,073,000
1926	32,400	35.00	1,133,000
1928	34 200	35.00	1,197,000
1930	36,000	35.00	1,260,000

Obviously it is in no spirit of unfriendliness to the railways that privately-owned automobiles divert revenues from these companies. As a matter of fact it means no profit to the automobile owner unless it be the momentary feeling of good-will toward him by his deadhead passengers. In time, of course, these deadhead passengers will become somewhat fewer as the rapidly diminishing novelty, already greatly shrunken, makes the automobile yet more commonplace. On the other hand, as long as prospective electric railway passengers find more frequent opportunities to be carried to or near their destinations in the passing automobiles of their friends, just so long may the diversion of revenues from electric railways be expected to continue. Manifestly the remedy for this spells better, faster and more frequent service by the railways, and so, as a matter of important business consideration and in justice to themselves as well as in fairness to the private automobile owner, serious study and effort should be made to solve this particular problem. It is true that in our largest cities the automobile is not regarded as a factor adversely affecting the earnings of urban transportation companies. On the contrary, it might even be considered a welcome aid, for the problem in our larger cities as a rule is to devise ways and means to handle satisfactorily the enormous traffic which constantly offers itself. On the other hand, in the large majority of our cities this form of competition is keenly felt.

Fortunately a large amount of splendid constructive work reflecting considerable thought and careful study put into this, is expressed by the present development of the variously named "light-weight car," "one-man car" and "safety car," but which we in Denver prefer to designate the "quick service car." The origin and development of this car have been so thoroughly described in the technical press that we need only state here that the "quick service car" means one-man operation—therefore a substantial reduction in the platform expense per car; that it is very light in weight—therefore a substantial reduction in power costs and it is hoped in maintenance expense also. Since it is much smaller and much lighter, utilizing the single truck with but two motors, its first cost should be materially less than its big brother, the standard double-truck car. Some ingenious mechanical and electrical devices have been developed to facilitate safe and convenient operation by one man and, in the communities where it is being operated, the "quick service car" as designed to-day seemingly meets the requirements. But so far, this type of car has been used only in the smaller cities, although some experimental trials are being made in one or two larger cities, such for example as Seattle.

The "quick service car," besides having large and attractive possibilities in the way of low operating costs per car, is also deemed to be capable of more rapid acceleration than the ordinary double-truck city car. Hence, we have available the reasonable means of supplying that "better, faster and more frequent service" which should materially help the urban transportation companies regain much of the revenues now being diverted by the automobile and by the impatient individual who will walk rather than wait for the car.

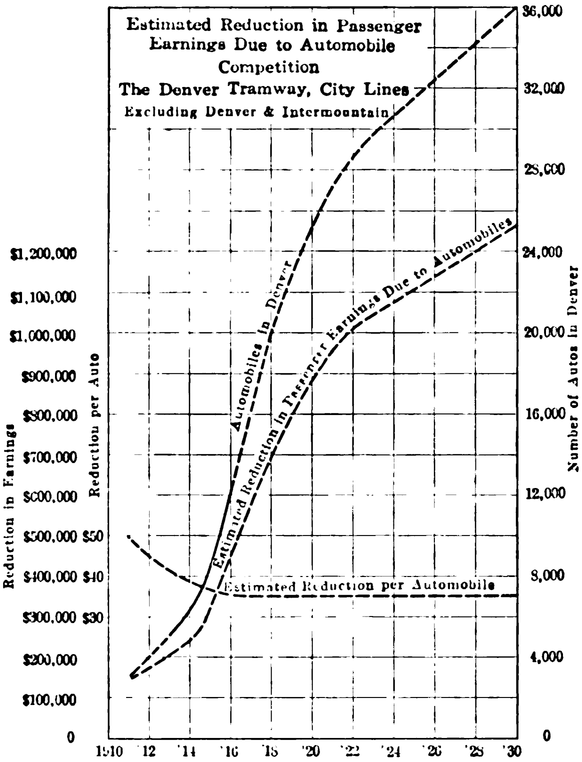


Chart Showing Estimated Effect of Automobile Traffic on Denver Passenger Earnings

From the standpoint of the public, while there may be expected some objection to a car smaller in size than the ones customarily in use, still the greater frequency and the faster service are so appreciated and welcomed as not only to offset the objections but to induce greater patronage of the cars. Such seems to have been the quite general experience where the "quick service car" is being operated.

From the standpoint of the employee, greater compensation is usually paid to the operator of the "quick service car" than to the platform men of the present standard car. Moreover, the greater frequency of service, together with the continual movement of the "rolling stones" among street car men, insures to the trainman who desires to continue permanently with the company that he need have no apprehension about his job. Hence, it is reasonable to expect that the "quick service car" will be regarded favorably by the large majority of the employees.

With all these favorable factors the question arises: "Can this type of car be used to advantage in cities of medium and larger size, say up to about 500,000?" The writer is inclined to believe that it can, but certain further developments in his judgment are essential before it may be safely and successfully put into use in such cities. These are:

1. Multiple unit control with automatic acceleration.
2. Vestibule connection affording passage-way between cars even while in motion.
3. Further simplification in some of the accessories used on the cars.
4. Still further provisions for the comfort and convenience of the car operator.

MULTIPLE-UNIT CONTROL WITH AUTOMATIC ACCELERATION DESIRABLE

Observation by the writer of the operation of these cars in a Southern city seemed to emphasize the importance of train operation in order to provide capacity during the rush hours. Although it was sought to meet this by operating so-called "double-headers," that is, two cars virtually together, but of course with a certain amount of space between them for safety, nevertheless the American determination to board the first car that came along regardless of its crowded condition, sometimes resulted in sixty-three and more in the little twenty-nine-seat car. If there is anything that will defeat successful introduction of the "quick service car," certainly in the larger cities, it is such excessive loading of individual cars.

When one stops to think, are not problems of urban transportation service substantially the same in all American cities? Thus in the New York subways, on the elevated in that city and in Chicago during the greater number of the twenty-four hours of the day, the train units may be relatively small. In Chicago at certain times single-car units are operated and two-car units quite generally, but, of course, during the one or two hours constituting the morning rush and likewise the evening rush it is necessary to tie together a number of these units, sometimes into six and eight-car trains. In the medium-class cities we find during the rush hour two-car trains or trailers, but generally the service is provided by trippers or additional single cars operated on much closer headway. Clearly the same general periodic flow of the daily travel obtains in practically all cities, the difference being only in degree. Probably 90 per cent of the troubles of the urban transportation companies are traceable to the rush-hour difficulties, and so it is not strange that the present big fifty-seat car is in fact a sort of compromise, reflecting the wish to meet the problem of the one or two rush hours even though the greatest percentage of its capacity be not utilized and therefore wasted during the remaining twenty-two hours of the twenty-four. So we may say that most surface lines operate throughout each of the twenty-four hours of the day relatively large units, each of which in a measure corresponds to the rush-hour train of subway or elevated.

The present development of the "quick service car" is a return to first principles when the early success of urban transportation was made possible by frequent small units. But, the rush-hour service requirements having been allowed up to now to dictate the choice and size of the surface car for the entire twenty-four hours, we should not now turn around and make the parallel mistake of forgetting the rush-hour difficulties and try to force the little car as it is to-day to handle that service.

The theory that frequent operation of the small units will serve to keep down sufficiently the accumulation of passengers at the various loading points seems to work out satisfactorily in the smaller cities and towns where the periodic flow of travel varies only to moderate degree, but under extreme rush-hour conditions of the middle class and larger cities that theory will not hold. In fact, as long as we find our factories, department stores, offices and other business institutions closing at substantially the same time and thus sending out a vast number of people, all of whom wish to get to their homes at the same time, traffic congestion will always be a problem and one which I feel can best be handled by offering adequate capacity, preferably by properly chosen units operated together in trains as on the elevated roads.

A further factor which must not be overlooked is the congestion in the streets due to the space occupied by the various vehicles. There should be no need to dwell upon this, as reflection will bring out the importance of it quite clearly.

VESTIBULE CONNECTION BETWEEN CARS

Some years of operating two-car trains in city service in Portland and Denver have demonstrated quite clearly the desirability of a vestibule connection between the cars. In both cities, prior to January of this year, the far-side stop prevailed, and it was the unfailing experience to see the rear car of the train heavily loaded, with the front car very much less so and often with a surplus of unoccupied seats. Since January, the near-side stop has been in effect in both cities, and in Denver we now observe exactly the reverse. Now the front car is heavily overloaded while the trailers carry much the lighter loads. In St. Louis, where trailers are operated to some extent and where the near-side stop is in effect, exactly the same condition obtains. Vestibule connections would serve to equalize the loading. This, it seems to the writer, is good evidence that it would be highly risky and most unwise to rely upon a number of smaller detached units during the rush hour, for if people will not take the trouble to go back to the second car of a train and there find plenty of seats, but instead will pack into the first car, no matter how overcrowded, what hope is there that they will pass up a crowded small "quick service car" immediately before them and wait for another, no matter if it is only a block away?

Vestibule and coupler designs for such purposes offer fine problems for the inventive minds, and it is perhaps of interest to say here that a coupler and a vestibule connection to meet the requirements have been designed.

SIMPLIFICATION OF ACCESSORIES

Putting up to the average platform man the requirement to do the work which we now expect of two men calls for still further development of automatic apparatus and simplification of operations. For that reason alone the controller should provide automatic acceleration; but apart from that, is it not about time that control apparatus be designed as much with remembrance of the human element in the operation as with the view to safeguard the motors and the generating apparatus?

The ordinary K controller is a very effective piece of apparatus in the hands of a very competent or highly efficient trainman, but since in the practical operation of electric railway systems, this man does not remain long on the front platform of a car but is soon advanced to a better position, it follows that the average platform ability is after all what should be considered in the design and functioning of controller apparatus. For we find in practical operation, that the controller is handled in as many different ways as there are men employed to operate electric cars. Thus we have excessively fast feeding or vice versa, or running on resistance points, or widely different methods of acceleration, and these various methods of manipulating controller are reflected in various troubles with the equipment and in operation.

How well this has been appreciated in operating and manufacturing circles is evidenced by the fairly wide use of two auxiliary devices, one the automotorneer and the other the coasting clock. The coasting clock, of course, serves other functions than merely to better some of the existing shortcomings of the street car platform controller. These auxiliary devices have proved to be very helpful but do not get to the root of the problem since the original cause of it all is still allowed to continue, and not infrequently auxiliary devices operate to change earlier troubles into others of different kinds. In the view of the writer, the real answer is to provide city cars with control having automatic acceleration. If this should mean a master controller with contactors I believe railway operators would welcome such a change, particularly if the master controller could be kept within very small dimensions.

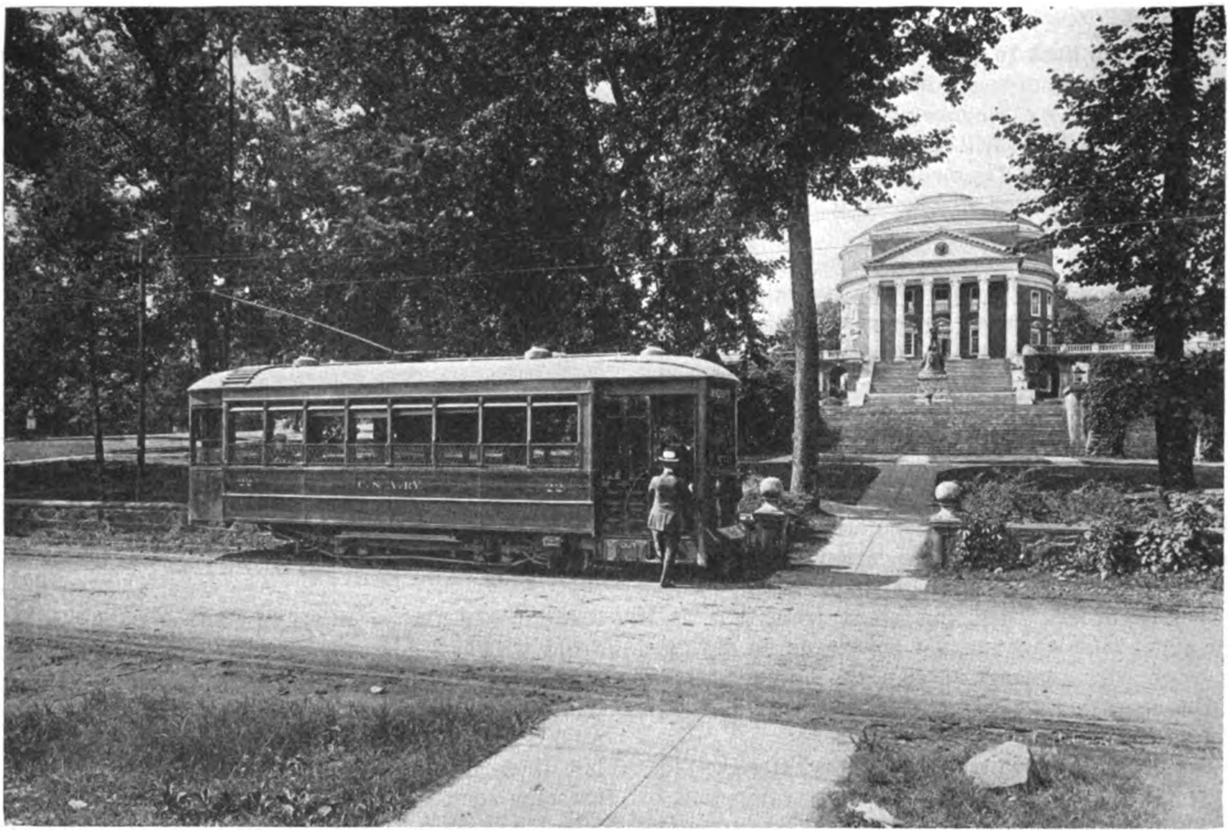
The entrance doors should be pneumatically operated, although the vestibule doors may just as well be opened by hand and be manipulated by the employee in the trailing car.

COMFORT AND CONVENIENCE OF CAR OPERATOR

Motormen always object to the reflections in the front windows due to the lights behind them when operating a car without bulkheads, and it is undoubtedly an accident risk. That this is appreciated is manifested by the use of auxiliary curtains, but these do not fully meet the requirements and occasion some objection in that the car operator no longer then has a clear view of what is happening within the car and at the entrance and exit. Some day some bright person will point out a very simple solution of this particular problem; perhaps the use of curved glass as on some store fronts may furnish the idea.

With the "quick service car" thus developed the chances for its successful introduction into larger cities would certainly be much better, for then it would be entirely up to the operating organization to provide the needed capacity at the proper place and time. In any event the writer believes that it would be wise to utilize two men per car in the downtown business district during the busier portions of the day. This should usually work out to one extra motorman for each three or more cars. The original operator upon entering the downtown district would become the conductor, and therefore the same man would deal with the cash throughout the trip.

Mr. Hild says that the present development of the "quick-service car" is a return to first principles when the early success of urban transportation was made possible by frequent small units, but as the rush-hour service requirements have been allowed up to now to dictate the choice and size of the surface car for the entire twenty-four hours, he believes that we should not now turn around and make the parallel mistake of forgetting the rush-hour difficulties and forcing the little car to-day to handle that service.



Car in Operation in Front of Rotunda of University of Virginia

A Railway Without an Attorney

The Story of the Charlottesville & Albemarle Railway from the Time It Was a Joke Until Charlottesville Citizens Thought Enough of the Property to Put Their Own Money Into It

THIS is the story of Charlottesville, Va., and its electric railway. Charlottesville, if one includes the surrounding hills, has a population of 12,000. Yet not more than 4000 to 5000 people are near enough to be regular riders. The only favorable feature to encourage riding is the presence of the University of Virginia at one end of the line. There are no industries of importance. Quite a number of people have their own carriages, and still another large number, the colored folk, have no carriages at all and not much for carfare. It is only a few minutes' walk for almost anybody to the heart of the town. Nevertheless, on 3.5 miles of track the Charlottesville & Albemarle Railway in 1916 carried approximately 1,000,000 passengers. How was it done?

THE CHANGE THAT HAS BEEN WROUGHT

The ELECTRIC RAILWAY JOURNAL for Oct. 17, 1914, had an article entitled "Making a Small Company Pay." This told in some detail of the physical rehabilitation of the Charlottesville company—how a steam turbine plant and a.c. distribution replaced reciprocating engines and d.c. distribution, and light one-man cars superseded heavy two-men cars. That article was written two years after the new interests had taken hold and when it was still too early to say that they would get back what they had put in.

To-day, after five years, it is no longer doubtful that Charlottesville has placed the railway in the same class with Thomas Jefferson, the University of Virginia, the First Families of Virginia and the Albemarle pippin—all being matters of peculiar pride and joy. There was a time when it was held a disgrace to ride in the shabby street cars; to-day walking on Main Street is almost a novelty. The reasons are the simplest—clean cars, frequent service, polite operators and the sale of tickets at so many drug and grocery stores that people have become accustomed to buying transportation as an inevitable part of the daily purchases.

It was on July 1, 1912, that a syndicate composed of F. C. Todd, Norman James and John L. Livers took hold of the discouraged scrap-heap called the Charlottesville & Albemarle Railway.

Appreciation

It is often said that the present owners of this Company, who have made large investments in Charlottesville, were the prime movers in the present activity.

Have you been helped directly, or indirectly by the above, and if so, are you showing your appreciation by investigating the securities offered on a HOME INDUSTRY, or are you one who sends your money to the other city, and still expects your city to grow?

Think it over, then ask us about the 7 Per Cent Accumulative Preferred Stock, which sells at par $100.00.

C. & A. Railway Co.
Telephone 57

How Surprising It Is

That there are some men in Charlottesville who will invest their money in Oil Well, Mining, Insurance and Vending Machine stocks, and expect returns from their investments; while other men from the money centers will invest their money in Charlottesville. There is a reason. Think it over, then ask us about your investments.

C. & A. Railway Co.
Telephone 57

Effect of Strike

No alarm need be felt by the citizens of Charlottesville, on account of the proposed strike of railroad men, for their Electric Service, as this Company has enough coal in stock to operate until 1917—likewise, the 7 Per Cent Preferred Stock of this Company will not be affected.

Why not invest in a Home Security which pays a maximum return with the greatest safety? Ask us about it.

C. & A. Railway Co.
Telephone 57

Charlottesville—Examples of How the Company Sold Its Preferred Stock to Local Investors

This consisted of 3 miles of track, antiquated cars, an obsolete arc-lamp system and 308 dissatisfied users of electricity. To this scrap-heap were attached certain encumbrances, to wit: A first mortgage of $25,000 at 5 per cent; a second bond issue at 5 per cent, of which $67,600 was outstanding, and loans, notes payable, etc., many personally indorsed by the directors, amounting to more than $26,000.

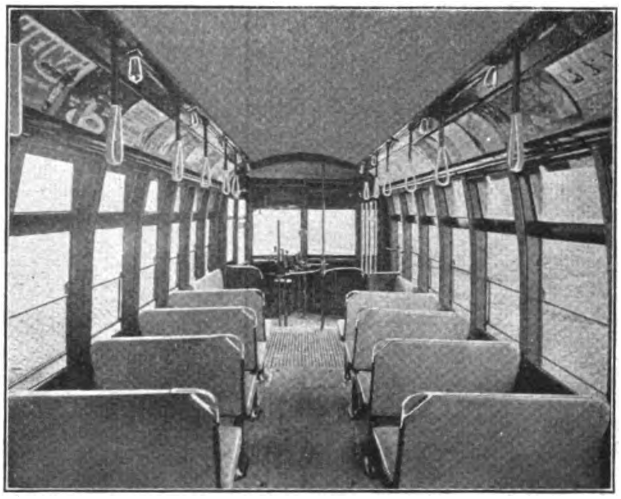
Since July 1, 1912, all the floating indebtedness has been cleared away, a $350,000 bond issue at 6 per cent has been sold at 92.5 net to pay for the improvements personally financed by the syndicate, and, last but not least, the property has been put on such a sound basis that the citizens of Charlottesville have taken up since April, 1915, an issue of $100,000 of 7 per cent preferred stock at par. Dividends at this rate have been paid since July 1, 1914. Nearly 100 of the most substantial residents now have a paying stake in their local public utility. No better proof than this could be offered of the sound character of the changeover.

Mr. Livers himself wrote all the advertisements in connection with the sale of stock. Some of these are reproduced as examples of his horse-sense style and ability to make use of questions of current interest, such as the railroad strike then threatening.

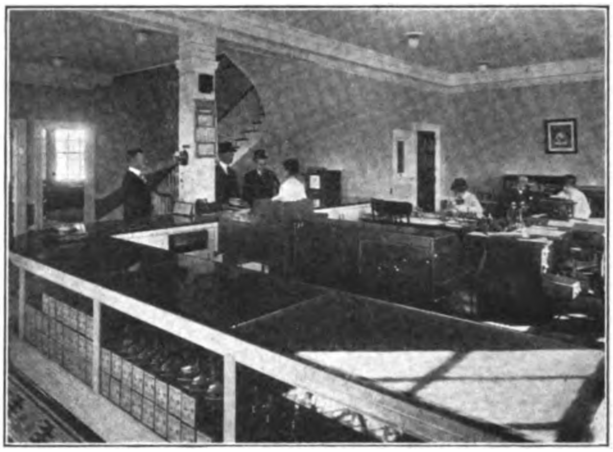
Why the Railway Business Improved

The old trackage of 3 miles included a short spur on which a needless shuttle service had been operated. One of the first things that Mr. Livers did on becoming manager was to take up this track and use it for an extension toward the University grounds north. This encouraged the development of the University end of the town and so developed more riding. At the lower end of the town the company had to use a makeshift turntable for its

Charlottesville—View Showing Operator's End of New Light-Weight Car



Charlottesville—The Rides Are Short, but the Cross-seats Help the Riding Habit Immensely



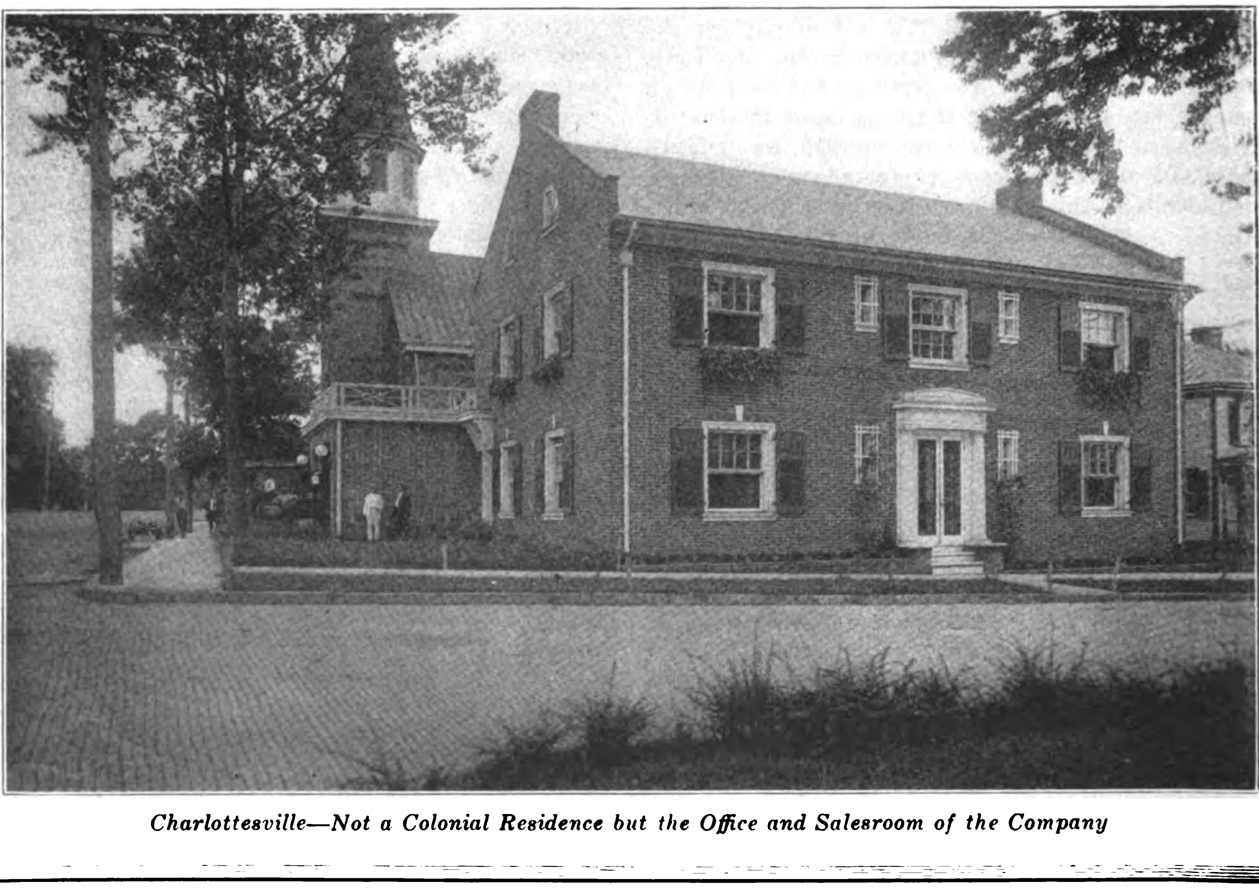
Charlottesville—Views of Interior of Main Office and Winding Stairway

new single-end cars, but finally the Chesapeake & Ohio Railroad permitted the building of a loop at its station there so that people can enter the cars directly from the station sidewalk instead of tramping up an incline. The three sidings on Main Street were increased to five, so that a five-minute service can be given on the summer schedule.

As mentioned in the earlier article in the ELECTRIC RAILWAY JOURNAL, Mr. Livers made popular the park at Fry's Spring, the southern end of the line, by converting a deficit-making hotel into a group of cottages and the leftovers into a glazed dance pavilion. As only half the cars go through to Fry's Spring, the car operator blows his whistle once on outbound trips and twice on inbound trips, so that prospective passengers do not have to leave their homes in bad weather until the last minute.

But the great change was in the character of the rolling stock. Before the new cars came, bathtub enamel and scrubbing brushes were freely used as evidence of the new management's good intentions. Then came the near-side one-man cars—there are now seven of them—weighing 18,000 lb. as compared with 24,000 lb. to 30,000 lb. for the old ones. Some views of these cars are reproduced herewith. Through using such cars the platform expense was cut in two. Energy expense was cut even more, for it cost the old plant almost 8 cents a kilowatt-hour and the present cars are billed at 2 cents a kilowatt-hour. Yet the end in economical operation has not been reached, for lately the cars were equipped with "Economy" meters which will pay for themselves many times over.

The cars are 31 ft. 2¼ in. over all and seat



Charlottesville—Not a Colonial Residence but the Office and Salesroom of the Company thirty-six passengers. The doors are hand operated. Fare collection is simple, as about one-half of the passengers buy tickets and deposit them in a New Haven locked farebox. All passengers, of course, enter and leave via the front platform, but colored passengers take the rear seats. The cars are roomy; the cross-seats comfortable, and the company never passes a nickel.

The operator of the car handles very little cash, because so many tickets are sold through storekeepers. Tickets for adults are sold at six for 25 cents; for children, at 2.5 cents each. The storekeepers receive no commission except on children's tickets, for which they pay $14.25 in buying $15 lots—a commission of 5 per cent. All such transactions are cash. Once there were 20,000 deadhead riders a year—there are none now.

In a town of this size, a booklet of information hardly seems necessary. For all that, the company has got out a vest-pocket booklet with timetables and data for power and lighting customers. This booklet, by the way, cost the company nothing, as it was a part of a local trade directory.

NO ACCIDENTS—NO ATTORNEY

It may be well here to explain the title of this article: "A Railway Without an Attorney." When the present administration came in, it found two other obligations besides those previously named. One of these was a judgment of $1,750 covering paving arrears, and the other was an accident judgment of about $6,000. Both cases were settled. Since the new way of doing things was begun, there have been no accidents or lawsuits of any kind. The Charlottesville & Albemarle Railway is really a railway without an attorney.

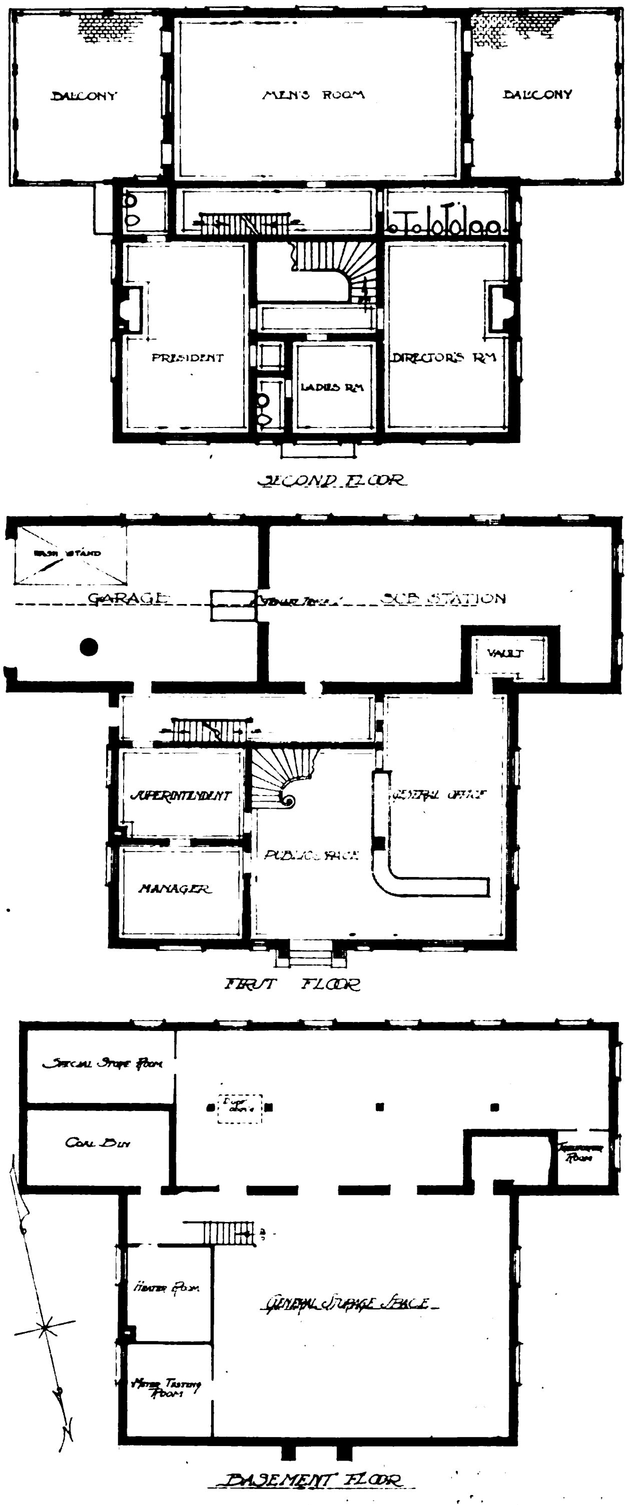
RELATIONS WITH THE MEN

This is a short chapter and one worth thinking over. The men receive 17 cents an hour to-day, just as they did under the two-men system. While the total number of cars is seven, the number of trainmen is seventeen. The trainmen, however, also include carhouse men, shopmen and a lamp trimmer, all of whom are available for platform relief duty. Car service is maintained from 6 a. m. to 11 p. m., and the runs are usually eight hours, four in the morning and four in the evening. There is no extra list. The trainmen may be described in the same way as officeholders: "Few die and none resign." Since 1915 every employee of the company has received ten days' annual vacation with pay.

To every man on the property Mr. Livers is just "John." When in trouble they come to him as a matter of course. Nor is there any sense of patronage in this. A fine assembly room is provided for all the employees. When an entertaining talk about railroads—say the great electrifications—is to be given, Mr. Livers invites the big men of the town. It might be said here, by the way, that he is president of the Chamber of Commerce and a member of almost everything in town. No affair is thought to be complete without him. Yet he came to this famous Confederate town from Gettysburg!

THE SHORT, SAD HISTORY OF THE JITNEY

In the summer of 1915, when Mr. Livers was attending the National Electric Light Associatio convention at San Francisco, the jitney appeared in Charlottesville. When Mr. Livers returned, he



Charlottesville—How One Structure Houses the Company from Offices to Substation maintained throughout the winter the five-minute summer schedule instead of a seven-and-a-half minute schedule, and he kept up the earnings at some increase in mileage. Before another summer came, the Council had passed an ordinance demanding that the jitneys maintain a regular schedule over a definite route and that they furnish a $1,000 bond. *Vale* jitney!

A NEW HOME AS THOMAS JEFFERSON WOULD HAVE HAD IT

In and around Charlottesville cluster memories of one of America's greatest men, Thomas Jefferson. Jefferson was the greatest of early American architects, and specimens of his work are found not only in "Monticello" on a mountain overlooking Charlottesville, but also in many of the homes he designed for his neighbors. Therefore, the Charlottesville & Albemarle Railway could pay no finer compliment to the memory of Jefferson and to the town that was so long his home than to put up as a sales and administration building a $20,000 edifice which is a splendid example of Jeffersonian architecture.

The new building, shown on page 486, is located on Main Street at a point where there was formerly a collection of poor shacks. In front of the plot was a small municipal eyesore, which the company has converted into a park. Around the corner is a plot on which a public library is to be built. Instead of a dazzling, garish electric sign to advertise its business, the company floodlights the building at night. The effect of the light on the combination of red brick, white trimmings and green shutters is beautiful instead of blatant. A little modest cast-bronze lettering on the front is all that tells the visitor that this is the home of a corporation and not one of the First Families of Virginia.

The plans on page 487 show how one structure houses an electrical salesroom, offices, storeroom, garage, substation and men's room. A fireproof partition is provided between the building proper and the annex at the rear. On entering the building, the visitor will find that the interior fully harmonizes with the exterior. First to catch the eye is a perfect example of a Colonial winding staircase with a grandfather's clock.

All the sales counters are low, restful to lean upon and free from forbidding grillwork. At the left are the general offices open to every inquirer. Instead of advertising matter, the walls are ornamented with rare prints of Jefferson, Washington and other Revolutionary worthies. In the ladies' room and the directors' room upstairs are other old-time prints. The balcony outside the men's room has made an excellent rostrum for speakers at political gatherings.

While the architecture of the building is eighteenth century, the spirit of the organization inside is twentieth century. The Charlottesville & Albemarle Railway makes no loud noises but works quietly and sincerely, as if everybody on the property really liked his job of rendering service to the public.

Although ELECTRIC RAILWAY JOURNAL readers are interested primarily in railway operation and the selling of transportation, it may be well to close with a brief statement of what the Charlottesville & Albemarle Railway has accomplished in the central station business. It began with 308 customers; it has to-day more than 1600 customers—all live ones. The old rates of 18 cents maximum and 5 cents minimum have become 12 cents maximum and 2 cents minimum for large users of electric ranges. When the company has 2000 customers and a lighting income of $100,000, it will make a further reduction in rates. And this is by no means a hundred years away. For the fiscal year, July 1, 1910, to June 30, 1911, the light and power earnings were only $29,004; for the calendar year 1916 they were $68,867.

About one-fourth of all electric range prospects in town are now users of the service. There is not a gasoline engine or acetylene plant in Charlottesville to-day, and practically every workshop or store that can use electricity is now on the mains. One of the sales-getting devices is a paper drinking cup available to a passenger on the Fry's Spring line.

One of the latest customers is the Southern Railway. The company learned that the railroad was about to put up its own substation for 4400-volt signal and lighting circuits to care for service on the main line north and south of Charlottesville. The Charlottesville & Albemarle Railway secured this business, amounting now to more than $125 a month. It also agreed to take care of the necessary transformers and switchboard at its own substation, thus insuring better service than could be given off the distribution lines.

In conclusion, another typical instance of service may be mentioned, convenience for the customer in paying bills. The company prints a postcard statement, the coupon of which it retains, sending the larger portion to the customer. The amount due is payable, as noted on the statement, at either of Charlottesville's national banks. This plan is an excellent accelerator of payment. The old discount of 10 per cent for cash was abolished long ago, as the company found that there was no need of giving money away when the people were satisfied with its service. Furthermore, it is said, when a public service commission fixes rates, it does not take discounts into consideration.

THE MORAL

The moral of Charlottesville is plain. Good service can change a disreputable, run-down utility into a permanently paying proposition if the men who furnish the brains and the money have the patience to see it through. Those who play fair with the people will find that the people will play fair with them. Surely, Charlottesville can go no further than to invest its money in its home utility rather than in some outside corporation.

The Light-Weight Safety Car and Car Standardization

By W. H. Heulings, Jr.
Vice-President The J. G. Brill Company
Philadelphia, Pa.

The Author Shows That the Standardization Movement Has Received a Great Impetus Through the Advent of the Light-Weight Safety Car

PARADOXICAL as it may seem the transportation industry has been developing toward single-truck, one-man cars for many years. There were evidences of an increasing use of smaller car units before the prepayment methods came into use a decade ago, but the growth was halted by the turning of attention to prepayment schemes and their accompanying door and step-operating devices. Then came the use of steel in under-frame construction, later extending up the sides of cars, and finally including the whole framework and sheathing. This brought about a large reduction in weight. In changing from wood to steel, weight reduction naturally came in for a great deal of attention, especially in view of the fact that for a number of years previously there had been an illogical demand for large capacity cars

For a time there was a tendency to build steel cars heavier than necessary. Purchasers had to "play safe" and avoid too radical a change in regard to maintenance charges, and builders could not obtain all of the material in the shapes and sizes desired. However, experience was gained quickly, the desired commercial and pressed shapes were produced, and car builders were able to standardize their material to a considerable extent.

Resuscitation of One-Man Car Idea

A number of years ago the managers of a few lines in different parts of the country had the hardihood to resuscitate one-man operation, which had been instituted on horse-car lines throughout the country soon after the close of the Civil War and had saved many a line from bankruptcy. It fell to the lot of The J. G. Brill Company to design and build these early one-man electric cars. This was before the days of steel construction, and of the two-leaf pivotal doors and the simple, balanced door and step-operating devices, so that the one-man cars were rather heavy and unwieldy to operate. Other companies having to reduce expenses, instituted the same system on all or part of their lines. The "Nearside" car, also, has had a wide influence in the field in the direction of one-man operation, because it long ago proved beyond any shadow of doubt that the location of entrance and exit at the forward end only, with doors and steps controlled by the motorman alone, was not only thoroughly feasible but eminently successful.

These were the beginnings, and there was a growing use of one-man cars in the succeeding years. Early in 1915 the engineering department of the Brill company sent out a questionnaire to those railway companies which had equipped their lines with cars purposely built for one-man operation. The answers received were compiled in a table of data which proved the practicability and satisfactory service of the car in every particular. The substance of this valuable table was published and discussed in the issue of the ELECTRIC RAILWAY JOURNAL for April 21, 1917, and the data have been otherwise widely circulated throughout the field. They have formed the basis of evidence of successful one-man car operation in many cases placed by railway companies before state public service commissions in petitions for permission to inaugurate one-man car operation.

In July, 1915, the Brill Company commenced a carefully planned publicity campaign on the subject of the one-man car and employed a page advertisement in the ELECTRIC RAILWAY JOURNAL each week to develop every viewpoint of improved service and greater economy obtained through their use. These advertisements were continued without a break for more than a year and should be credited with aiding very materially in the preparation of the field for the wide adoption of these cars.

That one-man car operation is both satisfactory and economical is a settled question so far as lines in small and medium sized cities are concerned, and it is very evident to me that sooner or later it will be adapted to parts of the service of large city systems, for present methods which permit the running of half empty cars during the greater part of the day are wasteful of power and plainly evidence a serious lack of flexibility. Managers in all quarters are seeking to rid themselves of this handicap to their earning capacity and to substitute a means for building up their service.

The Time Is Ripe for Standard Cars

From the carbuilders' standpoint, never since the horsecar days has there been such an opportunity to have a standard car as is now offered in the field of railway transportation in small and medium-sized cities, and probably to a considerable extent on the systems of large cities. Toward the end of the horsecar days a few light-weight, one ana two-horse types became standardized and met the requirements of most of the field. These same cars are still built for horse lines in foreign countries. Through this standardization car builders were enabled to turn out better work because their men became accustomed to certain patterns, templates, methods, etc. As a consequence costs were reduced and deliveries were made more promptly. Although it is a far cry from a wooden horsecar to a steel motor car, still there is much that may be made analagous by the focusing of efforts on a few types and developing them. This could replace the previous practice of constantly diverging in the endeavor to meet "local conditions" and working out features that, although good, are expensive to make and maintain because of their peculiarity. Car builders and car buyers are both to blame for this divergence in types, both have been actuated by the commendable desire to improve, but both should have realized long ago the inevitable result of the unorganized furnishing of equipment for an industry spread over a wide area and developing rapidly along similar lines.

However, this more or less useless divergence of car types will automatically cease in time and one of the causes for bringing it to an end is already at hand in the form of the light-weight, one-man car. If the Stone & Webster Engineering Corporation and its engineer of car design and construction, C. O. Birney, in collaboration with the American Car Company, had not produced the type of car that has been and is now being built in such large numbers, doubtless there would have been an indefinite continuation of the multiplicity of divergent types in this class of service. Instead, the field has been given the "safety car" a design remarkably logically adapted to the situation and one that has hit the target of the traffic problem of the average American city squarely in the bull's-eye. What Ford did in the automobile field Birney has done in the electric car field.

BENEFITS OF STANDARDIZATION

And this is what car standardization, as thus far achieved in the light-weight, one-man type, has done for the manufacturer: It has simplified the purchase of material because the light commercial shapes called for in the design are of sections, sizes and weights that have a large market and are most readily obtainable under normal conditions. It has enabled the parts to be made up in large quantities, permitting the larger steel parts to be painted and stored in the open. It has habituated the workmen to the routine of making the parts and building the cars, insuring greater accuracy and rapidity in the work. It has eliminated the necessity for making preliminary drawings, scale drawings, detail and working drawings, bills of material, etc. It has relieved the engineering department of an enormous amount of computation of strength of material, etc. It has done away with estimating, and has reduced correspondence and other clerical work to a minimum. It has done away with the necessity for new patterns, templates and jigs. It has permitted shop and storeroom organization to be made more specific and efficient, so that machinery and facilities can be utilized to better advantage and supplies ordered in larger quantities with greater definiteness and less waste.

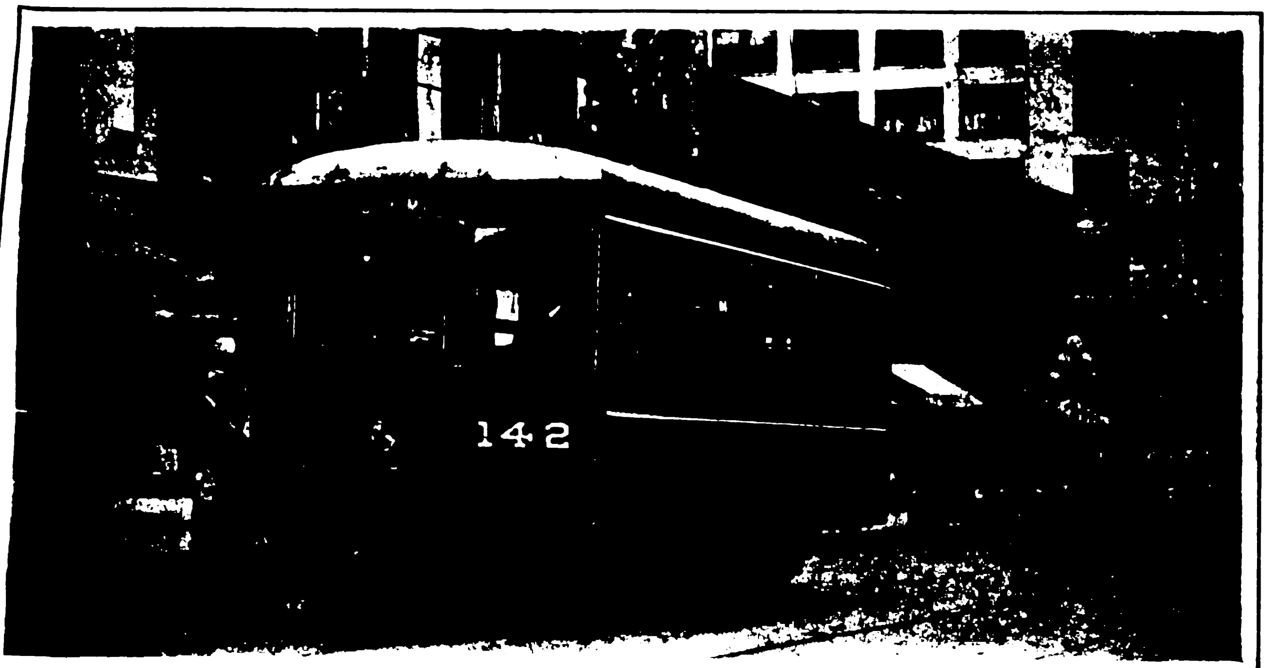
Standardization cannot help but eliminate waste, speed up production and improve the product in any line of manufacture. The comparatively short experience in standardized car construction of the modern steel framed one-man type has proved what has long been evident—*i.e.*, that cars can be built at a much lower cost and in much shorter time if they are reduced to a few standard types for the different classes of service. It is probable that structural differences between types designed for the various classes of service also can be reduced by careful planning so that parts may be interchangeable to an even greater extent.

A very promising beginning has been made in the standardization of this light-weight, one-man safety car with its two or three modifications of platforms and its one design of body. It was only to be expected that standardization in cars would begin with the single-truck, city type and doubtless it will soon show its beneficent influence in the other classes of cars. Many railway men believe that the one-man car will prove so strong a competitor of the larger types that in most cities they will soon disappear. Others consider that the double-truck car will continue to have the chief place on the larger city systems, but will be arranged to operate as a one-man car outside of rush hours.

Whatever is the outcome of the impetus given to car standardization through the success of this one-man car, certain it is that the car builders will continue to co-operate in every way to further the adoption of standard types, for it is plain that whatever benefits the transportation industry benefits the car-building industry.

> *"The field has been given in the 'safety car' a design remarkably, logically adapted to the situation and one that has hit the target of the traffic problem of the average American city squarely in the bull's-eye. What Ford did in the automobile field Birney has done in the electric car field."*
>
> —W. H. HEULINGS, JR.

Working Out the "More Service" Idea in Washington



Single-End Birney Car Used on Seattle Division

The Puget Sound Traction, Light & Power Company Has Successfully Used Light-Weight All-Automatic Safety Cars on Its Various Divisions for Supplementary Service and Better All-Day Service—Public Has Responded with Larger Patronage

WITH increased cost of service and decreased revenues, owing to higher prices of material, supplies and labor on the one hand and to automobile and jitney competition on the other, the electric railway operator has generally been confronted with the problem of making both ends meet. Increased rates, of course, would cure the condition. But increases sufficient to provide adequate income to insure all operating costs and a fair return on the investment are not possible in all cases, at least not without placing an undesirable burden on the public. Hence the electric railway operator is applying his own genius and initiative in an effort to find the way out.

The automobile has brought one thing home to electric railway managers, *i.e.*, that greater speed and more frequent service with fewer stops are popular. It is in that direction and in the operation of light-weight extra-service cars that some operators are now experimenting, using an all-automatic safety car with a single operator. Among those who are giving this type of car a careful trial is the Puget Sound Traction, Light & Power Company, which has put some of these cars into operation on its Seattle, Bellingham, Everett and Tacoma Divisions in the State of Washington.

The purpose of the experiment is to provide extra service on certain suitable lines up to the saturation point established by such extra service, and to see whether by this means increased revenues can be provided at a less proportionate operating expense. The feeling is that if this can be done accelerated and more frequent service will be furnished to which the public will respond with larger patronage, and increased operating costs will be met without asking too much of the public in the way of increased rates—provided it is done, of course, without causing serious disturbance in existing conditions. If successful the extra-service safety car will eventually mean more cars, fewer stops and more rapid movement—conditions that should meet the popular demand for service reflected in the use of the automobile and the jitney.

In addition to providing the supplementary service referred to above, the safety car has been used to replace heavier, standard cars and to give better all-day service. The conditions under which the new cars were introduced in both cases and the results accomplished in the districts served by the Puget Sound Traction, Light & Power Company are detailed below.

Seattle Division

The city of Seattle, with its population of about 300,000, is served by more than 200 miles of electric railway lines. Facing Elliott Bay, an arm of Puget Sound, with more than 6 miles of deep water frontage and well-developed wharf and terminal facilities, it is the geographical center of the Puget Sound country. A distance of 3.5 miles back from the bay lies Lake Washington, a deep body of water about 28 miles long. This was recently connected with the bay by a canal to give the largest vessels a fresh water haven.

Between bay and lake the city has extended, largely to the north, to accommodate its growing population and industries. This extension has involved new and longer lines of electric railway communication. The city is one of many hills and, in spite of very extensive leveling activities in progress for several years, many steep grades still remain. Several cable car lines have resisted the inroads of their electric railway competitors, although the inroads did not stop until the cables were all electrically driven.

With these steep grades, long lines and a congested business district, which practically all cars enter, conditions in Seattle impress the casual observer as not particularly adapted to the use of small, light cars. For these reasons, and because of some delays in securing the necessary permits from regulatory authorities, the use of safety cars in Seattle has thus far been on a comparatively small scale. The results, however, have been satisfactory.

Increasing Service 24 Per Cent and Receipts 35 Per Cent

Comparative Data of Operation on Summit Avenue Line

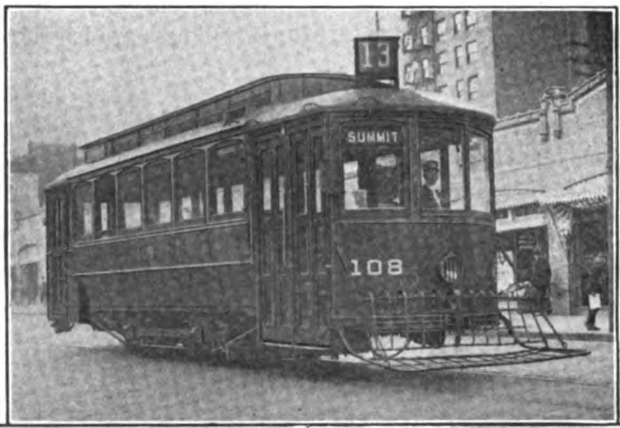
	*May 1-June 27	†July 27-Oct. 4	‡Oct. 5-Oct. 12
Car-miles per diem	661	761	834
Cars per hour	7.33	8.46	9.11
Headway in minutes (eighteen-hour average)	8.2	7.1	6.6
Longest headway in minutes	12	12	12
Shortest headway in minutes	5	5	4.5
Percentage increase in cars per hour over first period	.....	15.4	24.3
Percentage increase in receipts	.....	24.5	35.3

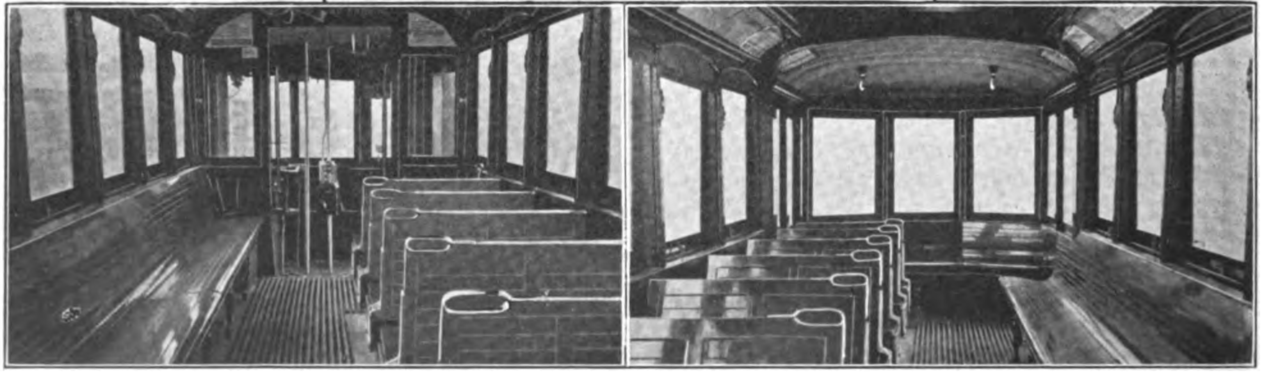
*Before either safety car was added to service. †Specimen period after Birney car was added. ‡Specimen period after remodeled car was also added.

Note—The car-miles and receipts are the average per diem for all seven days of the week. The other figures are from only the week-day schedule.

G. A. Richardson, general superintendent of railways, Seattle Division, set forth in the 1915 Convention Number of the Electric Railway Journal his belief that light, extra-service safety cars could be used successfully for heavy traffic to supplement the regular operation of cars of maximum size. He has, since then, interpolated cars of the former type with one operator among larger cars on a forty-second headway without disturbance in car spacing.

The first attempt to ascertain the possibilities of the safety car was made late in 1914 on the Ray Street shuttle. Afterward, during 1915, cars of this type were installed on the Fremont and Ballard shuttles. The following year two extra-service cars were installed on the Summit Avenue line under a city ordinance providing for the operation of one-man cars with approved safety features. These cars were routed over Second Avenue under a forty-second headway during rush hours. One of the two cars is of the single-end Birney type, seating twenty-nine passengers. The other is a remodeled, prepayment, single-truck car seating thirty-six. Both have the same safety devices. The Birney car weighs 10,000 lb.; the other weighs nearly 22,000 lb. It cost only $800 to reconstruct the larger car. The accompanying illustrations show the Birney car (No. 142), the remodeled car (No. 108), and two interior views of the latter.





"More Service"—Remodeled Single-Truck Safety Car Used in Seattle, with Two Interior Views

The installation of these two small cars on the Summit Avenue line was at different times in 1916, the first being added In June and the second in October. The table on page 492 tells the story of three specimen periods, before and after each car was added to the Summit Avenue service.

The point of this experiment is found in the addition of more service that proved to be self-sustaining. In this case the addition of 24.5 per cent of supplemental service through safety cars brought 35.3 per cent greater receipts.

It is assumed that every route produces a certain net return until a service saturation point is reached. Beyond this point the larger-type car would not earn enough from extra traffic to justify the extra service. Supplementing the service, however, by the lighter and less expensive extra-service car will pay until a new saturation point has been attained. What this new point will be, however, cannot be determined until it is seen how far the public will respond with more patronage in return for the increased service.

MORE CARS ORDERED AND BEING REMODELED

There are at the present time six single-end safety cars in operation in Seattle—two on Summit Avenue, one on Twelfth Avenue, and one each on the Fremont, Ray Street and Ballard shuttles. All of these cars operate over the entire routes.

The company has on order twenty-five single-end Birney cars and is remodeling twenty-nine more after the model of the heavier prepayment-type car now in use on Summit Avenue. It will operate them over routes adapted to this sort of supplemental service, and it expects from experience to date that the new service will double headways in the close-in districts of the city without loading the downtown trackage to capacity.

Bellingham Division

Bellingham, which has its share of hills and hollows, stretches for about 5 miles along the shores of Bellingham Bay. The waterfront is in the form of a right angle. From the vertex the city reaches back into the hills that border Lake Whatcom. Like most Western cities, Bellingham possesses generous dimensions. For this reason, and in the hope of great expansion for the city, a relatively large track mileage was deemed necessary by those who built the original lines. As a result Bellingham is favored with more trackage—26 miles—than its size really warrants.

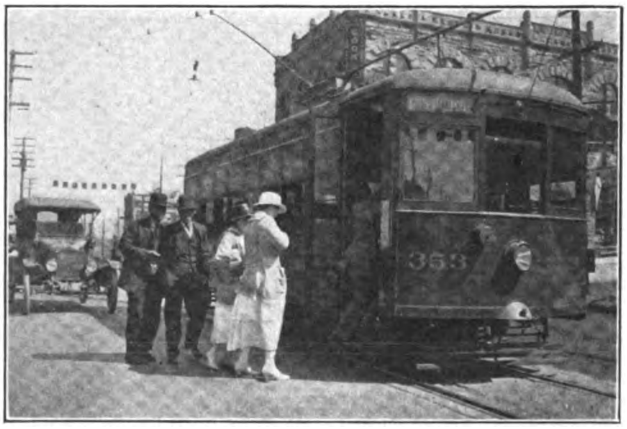
While traffic was better in pre-automobile days than it has been in recent years, the lines have not yielded a profit. The high-water mark in traffic was reached in 1913, when the average revenue per annum from a population of 27,850 was $6.84 per capita. By 1916 the private automobile and the jitney had lowered this average to $4.78 per capita. The prevalence of such carriers is well shown in the accompanying illustration.

As early as 1914, before the jitney began to widen the inroads of the automobile, L. R. Coffin, manager of the Bellingham Division, conceived the idea of a light and fast one-man car. His recommendations could not be met at that time, however, as the all-automatic type had not yet been perfected. It was not until Dec. 6, 1916, that three 13,000 lb. twenty-nine seat Birney cars displaced two thirty-six seat 23,000 lb. single-truck cars on the York-Addition crosstown line. This line is 2.5 miles long and a half mile of its middle section is on the busiest part of the city's main thoroughfare. Since the route is bisected by the business district, a large number of people have no occasion to ride more than half the line, or 1.25 miles.

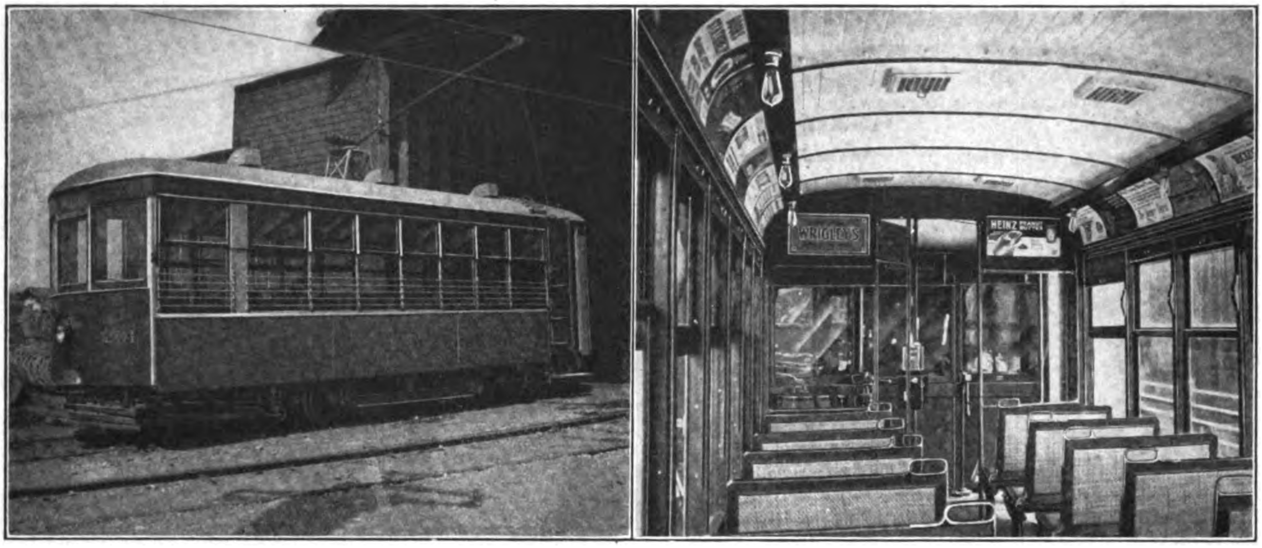
"More Service"—The Jitney and the Private Automobile Had Worked Havoc with Electric Railway Revenues in Bellingham

EFFECT ON PUBLIC AND EMPLOYEES

Public relations in Bellingham had been of the best for many years because the company took the attitude that there were no secrets about a public utility and the community met that frankness with unprejudiced fairness. When the all-automatic



"More Service"—Passengers Boarding Safety Car in Bellingham



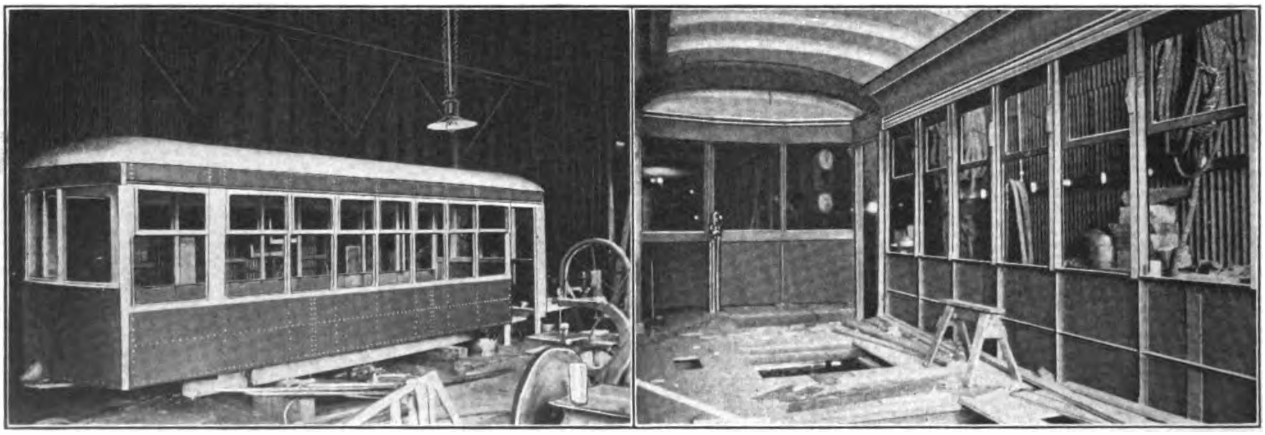
"More Service"—Exterior and Interior of Bellingham Safety Car

car was to be tried out, the management went directly to the City Council with all the whys and wherefores. The Councilmen were taken for a ride on the first car operated, and safety demonstrations were made en route. The result was that they were satisfied that the new cars meant better service and at once became boosters for them.

The Birney cars make the one-way trip of 2.5 miles four times an hour, an average speed of 10 m. p. h., including layovers. This must be granted to be unusually fast city service when it is considered that there are thirty-five safety stops in each round trip. The old cars were unable to make so good a schedule except on very light days. The increase in service, the more certain schedule, the low step and the safety features made a hit with the public, and criticisms were few and good-natured.

The appreciation of the public was shown in the form of increased traffic on the line concerned. For approximately the first five months of operation of the new cars the gross earnings showed a gain of more than 60 per cent over the earnings of the corresponding months the year before. This increase in patronage need not be considered as temporary, for experience is proving that the people are using these cars in preference to walking or automobiling. The State bonding act had eliminated the irresponsible jitneys that were unable to qualify, but some were still left on the short routes. These have now been driven off, however, not by the law but by the economic superiority of the new electric railway service.

In bringing the matter before the employees when the first cars arrived Mr. Coffin called a meeting at which he showed a chart with earnings going down and expenses going up, the curves being due to cross in two years if they continued their rush toward each other. Mr. Coffin told the men that the company had made every possible saving. If it were to attempt a saving by reducing service, it would be cutting off its nose to spite its face. It had concluded, therefore, that the only way to beat the jitney and the automobile was to increase the service by the use of a new-style light car with one operator. Mr. Coffin assured the men that the increase in traffic, car mileage and car-hours would be such that every man then employed would hold his job. After the new cars had been demonstrated, volunteers to operate them were called for. There



"More Service"—Safety-Car Bodies Being Built in Company's Shops at Bellingham

was some hesitation at first, but soon all the men preferred the new cars to the old.

RESULTS OF THE "MORE SERVICE" STUDIES IN BELLINGHAM

The success of the first cars led to a thorough analysis of the system as a whole to see how far the same benefits could be extended. In planning more service Mr. Coffin found that certain lines could be rerouted and through service applied to avoid the annoyance and time-loss of transfers. In one instance, the combined changes gave a residential district the equivalent of a ten-minute instead of an hourly service.

The "more service" studies as they affected the Bellingham electric railway system may be summarized as follows:

Regular cars increased from thirteen to nineteen.

Extra cars decreased from seven to six.

Regular car-miles increased from 781,452 to 1,117,045 (49 per cent).

Extra car-miles decreased from 73,015 to 68,650 (5.98 per cent).

Total car-miles increased from 854,467 to 1,239,695 (45 per cent).

As the greater part of the system is single track, the larger number of cars operated required more passing points, and in preparing the new schedules the management assumed that the delays occasioned by these additional passing points would about offset the speed advantages of the new cars. Hence, in the schedules for the new cars, the running time of the cars was not changed, and the car-hours have increased in practically the same ratio as the car-miles. With conditions more favorable it is believed that the new cars could make considerably higher schedule speed than the old.

THREE SETS OF MODERN CARS IN USE—ONE HOME MADE

The three York-Addition twenty-nine seat cars were made specifically for Bellingham according to Stone & Webster standards. They were built by the American Car Company. Eight cars of practically the same design were purchased from the St. Louis Car Company. These cars have two trolley poles instead of one to save time and trouble for the operator. They are now in service on the main line, which is 4.5 miles long. Six cars every ten minutes have replaced four 40,000-lb. forty-two-passenger cars every fifteen minutes. To secure more clearance for the wheel guard, the resistors have been placed on the roof under the trolley-base stand. The cars have 24-in. wheels and flush platforms.

The company itself has built eight Birney bodies under the direction of Superintendent Hickok. These have been put on the Brill 21-E trucks taken from the discarded single-truck cars, but 30-in. wheels were substituted for 33-in. Consequently these cars have a first step of 13 in., a second and recessed step of 11 in., and a platform riser of 6 in. The old 30-hp. motors and old control were also saved for service. Otherwise the cars were fitted with the Safety Car Devices Company's equipment, Johnson fare boxes, "Duraduct" fiber conduit and other Birney car appurtenances. Various car views in Bellingham are shown in the accompanying illustrations.

Everett Division

Everett is another division of the Puget Sound Traction, Light & Power Company where the "more service" idea is being worked out. Everett and Bellingham are similar in size, but Everett has advantages over Bellingham in topographical features and in the fewer miles of track required to serve practically the same population.

The town is located on a tongue-shaped peninsula, with the bay on the west and the Snohomish River on the north and the east. The possible length of ride north and south is from 3 to 4 miles, and crosstown, east and west, the main line is only 2.2 miles long. Everett has been through the whole gamut of automobile experience, from both private car and jitney. The electric railway operated sixteen jitneys and demonstrated to its own satisfaction that they were not destined to succeed electric carriers, but it also ascertained beyond doubt that frequent service was the strongest point of the jitney. Hence it has turned to the faster, lighter, more-frequent safety car as the cure for jitney competition.

WINNING EVERETT BACK TO ELECTRIC RAILWAY TRAVEL

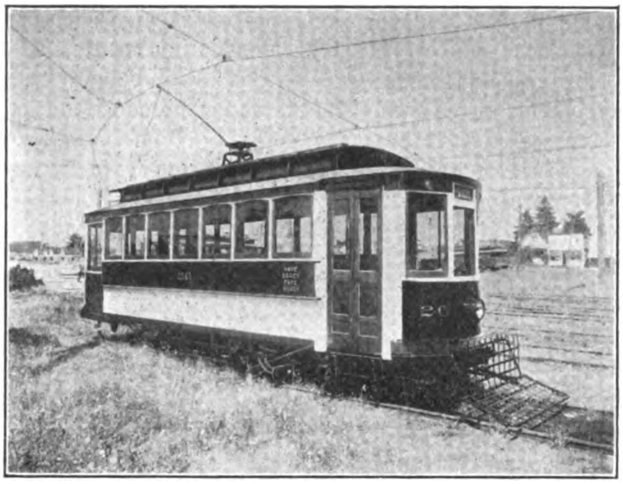
The first effort to provide this was the substitution in March, 1915, of two remodeled single-truck cars, weighing 22,000 lb. each, for one double-truck car. In October of the same year two more remodeled cars were put into service. In October, 1916, four Birney cars were installed. Service on the River-Bay Side line was then furnished with six one-man cars, as compared to the old service of three two-men cars, and the headway was lowered from ten minutes to six minutes. The result of practically doubling the service was that the jitneys disappeared and the average daily earnings on this short line increased from $77 to $100. The platform force remained stationary, and the car operators received an increased hourly wage, as is the case for the same class of service on all of the other electric railway properties under Stone & Webster management.

The first four Birney cars were single-enders of twenty-nine seat capacity and weighed only 10,000 lb. each. They replaced double-truck cars weighing from 48,000 to 50,000 lb. The influence which these four 10,000-lb. cars and the four remodeled 22,000 single-truck cars had on the system as a whole by displacing big cars is shown by the fact that in April, 1916, the average kilowatt-hours per car-mile were 3.81 and in April, 1917, 3.01. Another way of expressing this saving is to state that the instantaneous demand basis upon which the company buys power was reduced by 85 kw.

What the saving in paving and track upkeep will be can only be conjectured. It can be said, however, that 60-lb. rails, whether in brick, block, concrete or asphalt pavement, have not stood up under the shock of cars weighing 48,000 lb. or more. In fact, track put down in 1911 has already required complete overhauling instead of giving twenty years or more of real service.

Besides having four Birney cars in use, the company has ten on order. Eight of these, like the four already in operation, will be single-end for loop line use. The other two will be double-end cars, weighing 13,000 lb. and seating thirty-five people. Four single-truck cars of the remodeled type with the two new ones will care for all double-end operation. Thus, when the change is complete, Everett will have fourteen new and four remodeled single-truck safety cars in place of nine double-truck and four single-truck cars.

The carrying out of the "more service" idea and various industrial changes in Everett have led to considerable rerouting. The Lowell line, the longest in Everett, is still operated with double-truck cars. The old smelter line has been looped by way of the interurban station, and a ten-minute service substituted for the former fifteen-minute service. The Colby line has also been rerouted to meet industrial changes, and its headway altered from ten minutes to eight minutes. The rerouted Lowell line is 3.75 miles long, the smelter line 3 miles, the Colby line 2.6 miles and the River-Bay Side line 2.2 miles. Part of the travel of all lines is to the business center.



"More Service"—Remodeled Safety Car Operated in Tacoma

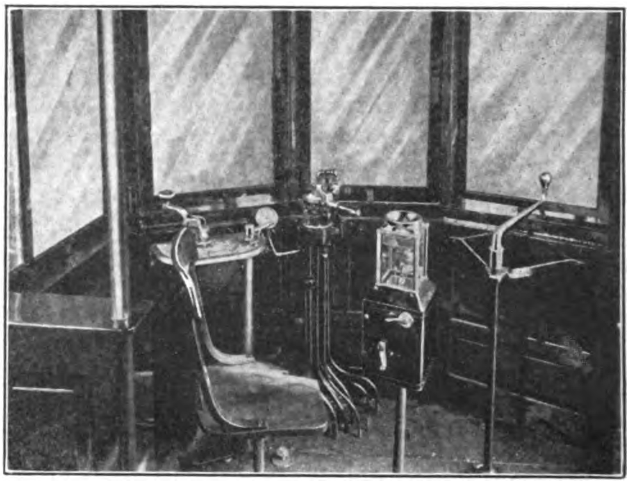
In short, it can be said with certainty that the "more service" plan, combined with the idea of a "car in sight," is winning Everett back to the electric railway car.

Tacoma Division

At this time Tacoma is operating six cars which were remodeled for "more service" operation. They have all the safety features, including air brakes, deadman's controller handle, pneumatically operated doors and steps, etc. The alterations, including the air brakes and prepayment facilities for double-end operation, cost approximately $1,300 per car.

The original cars were of the convex-concave-side type with monitor roofs and drop platforms. They were equipped with Brill 21-E trucks and GE-58 motors and were operated with hand brakes. The changes made in the car body proper included the removal of the bulkheads and the rearrangement of the seats. The bulkheads were cut off at the height of the inside window sills, the lower portion being cased over and a 1-in. pipe stanchion extended from each section to the end plate. This is arched to conform to the contour of the roof. The opening between the stanchions is 36 in.

Furthermore, for the reason that the width as measured between the posts at the floor line is only 6 ft. 4 in., it was necessary to retain the longitudinal seats along one side of the car. Cross seats were provided on the opposite side. The original stationary steps and manually operated doors on both sides of the car were removed, the left side of each platform was closed and a stationary window installed in its place. On the right side a two-leaf folding door, which swings out and against the body corner post, was installed.



"More Service"—Front Platform of Tacoma Remodeled Safety Car

Public Is Pleased—More Cars Ordered

These remodeled cars, views of which are shown herewith, are operated in Tacoma at one-half the former headway, and a great increase in traffic—approximately 100 per cent—has been effected. The public is well pleased with their operation.

Thirty-two Birney cars on order will be installed in connection with important improvements in headway—50 per cent or better. They will replace cars weighing 39,000 to 46,000 lb. and seating an average of fifty-two passengers. It is intended to run these cars on Sixth Avenue, Pacific Avenue and K Street. The Sixth Avenue line has a five-minute minimum headway to-day and this will, of course, be cut deeply by the change. The other lines are now on fifteen-minute headways.

Looking Through the Cedars at the Bay

Meeting the Menace of the Private Automobile at Corpus Christi

Within Two Years the Doubling of Service with the New Light-Weight Cars Improved Public Relations and Brought a Permanent Increase in Traffic of More than 30 per Cent in a Town Where Automobile Riding Was Three Times as Great as Car Riding

FAR down in the southwestern corner of the United States lies Corpus Christi, Tex., along the bay of the same name and adjacent to a country rich in agriculture and just developing gas fields. There are no town industries of importance, Corpus Christi being in many respects a seaside pleasure resort like Atlantic City. The population is about 20,000.

In 1910 an electric railway promoter came to town and blissfully laid down some cheap unbonded rail, paid 3 cents per kilowatt-hour at the a.c. end for energy, bought big, heavy second-hand cars and installed a fifteen to twenty-minute service as his ideal.

When the present owners took hold in the early part of 1914 they found that the real problem was to draw traffic away from the private automobile. In a town like Corpus Christi, neighborly feeling is so highly developed that even the stranger who is observed waiting for a car is invited to step in and ride! The numerous realty men have actually cultivated this practice as a means of business solicitation. The physical configuration of Corpus Christi and the newly-paved streets have also helped the automobile. Although the town is 4 miles long, there is only one outlet at each end to divide the automobile traffic.

OLD VERSUS NEW ROLLING STOCK

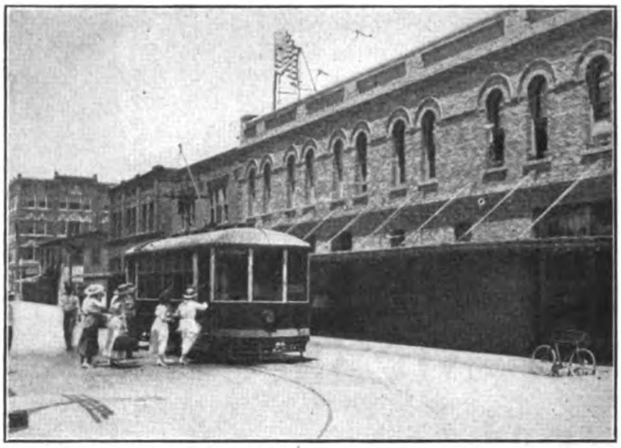
The old rolling stock comprised nine two-men cars, some single and some double-truck, with motor outfits ranging from two 35 hp. to four 50 hp. per car. These cars were built over for one-man service by inclosing the rear. They all had longitudinal seats except one Narragansett-type open car. The latter was rebuilt by installing sides and screens and replacing the benches with slat cross-seats.

The regular travel, however, is now handled with eight cars purchased during 1915 from the Southern Car Company. These cars are 26 ft. over all, weigh fully equipped about 12,000 lb. and seat twenty-eight passengers. The equipment includes Philadelphia radial trucks, of 9-ft. 6-in. wheelbase and 24-in. wheels, two of the original 17.5-hp. Westinghouse "Wee" motors and National "Featherweight" compressors. The remarkable ability of the motors is attested by a case where a load of 101 soldiers (eighteen of whom were on the roof and eleven on the fenders) actually could not prevent the car from climbing a 6 per cent grade.

A typical comparison between old and new cars showed 1340 kw.-hr. for 1611 car-miles for the new one-man cars, or 0.83 kw.-hr. per car-mile, as compared to 2000 kw.-hr. for 1112 car-miles for old cars carrying two 35-hp. motors, or 1.8 kw.-hr. per car-mile. On the basis of 2 cents per kilowatt-hour for energy, the difference in cost is quite perceptible.

There is no question that the public is pleased with the new one-man cars. The number of stops per mile averages but six, and the schedule speed of 8 m.p.h. answers all local requirements. As a matter of fact, the operator has just enough to do to keep him attending to his business. Sterling fare boxes of locked type are used, for every car passes near the company office every half hour and even at night change can be secured from a local drug store.

Corpus Christi—The Residences on South Broadway Do Not Harbor Natural Street Car Users



Corpus Christi—View of Passengers in Act of Boarding New Light-Weight Car

Most of the fares are cash, as tickets are sold only on the basis of forty-five for $2.

HOW SERVICE AND REVENUE HAVE INCREASED

The company now operates five routes with a ten to fifteen-minute service on each. Through overlapping, however, the service for thirteen squares in the heart of the town is on a five-minute basis. Since the beginning of one-man car service the gross earnings have gone up with a bound. For the first three months of 1916 they increased practically 30 per cent as compared to the first three months in 1915. The increase over later corresponding periods has been still greater, but the three months noted will serve as an index because they were for periods of 1915 and 1916, which were not complicated by extra travel due to conventions, militia encampments, etc.

During January of this period the earnings per car-mile were 11.2 cents in 1916 as compared to 13.1 cents in 1915, but the expenses per car-mile were only 9.95 cents instead of 13.38 cents. Incidentally, 22,849 car-miles were run in January, 1915, and 37,845 car-miles in January, 1916, an increase of about 70 per cent in mileage, although the power bill rose only 14 per cent. The heavy military riding in February, 1917, brought the gross earnings to 17 cents per car-mile, while the expenses amounted to 12 cents per car-mile.

Comparison of the period from July 1, 1916, to March 1, 1917, with the corresponding previous eight months shows a gain of 31.1 per cent in gross earnings and an increase of only 4.7 per cent in operating expense—the latter including the cost of building 1200 ft. of temporary track to a military camp. During this eight-month period the company carried 1,020,247 passengers with 278,900 car-miles as compared to 836,124 passengers and 241,043 car-miles in the corresponding eight months the year before. The gross earnings per car-mile were 16 cents and 14 cents respectively, and the expenses per car-mile 11 cents and 12 cents. Thus the net

Corpus Christi—Looking North on Chapparral Street, One of the Main Thoroughfares earnings increased from 2 cents to 5 cents per car-mile.

In short, the condition has changed from practically no net to a fair return on the investment.

A ROAD WITHOUT ACCIDENTS OR LITIGATION

The original company was always in hot water with the public, and some hangover suits are still pending against it. The present company has not had a single platform accident of any kind. Its only accident expense is caused by collisions with vehicles. These are due in part to the fact that the use of inclined runways at street crossings keeps traffic to the middle of the street rather than near the curb. If the manager cannot convince the automobilist that he is at fault "for bumping my street car," a modest settlement is made. The accident costs to date have been as follows: July 1, 1914, to June 30, 1915, $341.85, or 0.7 per cent of gross earnings; July 1, 1915, to June 30, 1916, $408.75, or 0.8 per cent of gross earnings, and July 1, 1916, to Feb. 28, 1917, $176.10, or 0.4 per cent of gross earnings.

OTHER PROOFS OF GOOD PUBLIC RELATIONS

That the presence of enough clean, bright cars to give ample service and the absence of accidents have had a direct effect on public relations is proved also by the change in sentiment concerning tax assessments and track foundation standards. Taxes are levied separately for the city, county and schools. When the assessors come, the manager escorts them over the property and explains why this or that item should be reduced. Differences in valuation are reconciled upon the ground, no reason being left for later protests and bickerings. The 1916 assessments were from $9,000 to $13,000 less than in 1915.

In the case of track foundations, the city formerly required the use of wooden ties, a 7-in. rail and bitulithic-covered concrete to a total depth of 21 in. The railway built 2 miles of this at $7 a running foot. For the next 2 miles it was allowed to use Carnegie steel ties, which saved 3 in. of concrete and cost $6 a running foot. To-day the company is permitted to use on the outer lines a broken-stone ballast with bitumen macadam, which costs only $3 a foot. These savings are the direct result of better relations, as the railway has no choice but must follow Council regulations. The first rail laid was 70 lb.; the later rail, 60 lb. The company is also obligated to pay for the paving up to 1 ft. outside the rails. It uses Nelsonville filler and stretcher block on the inside and two wood blocks, each 4 in. wide, on the outside.

RELATIONS WITH THE MEN ARE GOOD

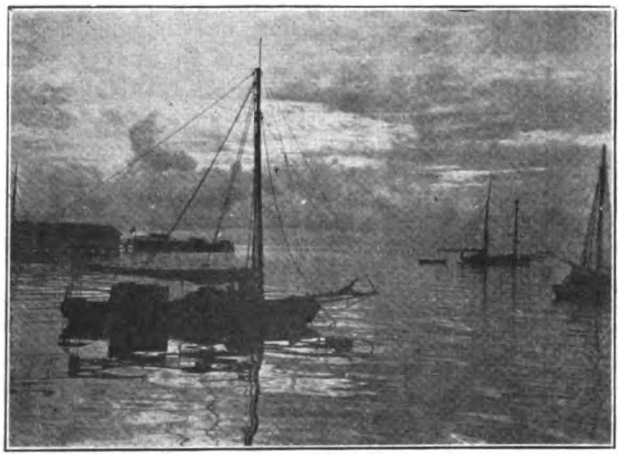
Relations with the men are as agreeable as those with the public. When the employees petitioned for an increase in 1915, they said that they knew the company was not making money, but they felt that an increase would make them better workers, as it would relieve them of financial worries. The increase was granted. That the men are satisfied appears from the fact that their average service is now four years and no new man has been fired for a year. The present wage scale follows: First six months, 17 cents an hour; second six months, 18 cents; second year, 20 cents; third year, 23 cents; fourth year, 24 cents; fifth year, 25 cents; sixth year, 26 cents. It will be noted that this scale is intended to keep off the floater, attract the country boy and hold men after they have become experienced.

ORGANIZATION OF COMPANY

The present company, known as the Corpus Christi Railway & Light Company, is owned by Philadelphia capitalists. It is the successor of the Corpus Christi Street & Interurban Railway and also of the People's Light Company and the electrical end of the Corpus Christi Ice & Electric Company.

In this connection, as an additional testimonial of the effect of service upon public relations, it should be noted that the consolidation of the lighting interests with the railway passed very favorably the test of public opinion in Corpus Christi. A special enabling act of the State Legislature was secured to authorize the amalgamation, but the consent of the citizens was also required. Needless to say, it was secured. Out of about 800 votes cast, only seventeen were opposed to the company's plan.

During 1914 and 1915 three scattered power plants of the company were discarded in favor of one plant. This is equipped with one 400-kw. Buckeyemobile and two 150-kw. Diesel engines, aside from stand-by reciprocating engines. The fuel used is Mexican oil, which permits energy to be generated at a cost of less than 1 cent per kilowatt-hour.



Corpus Christi—Moonlight Boat Scene on the Bay

Operation of Frequent Service Cars in Large Cities

The Author Presents Estimates Based on Actual Cases to Show That There Is a Field for These Cars in Many Such Cities

By J. C. Thirlwall

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General Electric Company
Schenectady, N. Y.

NO problem before the electric railway industry is so insistent for immediate solution as that of continuation in business without an early increase in rate of fare. Many companies have declared present fares impossible, and are asking their regulatory bodies for permission either to raise fares or to charge for transfers. Every means possible must be adopted to permit the electric railways to continue and extend their service, whether the means chosen is relief from certain unnecessary burdens, additional compensation or freedom to adopt new operating methods, or all three. And this permission must be given at the "sacrifice of habit" which, as a recent editorial in the ELECTRIC RAILWAY JOURNAL pointed out, is the chief obstacle to securing such relief. It is chiefly the "resistance of habit" which will delay the general adoption of the recently developed single-operator light-weight safety car. Manufacturers are always seeking new tools of greater working capacity to lower their costs of production; cars are the tools with which the railways work. The safety car is essentially a new tool with which more transportation can be manufactured for a given cost. It is the response of the brains of the industry to the demand for greater efficiency.

GENERAL ECONOMY OF FREQUENT-SERVICE CARS

By way of illustration of the possible savings due to the use of the one-man car we may assume that it seats two-thirds as many people as the usual city car and costs one-half as much per car-mile to operate. Obviously then the cost per seat-mile or per seat-passenger is less. To put it in another way, assume that two usual forty-four-passenger cars carrying a full-seated load for 5 miles cost $1.70 to operate for this distance (which is fairly close to the average). Then the operating cost per passenger is 1.93 cents. Three thirty-passenger cars could carry the same number of people for $1.28, or at a rate of 1.42 cents per passenger. This estimate is based on maximum conditions, of course, because average loads equal to the seating capacity of the car are hardly ever obtained outside of rush hours or holiday traffic.

If the two forty-four-passenger cars carried only thirty people for the same distance, then the cost per passenger would be 5.67 cents, whereas two twenty-nine-passenger cars could carry them for 2.83 cents. In the opinion of the writer the average value would lie somewhere between these extremes, probably about 4.5 cents for the large car and 3 cents for the small one. The inclusion of fixed charges would increase the relative difference.

From considerations like the above it appears that the substitution of the light-weight cars should result in a reduction of at least one-third in operating costs when handling any given number of people. It is the belief of the writer that the only limitations to their universal employment on the surface lines of cities of any size will be those imposed by congestion. In other words, they can be employed advantageously on any line where their mutual interference because of short headways does not overbalance the greater speed possibilities on the non-congested portions of the run. In most cities of less than 100,000 population, and in many considerably larger, there are no lines on which these cars cannot be used advantageously. In all other cities, even up to the largest, there are many lines where such cars could be used for part of the day or all day long to the mutual advantage of the operators and of the public.

The practicability of operating these cars on lines of fairly heavy traffic, but where headways are rather long, has been demonstrated, but many operators feel that on lines with extremely heavy rush traffic, particularly where such lines run through the business section in common with other lines having a very short headway between units, the use of smaller cars with one-man operation would slow down schedules to a prohibitive degree. There are undoubtedly headway limitations, as is illustrated on lines like Broadway, New York; Fulton Street, Brooklyn; Market Street, San Francisco; Broadway, Los Angeles; State Street, Chicago, and similarly heavily congested thoroughfares in the larger cities of the country. Here a reduction in speed is caused by cars running so close to each other that each one has not only to make its own passenger stops, but many extra ones due to its closeness to its leader. This matter deserves further consideration here.

HEADWAY LIMITATIONS

It is axiomatic that if a new type of car is adopted, and especially of a smaller size and resembling in outside appearance the "dinkies" which have been gradually disappearing, the number of seats per hour during the periods of heavy traffic must not be reduced as a result of their adoption. Therefore, in any given rush-hour period more of the smaller cars will have to be operated. For instance, if between 5.30 and 6 p. m. sixty of the forty-four-passenger cars have been leaving the downtown district, carrying away 2640 seated passengers, at least ninety of the smaller cars will be required in the same period to avoid public complaint. This would mean relative headways of thirty seconds and twenty seconds respectively, if the entire number ran for any space along the same street, and if the common portion were short such operation would probably be practicable. A somewhat shorter headway can undoubtedly be employed with a quickly accelerating and braking car than with the usual type, the reasons for which will be shown further on. It is almost self-evident, however, that if the length of the run where extremely short headways prevail with large cars, is considerable, and if it includes a large number of heavy loading points, any shortening up of headways may mean a very serious reduction in speed. No general rule can be formulated by which we can say at just what point the use of the large cars becomes preferable, since local conditions vary so widely. A 10-second headway for a space of one block would be less serious in its effect on schedules than a thirty-second headway over a half-mile stretch.

But the impression has been so general that these small "one-man" cars are simply a "small-town" proposition that an analysis of their possibilities in the larger cities should be of interest. The writer is firmly convinced that there is a field for their use on some lines in any and every city in this country. For this study three cities having widely varying characteristics, both in physical and operating conditions, and ranging in population from 250,000 to 500,000, were selected. In all three cases the data on which the figures shown are based were secured at first hand by the writer and discussed with engineers and officials of the companies. The conclusions reached and presented later in this article were approved, in the main, by the operators. They represent, therefore, the consensus of opinion of some of the most experienced and able operators in the country.

DISTINCTIVE FEATURES OF THE NEW CARS

Before taking up any specific problem, however, let us consider some of the distinctive and universal differences in service given with the present and new types of cars. The feature that has received the greatest prominence in most discussions of these cars heretofore is their "one-man" operation. The safety features which are an essential part of the car design, and the size and arrangement of the controlling apparatus, facilitate the operation, and by reducing the manual labor of the motorman make it far easier for him to perform additional duties without interfering with the car's movement and without sacrificing safety.

One-man operation in very small cities, or on lines of very light traffic elsewhere, in cars of ordinary design, has in many places been successful for many years past. The special features of such designs as the Birney type simply make it possible to handle heavy traffic and fast schedules with a single operator, and help to overcome a common objection of many public service bodies or of city councils to such operation, since these cars are obviously safer than the ordinary car with two men. The reduction in platform costs which can be thus secured is a very important item.

Yet great as this economy is, it is less than half of what can be secured. The ordinary cars with two-motor equipments and maximum-traction trucks used so widely in our cities weigh between 34,000 and 38,000 lb. Four-motor cars (except those brought out during the past two or three years) weigh from 44,000 to 48,000 lb. The Birney car weighs less than 13,000 lb. Hence the replacement of the heavier cars with these, even with 50 per cent more units, means a reduction of from 50 per cent to 60 per cent in the weight upon the rails. This will result in economies in power consumption, and in track, line and equipment maintenance. As a general rule these combined economies will more than equal the platform saving. To put it another way, if a reduction from 16 cents per car-mile to 9 cents per car-mile can be secured in operating costs, only about 3 cents of the reduction will be platform and 4 cents will be in economies due to weight, and in many cases the latter will be double the platform saving.

THE AUTOMATIC CAR A TRAFFIC BUILDER

The really vital feature of difference is not the economies that can be effected through the use of these cars, but the fact that because of their low cost of operation and by reason of their greater inherent speed possibilities they enable a company to give a greatly improved service to the public, and thus they become traffic builders. They enable the railway to secure the traffic carried by private automobiles and jitneys. In fact, it is the return of these riders to the electric cars that is the most significant feature of the reports from Fort Worth. Corpus Christi, Tacoma, Seattle, Bellingham and other places, following improved service, as indicated by the increased earnings of the lines on which such service was inaugurated.

If we agree that rush-hour seating capacity with the small cars must be equal to or greater than was previously given with larger cars, it follows that with the greater number of cars on the line each will carry a smaller number of passengers and therefore make fewer stops per trip. Since the chief limitation in schedule speed is the number of stops made per mile, this one difference alone would enable a faster schedule to be operated; but in addition, the small cars can comfortably accelerate and brake at rates which are impracticable for two-motor double-truck cars, and beyond anything regularly used with standard four-motor types. In Fort Worth and in Bellingham, the average normal rate of both braking and acceleration is 2.5 m.p.h.p.s., which is 60 per cent higher than the average rate with double-truck cars. This again tends to in-

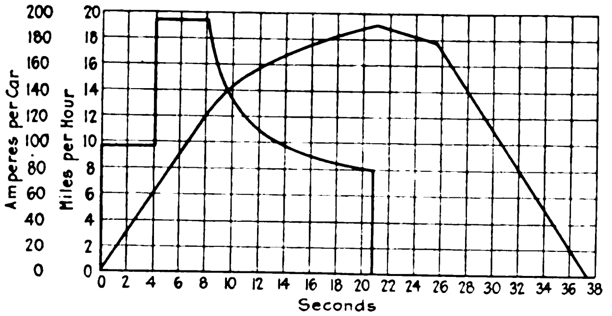


Fig. 1—Time-Speed and Time-Current Graphs for Forty-four Passenger Car Equipped with Two 60-Hp. Motors

Weight of car with thirty passengers, 40,200 lb. Average voltage at car, 515. Car coasts 20 per cent of distance. Friction with power on, 20 lb. per ton. Coasting friction, 25 lb. per ton. Accelerating and braking rates, 1.5 m.p.h.p.s. Free running speed, 25.2 m.p.h. Stops per mile, eight. Average duration, eight seconds. Schedule speed, 9.9 m.p.h. Power consumption at station, 3.4 kw.-hr. per car-mile.

crease the schedule speed considerably, and in combination with fewer stops enables a very marked reduction in running time to be made.

This should be assisted by still another factor—a somewhat higher effective voltage. Since line-loss voltage drop varies directly with the current taken, the reduced load will eliminate a considerable portion of the drop between the station and the car.

Relative Speed and Power Performances

A series of graphs have been plotted representing the relative performance as regards speed and power consumption of the small safety car compared with three types of double-truck cars, very widely used in the larger cities. The two most widely used types usually seat about forty-four passengers and are equipped either with two 50/60 hp. motors mounted on maximum-traction trucks, or with four 40/50 hp. motors mounted on M.C.B. trucks, both cars using 33-in. wheels. The performance of these two under average heavy traffic conditions, that is handling average loads of thirty passengers and making eight stops per mile, is shown on graph sheets Fig. 1 and 2, respectively.

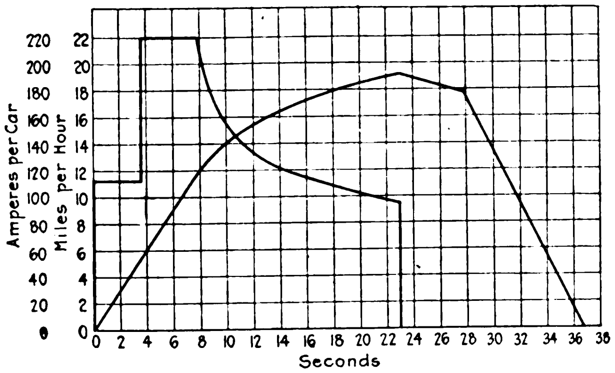


Fig. 2—Time-Speed and Time-Current Graphs for Forty-four Passenger Car Equipped with Four 40-Hp. Motors

Weight of car with thirty passengers, 48,200 lb. Average voltage at car, 500. Car coasts 20 per cent of distance. Friction with power on, 20 lb. per ton. Coasting friction, 25 lb. per ton. Accelerating rate, 1.5 m.p.h.p.s. Braking rate, 2 m.p.h.p.s. Free running speed, 27 m.p.h. Stops per mile, eight. Average duration, eight seconds. Schedule speed, 10 m.p.h. Power consumption at station, 4.34 kw.-hr. per car-mile.

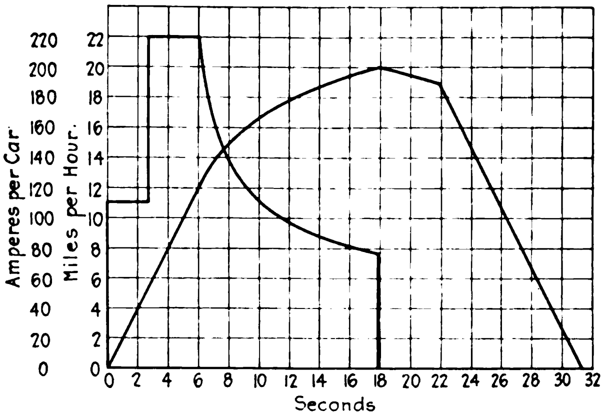


Fig. 3—Time-Speed and Time-Current Graphs for Fifty-four Passenger Car Equipped with Four 25-Hp. Motors

Weight of car with thirty-five passengers, 36,900 lb. Average voltage at car, 525. Car coasts 20 per cent of distance. Friction with power on, 20 lb. per ton. Coasting friction, 25 lb. per ton. Accelerating and braking rates, 2 m.p.h.p.s. Free running speed, 26 m.p.h. Stops per mile, nine. Average duration, seven seconds. Schedule speed, 10.4 m.p.h. Power consumption at station, 3.66 kw.-hr. per car-mile.

A more recent type, very widely adopted during the past two years, is the four-motor, low-wheeled car seating from fifty to fifty-six passengers, but with all weights cut to a minimum, designed for quick loading and unloading, and for fairly rapid acceleration and braking, the whole representing the most advanced ideas in "big-car" design. Its performance is shown on graph sheet Fig. 3. Graph sheet Fig. 4 shows the performance of the low-wheel, light-weight, small size safety car.

Some slight explanation of the assumptions made in each case may be in order. For purposes of calculation the average passenger load in each type of car has been taken at about two-thirds of its seating capacity, which by actual experience has been found to agree fairly closely with what is met with during daylight hours on most lines. For two-motor double-truck cars, the average acceleration and braking rates seldom exceed 1.5 m.p.h.p.s. because of the limitations of traction on slippery rails, and the schedules have to be based on such rates.

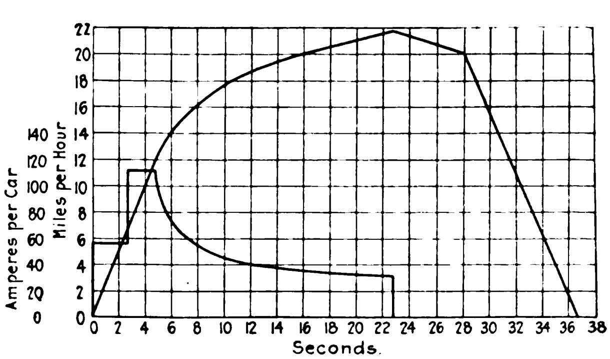


Fig. 4—Time-Speed and Time-Current Graphs for Thirty-Passenger Car Equipped with Two 25-Hp. Motors

Weight of car with twenty passengers, 15,800 lb. Average voltage at car, 550. Car coasts 20 per cent of distance. Friction with power on, 25 lb. per ton. Coasting friction, 30 lb. per ton. Accelerating and braking rates, 2.5 m.p.h.p.s. Free running speed, 25.5 m.p.h. Stops per mile, 6.5. Average duration, seven seconds. Schedule speed, 12.9 m.p.h. Power consumption, 1.29 kw-hr. per car-mile.

With four-motor equipments, rates of 2 m.p.h.p.s. have been frequently used, and such braking rates are regularly used. In the case of a very large proportion of such equipments now in service, however, non-commutating field motors are used, the commutation of which limits the rate of feeding, especially in the frequent cases where an improper gear ratio is used. The result is that with very few exceptions, the normal rate of acceleration on these cars is only about 1.5 m.p.h.p.s. I have accordingly used this rate on graph sheet Fig. 2.

For the lighter weight four-motor car, with its lower center of gravity and modern motor equipment, 2 m.p.h.p.s. has been used for both acceleration and braking, which is about as high as can be used without passenger discomfort, due to the pendulum effect of the body mounted on movable bolsters. With the extremely light-weight non-surging single-truck car, using motors which have a comparatively high internal resistance compared to that of the rheostats and so tend to smooth out the current and torque variations during rapid notching up, normal rates of 2.5 m.p.h.p.s. for both acceleration and braking can be, and are being, used without discomfort or danger to passengers.

In regard to stops and their duration: in fairly heavy service, eight stops per mile, including slowdowns, may be regarded as normal for a forty-four passenger car, and, except on those specially designed for quick loading, their average duration will vary from seven to nine seconds. With the large-capacity cars recently developed, increased average loads will tend to raise the number of stops slightly; but, on the other hand, the elimination of steps and of drop platforms, and the use of wider door openings have cut down the duration of stops, which usually average with fairly heavy riding about seven seconds. The smaller cars carrying only two-thirds as many people as the ordinary type should and do make fewer stops. This reduction has been taken at 20 per cent.

An analysis of the relation between passenger loads and number of stops per trip is contained in the American Electric Railway Association Proceedings for 1913, in the report on the Newark tests. This shows that with a reduction in average load from thirty to twenty passengers, or from seventy-five to fifty, which are the relative average and heavy loads of the forty-four and thirty-passenger cars respectively, there will be a decrease of about 20 per cent in the number of stops. So if the forty-four-passenger car makes eight stops per mile, the smaller unit on shorter headway will average about 6.5 stops.

Traffic slowdowns, resulting from vehicular interference, tend to bring the effective stops somewhat closer together, but unless a large part of the run is along a business thoroughfare the effect of such interference will not seriously impair the advantage of the small car. In a similar manner, an increase in average load on the fifty-four passenger as compared with the forty-four-passenger car, will raise the average number of stops made by 10 per cent or 15 per cent. These conclusions are borne out by comparisons between stops made on the same line, with large and small cars, in Fort Worth, New Orleans and other cities.

The advantages of the quick-loading design in the safety car, combined with the reduced number of passengers boarding at each stop, keeps the duration of stops down. In spite of one-man operation in Fort Worth the average duration is less than six seconds, and I have assumed seven seconds for the calculations.

The time per passenger boarding will obviously be somewhat longer with one-man operation if there is any considerable amount of change-making or issuing of transfers to be done. However, experience in most cities shows that once the public becomes accustomed to prepayment operation, the majority of passengers have the correct change ready on boarding the car. As to transfers, if a simplified system be used, involving no elaborate punching, the transfers can be prepared for each trip during the layover period, and handed out while the car is in motion or while passengers are alighting, which is common practice on many two-man systems.

But if there were no reduction in headway with the smaller cars, it is fairly certain that with each car carrying the same number of passengers as did the larger ones the average duration of stop would be appreciably increased and that this would to a large extent offset the increased schedule speed obtained by higher starting and braking rates. It would then be difficult or impossible to shorten running time.

Running friction has been assumed to be 20 lb. per ton for the larger cars, and 25 lb. per ton for the smaller; coasting friction as 5 lb. per ton higher. The amount of coasting in each case has been made the same proportion of the distance run.

The graphs represent comparative schedule speeds without layovers, based on passenger stops only. Traffic stops or slowdowns and layovers will affect each in a similar manner—reducing the theoretical schedule by say 10 per cent. The comparative speeds and energy consumption values, however, are relatively accurate. With the allowance for delays and layovers mentioned above, the practical schedules for the four types would probably be about 8.9 m.p.h., 9 m.p.h., 9.4 m.p.h. and 11.6 m.p.h. respectively, but the energy consumption figures would probably remain fully as high as those indicated due to the fact that the average motorman does not handle his car with 100 per cent efficiency

The energy consumption of the frequent-service car, therefore, when making the faster schedule will be about 38 per cent of that of the typical two-motor double-truck car; about 30 per cent of that of the heavy four-motor car; and about 35 per cent of that of the modern light-weight four-motor equipment. This saving alone taken at 1 cent per kilowatt-hour (which in general is a fair cost at the d.c. switchboard) amounts to from 1.3 cents to 3 cents per car-mile.

The platform savings compare about as follows:

Assume that the typical large car averages 9 m.p.h. for eighteen hours daily and 365 days a year at 60 cents per hour for crew wages. The annual platform cost is $3,950 and the cost per car-mile 6.7 cents. We will assume that the operator of the frequent-service car will be paid 10 per cent more per hour than either member of the two-men crew or 33 cents per hour. To be conservative, we will assume that the car will run at 11 m.p.h. for the same number of hours as the other, at an annual platform cost of $2,160 or a cost per car-mile of 3 cents, a saving of approximately 3.7 cents per car-mile.

Comparison of Operating Results Promised by the Light-Weight, Safety Car as Compared with Cars of Usual Types:

General Data	Usual Types	Safety Type
Weight per seat, lb....	800-1100	430
Relative schedule speed, per cent	100	120
Data on Car-Mile Basis, in Per Cent		
Energy consumption ..	260-330	100
Track maintenance cost	200-250	100
Equipment maintenance cost	160-180	100
Accident expense	200	100
Platform labor cost....	220	100
Total operating cost, including general expense	200	100
Relative earnings	100	82
Operating ratio	66	40

Easier Operation, Better Wages

An increased wage to the operator of the safety car usually has been given as compensation for the increased complexity of the duties and the greater responsibility necessarily assumed. The manual labor is not increased, and for a motorman is less; the operation of doors and brakes by air controlled by the same valve handle, and the small size of the controller make it easy to handle the car while seated in a comfortable seat with chair back. The men who are now handling these cars seem to regard the contact with passengers, the watching of the fare box and the occasional making of change or issuing of transfers as a relief from the monotony of car running. A greater mental alertness is required, but the men of the required higher grade are attracted by the increased wage.

All Maintenance Will Be Less

As to maintenance it is obvious that the smaller weight and bulk of the new cars will reduce ordinary body and truck maintenance. The cost of painting, for instance, would be only about two-thirds as great as on a 47-ft. car; the cost of washing and cleaning would be proportionally reduced; repairs to windows, seats, flooring, etc., would show proportionate reductions. There are only four 24-in. wheels to renew, instead of eight larger and heavier ones, and the mileage of the small wheel will usually equal that of the large one according to records already available. Brakeshoe wear is, of course, much less. Two small motors in place of two or four larger and heavier, and frequently of obsolete design, mean a considerable reduction in repair cost.

All these factors combined make it fairly certain that the total cost of equipment maintenance, including carhouse expenses, inspection, car cleaning and lubrication will be materially reduced from the usual figure of 1.5 to 2 cents per car-mile. Records indicate that it will be less than 1 cent and the savings therefore will be from 0.6 cent to 1.1 cents per car-mile.

On the effect of reduced weights on the rails, roadbed and overhead structure it is more difficult to speak with certainty. Clearly with a reduction of more than 50 per cent in the daily or annual ton-miles, there will be far less wear on special work and joints. Renewals of rails could be made in many instances with lighter sections, if small cars were operated exclusively, and less depth of ballast would be required. Since trolley wire wear is due almost entirely to arcing at the trolley wheel, the smaller current carried will reduce this to a minimum. In view of these factors, some competent engineers assert that the maintenance of way and structures would be at least directly proportional to the weight carried over the rails; others say that a reduction of 50 per cent in the weight would result in not more than 25 per cent saving. The writer feels that on a car-mile basis, a reduction of 67 per cent in weight should mean a 50 per cent reduction in maintenance, or that the ordinary figure of about 2 cents per car-mile would drop to about 1 cent.

Fewer Accidents Will Occur

There should be a material saving in accident expense also. The use of folding doors and steps interlocked with the brakes completely eliminates boarding and alighting accidents, while the flush platforms and cross-seats prevent many cases of falling. Again, the extremely high rates of braking which are feasible with these cars (the writer has seen graphic records showing more than 4 m.p.h.p.s.) mean excellent control. The "deadman's" release feature in the control handle, which makes it possible to secure an instantaneous emergency application on a sanded rail simply by releasing the pressure on the handle, insures the shortest possible stop in case of emergency. These features should and will result in a very appreciable saving, say from 0.2 cent to 0.4 cent per car-mile.

Reductions in Expenses, Increases in Gross

The combined effect of all these factors is to reduce the cost of the items mentioned from about 14 cents per mile under the most favorable circumstances or 16 cents under more usual conditions, to about 7 cents or less, a saving of from 7 to 9 cents per mile. Taking an average cost for large cars of 15 cents and assuming 50 per cent more mileage with the small ones to allow for the reduced number of seats per car (although, in general, this equalization of seat-miles need only be made during rush hours) we have for 100 miles of large-car operation a cost of $15, and for 150 miles of the small car a cost of $10.50, an average saving of 4.5 cents per mile for every mile now operated by the large cars.

But in providing 50 per cent more mileage the company will be furnishing to the public an increase in service of that amount which is a combination of higher speed and shortened headway, and this will always result in an appreciable increase in earnings. In every case in which records are available, this has ensued. In Bellingham, Tacoma and Seattle the increase was in almost direct proportion to the amount of extra service; in Fort Worth and Corpus Christi it was about 40 per cent of the amount of extra service; and records from Houston, Shreveport and Birmingham, where improved service with standard types of equipment was inaugurated, show similar results.

In view of such experience, I think it is a very conservative assumption to say that on the average line an increase of 50 per cent in service will result in at least 15 per cent increase in its revenues. Since a line with costs of 15 cents per car-mile for power, platform, maintenance and accident accounts would have to show earnings of at least 25 cents per car-mile to come anywhere near breaking even, the increased earnings on the existing mileage would amount to at least 3.7 cents per car-mile.

A figure, therefore, of about 8.2 cents per existing car-mile indicates the increased net made available by the small cars. In other words, for each all-day car displaced, assuming it makes 9 m.p.h. for eighteen hours daily, there is a prospective saving of $13.28 per day, or of more than $4,800 per year. If one and a half small cars were required for each large one displaced this amount would pay about 65 per cent on their cost. However, since 20 per cent of the additional mileage is inherent in the car itself, only 30 per cent more cars are required to furnish the extra 50 per cent of service. On this basis the replacement of all day cars would pay the cost of the new equipment in less than eighteen months, and on lines which are operated for more than eighteen hours daily, or on which the speed is less than 9 m.p.h., there would be an even higher return on the investment.

The rush-hour service is a different story. If this lasts, as in many cities, only for an hour morning and evening, or even two hours, the mileage made by the extra cars thrown on is comparatively small. If they operate four hours daily for 300 days a year, the annual mileage per car is only about 10,800 and the net increase on this amount is only $886, about 14 per cent on the cost of the cars required for replacement. On a line, therefore, which has a very heavy rush-hour service, and a comparatively small number of cars in all-day service, it will usually be found advisable to limit the use of the safety cars to the all-day operation, utilizing large-size equipments in rush hours.

Now let us consider some concrete examples of the general line of reasoning contained in the foregoing paragraphs, and in particular the application of the frequent-service cars under varying conditions of actual operation. The figures presented herewith are based on operating data secured by the writer on properties in three fairly large cities during the last year. They are substantially accurate as regards existing schedules, cost of operation, etc., except in so far as the increased costs of labor and material during the last ten months have increased the latter item.

Typical Comparison of Operating Results, Usual versus Light-Weight, Safety Types:

	Usual Types	Safety Type
Weight, tons	20	6.5
Schedule speed, m.p.h.	8.6	10.6
Cars required for 8-mile line	6	7
Daily car mileage	1,032	1,484
Cost per car-mile, including general expense, cents	15	7
Cost per day	$155	$104
Receipts per day	232	267
Difference	77	163
Annual difference		31,000
Cost of seven new cars, approximately		35,000

APPLICATION TO LARGE CITIES—CLASS "A"

We will first assume an installation in City "A" which has 400,000 to 500,000 people and about 330 miles of electric railway trackage and 1000 cars. On almost all lines are heavy grades and this has made the use of four-motor equipments quite general.

The cars seat from forty-four to forty-eight people and weigh from 39,000 to 48,000 lb. Because of these weights and the very severe grade conditions energy consumption is very high, averaging more than 5 kw.-hr. per car-mile for the system. The lightest cars, because of obsolete and inefficient motors, consume practically as much power as do the heavier ones. Energy is purchased, and the cost at the d.c. board is about 1 cent per kilowatt-hour (rather more than less on an average).

Traffic is very heavy on almost all lines. The earnings for the road average 30 cents per car-mile, but costs are also high, amounting to 20 cents per car-mile, segregated as follows:

Platform wages	6.8 cents
Power	5.2 cents
Way and structure	2.3 cents
Equipment	1.5 cents
General and miscellaneous	4.2 cents
Total	20.0 cents

Schedules are fairly fast, considering the size and type of cars operated and on the heaviest lines headways are reasonably short. The greatest handicap to economy of operation through the use of higher speeds lies in the fact that a very large proportion of the cars on all lines have to run for a long distance (from 2 to 4 miles per round trip) on a heavily congested street, resulting in headways of fifteen to twenty seconds in more than half of this distance during rush hours. This congestion cuts the speed along this common section to about 5 m.p.h., and even less for a portion of it. Not only are the schedules slowed down but a considerable amount of traffic is lost on this section, since it is possible to walk nearly as fast as a car can carry one.

Under these conditions it would be manifestly impossible to operate along this common portion 50 per cent more units if it were desired to use the smaller cars. Their use on such lines would have to be confined to the lighter hours of the day, or as short-line trippers running back and forth from the outer terminals to the intersection of each line with the street which is the common route.

Light-Weight Car a Railway Tool

> "Manufacturers are always seeking new tools of greater working capacity to lower their costs of production; cars are the tools with which the railways work. The safety car is essentially a new tool with which more transportation can be manufactured for a given cost. It is the response of the brains of the industry to the demand for greater efficiency."—J. C. THIRLWALL.

Nevertheless, there are many other lines, crosstown or belt, which do not have to contend with this difficulty, and two typical ones are analyzed below. The first is a crosstown line, running for some distance along streets with small retail stores, but with not more than two or three street intersections where the number of passengers boarding or alighting is at all heavy. The same service or base schedule is provided for all hours of the day. Other lines cut in on this one at various points and run for short distances with it and then turn off, but their effect would be to prevent any material increase in schedule speed on this line, unless they, too, were equipped with the faster cars. Since, across the major portion of the run, headways due to this common service of several lines are reasonably short, no material increase in the number of passengers riding could be expected from more frequent service.

The present cars seldom carry more than twenty-five passengers except during the rush hours. Therefore, the use of a thirty-passenger car on the same headways is quite feasible, except during the rush periods. At these times, seating capacity will have to be provided for by more frequent service. Aside from this, and a very small increase in speed made on the portion of the line which is distinct from any others, the service given by cars of the two types will be very similar, and the economy of operation of practically identical service is therefore illustrated:

F & V LINE

Distance round trip 10.15 miles—present running time seventy minutes. Thirty-three minutes one way and two minutes layover at each end.

Proposed running time sixty-six minutes, thirty-one minutes one way, same layovers.

Present cars seat forty-four and weigh 40,000 lb.

Proposed cars seat thirty and weigh 13,000 lb.,

	Present	Proposed
Running time, all day, round trip	70 min.	66 min.
Headways sixteen hours daily	8.7 min.	8.3 min.
Headways four hours daily	8.7 min.	6 min.
Cars required sixteen hours daily	8	8
Cars required four hours daily	8	11
Seats per hour, rush period	304	300
Car-hours per annum	58,500	62,700
Car-miles per annum	510,000	580,000

COST PER ANNUM

	Present	Proposed
Platform wages at 60 and 33 cents per car-hour	$35,100	$20,700
Power at 5.2 cents and 1.8 cents per car-mile	26,600	10,450
Maintenance of equipment and way at 3.8 cents and 2 cents	19,400	11,600
General and other transportation at 4.2 cents	21,500	20,400
	$102,600	$63,150

Annual saving	39,450
Cost of twelve new cars	60,000
Return on investment	66 per cent

A study of the service on this line showed that the present cars carry on an average trip through the day a maximum load of about twenty-five passengers and make an average of about eight stops per mile of five seconds each, while during the rush hours the maximum loads are from fifty-five to sixty and the stops per mile run up to ten and eleven of about six seconds each. The running time of thirty-three minutes in each direction is usually made without difficulty, but during the rush hours it averages about thirty-four minutes. The corresponding speeds are 9.2 and 8.95 m.p.h. The smaller car, using higher rates of acceleration and of braking with even a slightly longer stop, making eight stops per mile, should be able to run in twenty-nine minutes, on the normal trip. During the rush hours, its average maximum loads would be 60/87 of sixty or forty-one passengers, this being the ratio between present and suggested headways. The stops per mile should not exceed nine, and the running time about thirty-one minutes. Under these conditions an allowance of sixty-six minutes for the round trip is conservative and permits a liberal margin for interference by other cars.

The replacement of cars in this line would be purely in the interests of economy; no change in receipts is included, though there might be a very slight increase. In "General Charges" an allowance of 0.3 cent per car-mile (on present mileage) has been made for reduced accident and depreciation charges. The savings which could be counted on with a fair degree of certainty show an annual reduction in costs sufficient to pay for the new cars in eighteen months.

Another line perhaps represents conditions more nearly the average, having a heavy rush-hour traffic, and comparatively light all-day riding. This line requires nearly twice as many cars during the maximum period as during the lightest hours. Headways are not short enough to develop traffic to its full extent, and the use of the frequent service cars would here show their maximum possibilities.

H STREET LINE

Distance round trip 9.24 miles. Schedule time fifty-six to sixty minutes, including two minutes layover at each end.
Proposed schedule forty-eight to fifty-two minutes, including same layovers.
Present cars weigh 42,000 lb. and seat forty-eight.
Proposed cars weigh 13,000 lb. and seat thirty.

	Present		Proposed	
	Round Trip Time	Headway	Round Trip Time	Headway
3 hours daily	60 min.	5 min.	52 min.	3.7 min.
3 hours daily	56 min.	7 min.	50 min.	4.5 min.
8 hours daily	59 min.	8.4 min.	48 min.	6.8 min.
6 hours daily	57 min.	9.5 min.	49 min.	7 min.
Cars Required				
3 hours daily	12		14 (8 small, 6 large)	
3 hours daily	8		11 (8 small, 3 large)	
8 hours daily	7		8 small	
6 hours daily	6		7 small	

	Present	Proposed	
Seats per hour, maximum	576	606	
Car-hours daily	152	181	large cars 27 small cars 154
Car-miles daily	1,450	2,030	large cars 295 small cars 1,735
Increase in service		40 per cent	
Car-hours per annum	54,710	64,400	large cars 8,100 small cars 56,300
Car-miles per annum	481,000	718,000	large cars 88,000 small cars 630,000

Rush hour service 300 days yearly. Big cars not used Sundays and holidays.

COST AND EARNINGS PER ANNUM

	Present	Proposed
Platform wages at 60 and 33 cents per hour	$32,800	$23,400
Power at 5.2 and 1.8 cents per car-mile	25,000	15,910
Maintenance, equipment and ways at 3.8 and 2 cents per car-mile	18,300	15,940
General and other expenses at 4.2 cents and 4 cents	20,200	19,200
	$96,300	$74,450
Reduction in operating expenses	......	21,850
Annual receipts at 28 cents per car-mile	135,000	......
Increased 12 per cent on account of improved service	......	151,000
Increase in net	......	36,950
Cost of nine new cars	......	45,000
Return on investment		82 per cent

The increased speed, or reduction in running time, would here be proportional to that shown on graphs Figs. 2 and 4. The schedule most difficult to maintain now is the fifty-six minutes during the morning rush. At this period the cars now carry loads of fifty to sixty people, average about eight to nine stops per mile of about five seconds each, and take from twenty-six to twenty-seven minutes actual running time in each direction. With headways reduced from seven minutes to four and one-half minutes, the average load would drop to about thirty-five and the stops would probably not exceed six and one-half to seven per mile. A schedule of 12.2 m.p.h. could be easily maintained by the small cars, or twenty-three minutes running time in each direction. The larger cars would have difficulty in making this, and would probably have to cut down their layover period to the bare time necessary to change ends—about thirty seconds.

During the lighter hours of the day, with stops per mile now of only six to seven and with more frequent headways not more than five to five and one-half, the run could be made in twenty-one to twenty-two minutes without any difficulty. During the evening rush period, twenty-three to twenty-four minutes would probably be required for the small cars and for the large ones somewhat longer, which would come out of the five-minute layover period that the small cars would have ordinarily.

The figures speak for themselves. A probable saving of more than 20 per cent in operating costs could be secured while providing 40 per cent more service, which at the lowest possible estimate should raise the receipts of the line 12 per cent. The combined effect would be to increase the net earnings more than 80 per cent of the cost of the new cars.

It is obvious that if we attempted to provide rush-hour service with the small cars exclusively, twenty cars per hour would have to be provided, which would require seventeen cars on the line, and would necessitate the purchase of nineteen to provide a normal number of spares. The saving by so doing would be increased $5,000 annually, but the ten extra cars would cost $50,000 additional and the return on the entire investment would drop to 44 per cent instead of 82 per cent.

Safety Features Essential in Quick-Service Car

"The safety features which are an essential part of the one-man car design, and the size and arrangement of the controlling apparatus, facilitate the operation, and by reducing the manual labor of the motorman make it far easier for him to perform additional duties without interfering with the car's movement and without sacrifice of safety."—J. C. THIRLWALL.

Moreover, by utilizing six of the old cars in the rush-hour periods only six need be scrapped instead of twelve. In other words, the writing off of capital account because of obsolescence is only half what it would otherwise be. With the point in mind that when obsolete types of equipment are superseded, their book values must be charged off in a reasonably short period, the savings made by the change must be sufficiently great to cover this within a period of say four or five years, in addition to paying the fixed charges of interest, taxes, insurance and depreciation on the cost of the new cars. Assuming in this case that six old cars (which cost perhaps $45,000 ten years ago) have a book value to-day of $20,000, at least $5,000 annually of the net increase should be applied to their retirement fund. Fixed charges on the $45,000 invested in new cars would be about 15 per cent or $6,750. The total, or $11,750, deducted from the net still leaves more than $25,000 clear profit on the change.

A brief study of the service in this city indicated that about seventy-five of the small cars could be applied on these two and similar lines, with a net increase in earnings, after deducting the fixed charges mentioned in the previous paragraphs, of about $200,000 annually. The road last year had a deficit of about $100,000. Had the frequent service cars been in operation, this would have been changed to a surplus of like amount available for dividends; in other words, they would have made the difference between solvency and insolvency.

Without question, these small cars could be used at all hours except rush on any lines in the city, and if it were feasible to turn back alternate cars at the points where the heaviest lines come into the common business thoroughfare they could also be made a valuable auxiliary of the large cars during the peak-load periods. That development, however, could well wait until all independent lines and those of light traffic had been equipped.

Such lines as these offer the initial field of the frequent-service car in the larger cities.

CONDITIONS IN CITY "B"

A rather different situation exists in "B," a city of about 250,000 population, served by about 400 cars on more than 300 miles of track. Here trailers for rush-hour loads are used to a greater proportionate extent than in any other city in the country, fewer than two-thirds of the cars being equipped with motors. There are two standard types of motor cars used for pulling trailers, one seating forty-seven and weighing about 40,000 lb. and the other seating fifty-two and weighing 44,000 lb. Both are equipped with four motors. The trailers seat from forty-eight to fifty-four people and average about 16,500 lb. each. For rush-hour service the company therefore has available units seating more than 100 people and weighing about 60,000 lb.; so that both in weight and platform charges the rush-hour loads are carried very economically.

For lines where trailers are not required, two-motor cars seating forty-three and weighing 33,500 lb., or a larger type seating fifty and weighing 36,000 lb., are used.

For the most part the lines of heaviest traffic run through the business section on the same street and for several blocks on this street. Even with trailer operation, headways are down to thirty or forty seconds during the morning and evening peaks. Here again it would be manifestly impossible to run the small cars as units, since this would shorten the headways to ten or fifteen seconds.

But about a third of all lines in the city do not now use trailers and most of these lines do not operate through this street of heavy traffic. Several cross the business district in such a manner that they have only three street intersections where loading is heavy or where there is any considerable amount of traffic interference. These lines are well suited to the operation of the frequent-service car.

There are no jitneys in the city, but the use of private automobiles to and from the business section is unusually heavy. As much of the residential section lies close to the business district, there is also an exceptionally large percentage of walking to and from work.

Speeds are fairly high, but headways on most lines are altogether too long to develop traffic to the maximum extent. They run for the most part from seven to twelve minutes during the day and from five to seven minutes during the rush hours. Receipts per car-mile average about 26 cents. Operating expenses are about 13 cents, although for the single-car lines it would run somewhat higher and would segregate about as follows:

CENTS PER CAR-MILE

Power (operating costs only at 0.5 cent per kilowatt-hour)	1.9
Maintenance equipment, including carhouse expense	1.8
Maintenance of way and structures	1.4
Platform wages (single car operation)	6.2
General and other transportation	2.8
	14.1

The cost of operation on two typical single-car lines is shown in the table below, together with the estimated savings if frequent-service cars were substituted for the present type.

Now let us consider a somewhat heavier line on which it is necessary to increase the rush-hour service very considerably as compared with all day. Both types of standard two-motor cars are used; their average would be a forty-seven-passenger car weighing 35,000 lb. The line is 5.61 miles long and stops are frequent, averaging from seven and one-half to ten per mile, so that schedule speeds of 8.6 to 9.6 m.p.h. are the best that can be obtained. The duration of stops is very short, less than five seconds on an average. Data appear on the next page.

C Line, distance round trip 6.86 miles. K Line, distance round trip 8.58 miles.
Present cars seat forty-three and weigh 33,500 lb. Stops per mile run from seven to nine on K and from five to seven on C.

	C Line		K Line		Combined	
	Present	Proposed	Present	Proposed	Present	Proposed
Running time, round trip	36–40 min.	32-35 min.	50-52.5 min.	44-48 min.	....	....
Headways, four hours daily	10 min.	7 min.	7.5-8.5 min.	6 min.	9 min.	6.5 min.
Headways, ten hours daily	12 min.	8 min.	10 min.	7.3 min.	11 min.	7.7 min.
Headways, six hours daily	20 min.	16 min.	13 min.	11 min.	16.5 min.	13.5 min.
Cars required, four hours daily	4	5	6-7	8	10-11	13
Cars required, ten hours daily	3	4	5	6	8	10
Cars required, six hours daily	2	2	4	4	6	6
Maximum seats per hour	258	297	344	350	602	647
Car-hours daily	58	72	100	116	158	188
Car-miles daily	630	904	1,007	1,343	1,637	2,247
Increased service, per cent	....	44	....	34	....	37
Car-hours annually (rush service, 300 days)	20,910	26,020	36,110	41,820	56,930	67,840
Car-miles annually (rush service 300 days)	227,000	327,000	364,000	486,000	591,000	813,000

COST AND RECEIPTS PER ANNUM

	C Line and K Line Combined	
	Present	Proposed
Crew wages at 60 and 33 cents per hour	$34,212	$22,388
Power at 1.9 and 0.75 cents per car-mile	11,229	6,098
Maintenance equipment and way at 3.2 and 1.6 cents	18,912	13,008
General, etc., at 2.8 cents	16,548	14,800
	$80,901	$56,294
Annual saving	......	24,607
Present receipts at 26 cents	154,000	......
Estimated increase, 10 per cent	......	15,400
Net increase	......	40,007
Cost of fourteen new cars	......	70,000
Return on investment, per cent	......	57

Note—All terminals in City "B" have loops, so single-end cars are used. The single-end Birney-type car seats thirty-five people.

SERVICE DATA, "L" LINE

	Present	Proposed	
Distance round trip, miles	11.2	11.2	
Schedule time, minutes	70-78	60-64	
Headway, four hours daily	6-7	4.6	
Headway, ten hours daily	10	8.5	
Headway, sixteen hours daily	12	10	
Cars required, four hours	11-13	14	8 small 6 large
Cars required, ten hours	7	8 small	
Cars required, six hours	6	6 small	
Maximum number seats per hour	470	515	
Car-miles daily	1,420	1,885	250 large 1,635 small
Car-hours daily	154	172	24 large 148 small
Car-miles annually (extra cars 300 days)	506,000	672,000	75,000 large 597,000 small
Car-hours annually (extra cars 300 days)	54,910	61,220	7,200 large 54,020 small
Increased service	.....	33 per cent	

ANNUAL COSTS AND RECEIPTS

	Present	Proposed
Platform wages at 60 and 33 cents per hour	$33,000	$20,300
Power at 1.9 and 0.75 cents per car mile	9,600	5,050
Maintenance equipment and way at 3.2 and 1.6 cents	16,200	10,750
General and other expenses at 2.8 cents	14,200	13,000
Total	$73,000	$49,100
Saving	......	23.900
Present receipts at 26 cents	131,000	......
Estimated increase 10 per cent	......	13,100
Net increase	......	37,000
Cost of nine cars	......	45,000
Return on investment, per cent	......	82

There are several other lines similar to the first two and several similar to the latter one. Roughly about sixty new cars would be required to equip all such lines in the city at an approximate cost of $300,000, on which could be expected a return of something like $200,000 annually. Increased fixed charges on additional capital would be $45,000. Assuming fifty old cars scrapped, with a book value of $150,000 and a scrap value of $50,000, $100,000 would remain to be written off. If $25,000 annually were applied to this, it would still leave after deducting the fixed charges, $130,000 additional for dividends. This is more than one-third of the amount available for this purpose for the whole system last year.

The use of the frequent-service cars on the remaining lines would be feasible only during the lighter hours of the day, when headways on the main thoroughfare are not too close, or by rerouting some of the lines to relieve the congestion which limits their use.

If, as seems certain, a sufficient portion of the service could be changed so as to increase the net surplus of the entire road more than 30 per cent, it is well worth making. Moreover, power costs here and the saving resulting from a reduction in power consumption are based only on the operating costs of producing the power at present with no allowance for overhead. It is obvious, however, that if a really considerable portion of the entire power output is eliminated, it will sooner or later affect the reduction in the overhead costs either by enabling some machines to be shut down; by permitting additional service without the purchase of new station equipment or more copper in the line, or by reducing depreciation on the existing apparatus through the elimination of overloads, or by all three of these factors. If the usual overload allowance for power costs were made in this case as it was in City "A," where power is purchased from an outside company, the return on the investment would be appreciably greater.

ANALYSIS OF CITY "C" CONDITIONS

We now come to City "C," where the application of the frequent service cars would appear at first glance to be attended with the greatest difficulties and where the field for its application might be thought so limited as to be not worth consideration. This city has more than 500,000 population, spread over an unusual area, and served by 400 miles of electric railway, on which are operated 1000 cars. Hauls are unusually long and receipts per car-mile low.

The standard cars used here seat forty-four and weigh about 37,000 lb. They are, for the most part, equipped with two 50/60-hp. motors, although on some cars two motors of smaller capacity are used. The bodies are not designed for rapid movement of passengers, nor with the exception of a few can prepayment of fares be used. The bodies are unusually high, and the seating and bulkhead arrangement is inefficient as regards carrying heavy loads and collecting fares. The honest conductor is likely to miss an unusually large percentage of collections, while the dishonest man has exceptional opportunities for diverting fares into his own pocket.

The frequency now given is very good. Schedule speeds (omitting layovers at ends of lines) average more than 10.5 m.p.h. during the day and better than 9.5 m.p.h. during the rush hours, and this despite a large amount of running through a business section which is as badly congested as anywhere in this country, and where interference by automobiles and other vehicles with the street car movement is probably worse than in any other city. Headways are fairly short, less than ten minutes on the average during the day, and less than five minutes during rush periods.

Yet in spite of frequent service and fairly good speed, both private and jitney automobile competition has been so severe that the revenues of the company have declined seriously and receipts average less than 22 cents per car-mile. If average costs of operation here were as high as on most roads, such a condition would have led to bankruptcy long ago. But driven by necessity, and aided by an unusually low power rate together with a fairly low consumption since the cars weigh less than those of most roads, and stops are fewer, the company has reduced its operating cost per car-mile to the very creditable figure of 13 cents. This segregates about as follows:

	Cents per Car Mile
Platform wages	5.7
Maintenance of way and trolley lines	1.2
Maintenance of car equipment	0.8
Power cost	2.2
Car cleaning, inspection and lubrication	0.65
Accident account	0.6
Depreciation	0.55
All other expenses	1.5
Total operating cost	13.20

These costs are for 1916; it is improbable that maintenance can be held to these very low figures this year, because of the advance in material and supply prices. The reasons for the low cost of power have been referred to. The comparatively low charge for platform labor is the result of speeding up schedules to the physical limit of the equipment, and in spite of the fact that extremely liberal layovers are allowed the men on all trips except during rush hours.

Quick-Service Car Has Wide Field

"The impression has been general that these small 'one-man' cars are simply a 'small-town' proposition. From an analysis of their possibilities in the larger cities the writer is firmly convinced that there is a field for their use on some lines in any and every city in this country."—J. C. **Thirlwall.**

Even under these circumstances, which are probably the least favorable to the introduction of smaller cars, there are many lines on which they could be used to marked advantage, and on which they would show material economies. An analysis of the service and costs of operation on one of the typical lines appears opposite. This line extends about 5.5 miles in one direction from the heart of the city and about 4.5 miles in the opposite direction. Twelve-minute service is furnished all day for its entire length and much more frequent service to a point about 1 mile from the end of the longer branch. The line is shown as two divisions, though they are identical except for the extension on X.

S. P. & W. Line

Stops per mile average six and one-half during day, seven and one-half during rush hours, of about six seconds each.
Present cars weigh 37,000 lb. and seat forty-four.
Proposed cars weigh 13,000 lb. and seat thirty.

Division X—Distance 10.17 Miles

	Present	Proposed
Round trip, including layovers, two hours daily	125 min.	105 min.
Round trip, including layovers, eighteen hours daily	120 min.	108 min.
Headways, two hours daily	12.5 min.	7.5 min.
Headways, eighteen hours daily	12 min.	9 min.
Cars required, two hours daily	10	14
Cars required, eighteen hours daily	10	12
Seats per hour, two hours daily	210	240
Seats per hour, eighteen hours daily	220	200
Car-miles daily	2,010	2,755
Car-hours daily	200	244

Division Y—9.04 Miles

	Present	Proposed	
		A	B
Round trip, including layovers, two hours daily	110 min.	96 min.	105 min.
Round trip, including layovers, eighteen hours daily	108 min.	92 min.	92 min.
Headways, two hours daily	5 min.	3.3 min.	4.2 min.
Headways, eighteen hours daily	12 min.	9.2 min.	9.2 min.
Cars required, two hours daily	22	29	10 small 15 large
Cars required, eighteen hours daily	9	10	10 small
Seats per hour, two hours daily	528	540	548
Seats per hour, eighteen hours daily	220	195	195
Car-miles daily	2,054	2,785	2,330 small 310 large
Car-hours daily	206	238	30 large 200 small

Combined Service

	Present	Proposed	
		A	B
Minimum headways, common portion	3.6 min.	2.3 min.	2.7 min.
All-day headway	6 min.	4.5 min.	4.5 min.
Maximum number seats per hour	738	780	788
Car-hours per day	406	482	444 small 30 large
Car-miles per day	4,064	5,540	5,400
Car-hours per year (365 days)	148,000	176,000	162,000 small 10,950 large
Car-miles per year (365 days)	1,483,000	2,022,000	1,856,000 small 113,000 large
Increase in service, per cent	......	36	31

Note: By running cars ahead of schedule in the light direction during rush hours and eliminating layovers the headways in the heavy direction are shortened so that more seats are really provided than this table indicates. This manipulation is equally possible with the small cars, giving a corresponding gain there. These figures are based on normal operation, since the relative values will remain constant.

Annual Costs and Receipts

	Present	Proposed	
		A	B
Crew wages at 28 and 31 cents per car hour	$82,700	$54,600	$56,350
Power costs at 2.2 cents and 0.8 cent per car-mile	32,626	16,176	17,334
Maintenance way and line at 1.2 and 0.6 cents	17,796	12,132	12,492
Maintenance equipment, including car-house expense, 1.45 and 0.8 cents	21,504	16,176	16,487
Depreciation at 0.55 and 0.3 cent	8,156	6,066	6,189
Accidents at 0.6 and 0.4 cent	8,898	8,088	8,102
All other expenses at 1.5 cents on present mileage	22,245	22,245	22,245
Total operating cost per year	$193,925	$135,483	$139,199
Annual receipts (10 per cent and 8 per cent increase)	$311,000	$342,000	$336,000
Net	117,075	206,517	196,801
Increase	......	89,442	79,726
Approximate cost forty-eight cars and twenty-seven cars	......	240,000	135,000
Return on investment	......	37	59

The relative schedule speed is the most important factor here. The present cars make the long run normally in about fifty-two minutes, carrying an average maximum load of twenty-five passengers and making on an average six and one-half stops per mile. They have a layover of about eight minutes at each end. On the rush trips they take about fifty-nine minutes for the run, have three minutes layover, carry an average maximum load of sixty-five passengers and make seven and one-half stops per mile. If 10 per cent more people were carried in 30 per cent more units, the average maximum loads would drop to about twenty and fifty-three respectively, and the stops per mile to five and one-half and six and one-half. With these stops and with the higher rates of acceleration and of braking shown in graph sheet Fig. 4, running times of forty-seven and forty-nine minutes could be made. Allowing forty-eight minutes normally with a six-minute layover, we have the 108 minutes allowed for the round trip. On the rush trip fifty minutes with two and one-half minutes layover could be maintained and a round trip made in 105 minutes. Similarly the shorter run of 9.04 miles could be made in forty-two minutes and forty-four minutes, which is four to eight minutes less than at present. With an allowance of 10 per cent for layovers the round-trip times would become ninety-two and ninety-six minutes.

To furnish a very slight increase in seating capacity with the small cars under these conditions would require a total of forty-three cars during the rush hours and would necessitate the purchase of forty-eight to allow a reasonable number of spares for shop purposes. But if the bulk of the peak riding were cared for by the present cars, and the new type utilized for all-day service, only twenty-four small cars would be needed for operation and twenty-seven would provide the necessary shop spares. Even then the increase in service would be very nearly as great in the second case as the first, and the cost of operation would be only slightly higher, since the big cars with their two-man crews would be used such a small portion of the time.

The net result shows a saving of $58,500 and an increase in net of more than $89,000 for the all small-car operation, at an expenditure for new equipment of $240,000. With the second plan the saving would be nearly $54,000 and the net increase nearly $80,000 and the expenditure necessary only $135,000. There can scarcely be any doubt as to which is preferable as long as a company has large cars which are in fairly good operating condition.

The greatest difficulty here, as in other cities, lies in a very heavy congestion during rush hours on the two main business arteries of the city. Every line in the system, with the exception of two or three crosstown or belt lines, run for several blocks through the central business district, and from 5.30 to 6 p. m. headways are down to less than forty seconds for about a mile on the busiest street in the city. Moreover, at three of four intersecting streets, traffic delays of from thirty seconds to sixty seconds are frequent. The addition of cars on this badly-congested section would, therefore, appear to be very difficult. However, a careful study of the situation shows that up to a certain large percentage of increased units of the front-entrance type, no increase in difficulty of operation or lessening of speed due to interference would be experienced. Fig. 5 illustrates the reasons for this.

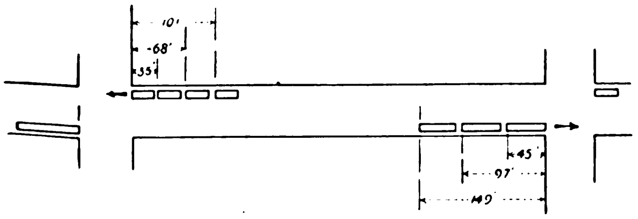


Fig. 5—Diagram Showing Car Blocking at Street Intersections

The blocks on this street are 600 ft. long and the streets 60 ft. wide. Cars at present average about seventy seconds to the block during rush hours. In the mile run, they average about ten stops of an average duration of fifteen seconds, and about five slowdowns. Three or four stops are unusually long, at the intersections of crosstown lines, and it is at these points that the interference of one car with its followers occurs. There are on an average two or three cars in each block all the time, and when one is held up for any unusual period the three group themselves as shown in the diagram, with their entrances 45 ft., 97 ft. and 149 ft. from the corner. The result is that while a few people may walk back to the second car, a large number who want to board it do not, and after the first car is given a clear signal and moves away, the second car must stop again before crossing the street. The third car makes two unnecessary stops before reaching the loading berth.

Traffic Building Versus Economy

> "The vital characteristic of the light-weight, safety car is not the economy that can be effected through its use. The important fact is that, because of the low cost of operation and greater inherent speed possibilities, it yields a greatly improved public service and thus becomes a traffic builder."
>
> —J. C. Thirlwall.

Four 28-ft. cars with front entrances take up less room on the street than the three 47-ft. cars, and their entrances when bunched at an intersecting street are 2 ft., 35 ft., 68 ft. and 101 ft. respectively from the corner. In other words, the entrances of the first two are nearer the corner than is that of one car now. Both can take on their load and move off together when the traffic signal is given, and the other two can move up together into place, making only one unnecessary stop for the third and fourth cars. Moreover, their follower has a car length longer running space than has the fourth car under present conditions. Due to the shorter average stop of a low-wheeled car, which takes on fewer passengers per stop, it can be seen why the operators are confident that they could put from 30 to 50 per cent more of the small units through this street in a given time than they can with their present cars.

Moreover, since this mile is only 8 per cent to 10 per cent of the one-way distance of most of the lines passing through it, a slight slowing down here would not offset the additional speed in the remaining 90 per cent of the run.

In this city, it seems probable that approximately 200 frequent service cars could be applied with a reasonable certainty of a return of more than $500,000 annually.

Conditions very similar to those shown in the foregoing data can be found on a fairly large proportion of the lines in all cities in this country except the very largest, and it is the writer's belief that from 20 per cent to 50 per cent of the service in almost any city could be better handled by these small cars, alone or in conjunction with standard types, than it is to-day.

Loading Operation on Converted One-Man Car of Washington Water Power Company

Spokane's Operation of Large One-Man Cars with Smoking Compartments

The Washington Water Power Company Began Remodeling Its Cars in 1915 and Now More Than Half the Mileage Is One-Man—The Spokane & Inland Empire Railroad Also Placed Three Cars in Service During the Last Year

EARLY in 1915, when the jitney craze was at its height, the Washington Water Power Company, Spokane, Wash., realized that something had to be done at once to diminish both the loss of travel and the cost of operation. It had enough well-built cars to give more service, but obviously not with two men per car. These cars were of greater length and weight than would have been selected for new cars, but the low-cost rate of electrical energy in Spokane made remodeling advisable as well as practicable.

In balancing the various factors pro and con the company decided to stick to the original cars, as they could be handled by one man just as safely as by two, and the extra cost of upkeep and track maintenance for 52,500-lb. cars would be more than offset by their extra seating capacity for peak loads. For a time conductors were used for rush hours, but experience proved this unnecessary. To-day these cars may be seen holding their own in the evening rush under a combined headway of forty seconds and less.

REVERSING A CAR TO CONVERT IT, AND ADDING A SMOKING COMPARTMENT

As an article in the Dec. 18, 1915, issue of the ELECTRIC RAILWAY JOURNAL described the conversion of the first cars in some detail, only the leading changes will be now described. In the original single-end form each car had a front platform of 5 ft. 5½ in. and a rear platform of 6 ft. 4½ in. The overhang of the latter had been the cause of more than one fouling accident. The body of the car contained seven rows of cross-seats and short longitudinal seats at each corner. In the reconstruction the rear vestibule became the front, and the doorways were so altered that entering and departing passengers leave by way of separate doors. As these doors, which slide into a bulkhead between, are not wide enough for two people at a time, they effectively prevent crowding and consequent confusing of the car operator.

The platform steps were also lowered 3½ in. through the expedient of lowering the vestibule floor so that the rises from the street became 14 in., 13 in. and 11½ in. This change, together with the arrangement for boarding and alighting at the front end under the eye of the car operator, has absolutely wiped out step accidents to passengers. It was not found feasible to operate the step in unison with hand-controlled doors, so that the step occasionally affords a lodging to reckless boys. To avoid step accidents in the dark, a lamp is used to illuminate the step while the doors are in the boarding and the alighting positions. Likewise a vestibule lamp also burns while the operator is collecting fares and registering them on the original International registers.

Of course the control and braking equipment had to be installed at the front end. Nevertheless there is a controller on the rear platform, which can be operated on the first five points for backing up and coupling the cars, and for emergency conditions.

While turning the original front platform to the rear the company did something which made the one-man car an immediate hit with many male patrons. It enlarged the 5-ft. 5½-in. space by adding the length of two car windows, and turned it into a smoking compartment with fourteen seats separated by a sliding door from the remainder of the car. Ever since this was done patrons have been clamoring for more "buffet cars," as they have been christened. The rear location of the smoker in no wise embarrasses other riders, and it has the merit of inducing an appreciable number of passengers to go to the rear end and sit down. This section has an emergency exit which upon being opened only ¼ in. sounds a special alarm to the operator. By the time the would-be departer has the door open the car is standing still. Only in one or two instances in more than two years of operation has this occurred. The alarm bell is connected to the regular signal batteries in the car, so that it is always in operating condition.

The foregoing changes, including lighting features, cost only about $300 per car.

DEVELOPMENT OF INCREASED SERVICE WITH ONE-MAN CARS

The first converted cars were put on during August, 1915. To-day the company operates regularly only thirty-one two-man, fifty-seven-passenger, 59,000-lb., 51-ft. 6-in. cars, as compared with forty-one one-man, 52,000-lb. cars. For extra service on big days the company has in reserve fifty two-man cars of the same length as the converted cars. All of these cars were in operation on July 4, 1917, to their full capacity without a single accident—a truly remarkable record.

The accompanying tabulation of the present one-man lines shows the general increases in the number of cars and the corresponding improvements in headway. The schedule speeds, which are exactly the same as with two-man cars, are rather low, but this is ascribed to grades up to 12½ per cent and to sharp curves which make speeding unsafe.

EFFECT OF ONE-MAN OPERATION ON LINES OF WASHINGTON WATER POWER COMPANY

Route	Schedule Speed (m.p.h.)	Number of Former Cars	Number of Present Cars	Old Headway (Minutes)	New Headway (Minutes)
Liberty Park and Pacific	8.8	4	6	15	10
Maxwell	8.8	5	7	15	12
Cannon Hill and North Monroe*	7.7	4	5	20	15
Tenth Avenue and North Monroe*	7.6	3	4	20	15
These lines not altered in service:					
Corbin Park and South Maple	8.5	4	4	15	15
Indiana	9.5	5	5	20	20
Fort Weight	8.0	2	2	30	30
Garden Springs shuttle	8.6	1	1	30	30
Cannon Street shuttle	7.0	1	1	15	15
North division shuttle	..	1	1	15	15
South division shuttle	..	1	1	15	15
Maxwell trippers	8.8	4	4	..	..

*As these lines overlap, most passengers get a seven and one-half-minute instead of a ten-minute service.

The one-man cars of the Washington Water Power Company handle about half the mileage on routes ranging from thirty-minute shuttle service to combination headways of forty seconds on blocks of Riverside Avenue (between Post and Howard Streets), where most of the outbound fares are collected.

To date the increased service has brought about 12 per cent more travel with a constantly increasing personally owned motor vehicle competition. This is 37 per cent below 1909, the maximum year, but at any rate the downward tendency has been checked. Still further improvement is to be expected with the removal of the jitney bus. On account of bonding regulations and increased convenience of car service the greater portion of the jitney buses have gone out of business in the last two months.

Operating expenses have shown a marked decrease since one-man cars have been put in service. Platform expenses, including a 4-cent bonus in this service, now average 35 cents an hour, a wage which attracts and holds the best men. Accidents also have been greatly cut down, and fare collection has been improved through the use of the prepayment system.

WORK OF SPOKANE & INLAND EMPIRE

The Spokane & Inland Empire Railroad did not begin converting cars for one-man operation until 1917. At present it has three cars in operation on the Rockwood line and five more are under way. It has followed substantially the plan of its neighbor, although in its case the long rear platform was open.

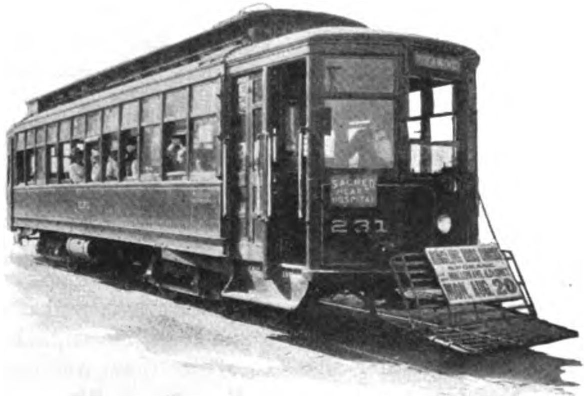
The work on the five cars now being remodeled has been considerably delayed through lack of materials, but they are expected to be ready for service within sixty days.

The tests on the three cars in operation on the Rockwood line of the company have been very satisfactory, and the cars have been operated without accidents thus far. A most favorable report on the one-man system has been forwarded to the St. Paul office of the Great Northern, owners of the system, with the recommendation that more cars be converted.

GENERAL PUBLIC PREFERS NEW-TYPE CAR

Spokane now has a greater percentage of one-man cars in operation than any other city in the United States, and is one of the pioneers in the field demonstrating the new type. The big cars have withstood the most severe traffic strains. Unusual travel of circus days, the Fourth of July and other general holidays has not created traffic congestion, and the general public prefers the one-man cars to those of the old type.

Spokane has more miles of street railway track per capita than any American city of its population with the exception of Tacoma, Wash. Statistics give Spokane an average of 1.23 miles of track for every 1000 of population.



Spokane—Converted One-Man Car Used by Spokane & Inland Empire Railroad

Mental Attitude an Important Factor in Railway Operation

Success in Railway Industry, as in Others, Demands a Conscientious Study of Conditions With a Willingness to Change Methods as Circumstances Alter

By Clarence Renshaw
General Engineer
Westinghouse Electric & Manufacturing Company

> "The fault, dear Brutus, is not in our stars,
> But in ourselves, that we are underlings."
> —*Julius Caesar.*

A CERTAIN minister once complained to an intimate friend of the poor attendance at his services. The friend suggested that the minister's sermons were too long and advised that he make them shorter. "That's a good idea," said the minister, "but really I am so busy with my parish work that I haven't time to write short sermons."

And so it is with many railways. When one talks of the economies of quick-service cars, modern motors, train operation or any of the other innovations that have been brought out during recent years to solve the very problems with which they are now confronted, the reply is usually in effect, "Yes, that's all very nice, but we are too poor to afford such economies."

Even when one suggests analyzing conditions or effecting economies which involve the expenditure not of money but merely of thought or effort, it is astonishing how little enthusiasm one can usually arouse.

It is no doubt true that some of the railway companies are obliged to sell their goods for too low a price on the basis of present costs, but it is also true that a mere increase in fare is not likely to solve the difficulty completely, since any such increase is bound to be followed by a reduction in traffic without any corresponding reduction in expenses. In the ELECTRIC RAILWAY JOURNAL for Aug. 25, for instance, Professor Conway of the University of Pennsylvania shows that a 6-cent fare, although a 20 per cent increase in rate, results in only about a 10-cent increase in receipts in a large number of cases, owing to the reduction in passengers which it causes. What is really needed in most cases, therefore, seems to be a better passenger load factor, and this is a thing which can be obtained only by individual efforts and not by legislative enactment.

One of the hopes of the average man is that conditions in the industry with which he is connected will some day become stabilized so that the equipment he buys or the operating practices he adopts to-day will be up to date forever and he thus may look forward to a life of ease without mental effort or change of habit. Such a state of affairs is not likely to be brought about, however, in either the railway industry or any other. Many of the present operators have already seen the properties with which they are connected change from horse cars to cable cars and from cable cars to electric cars, and have also seen the original electric cars passed on to the scrap heap long before they were physically decrepid.

Even the human element has, to a certain extent, followed the same cycle, although in this case there has been a difference. The human element is not entirely fixed, like equipment of wood and iron, but a certain proportion of it possesses a wonderful flexibility that enables it, if it will, to adapt itself to changing conditions and to be better able to cope with the new conditions from its experience with the old. Each change to which the human element adapts itself, however, has a tendency to absorb a certain part of its flexibility, so that it is more difficult to adapt itself to the next change; and although the magnitude of the changes which must apparently come to the railway industry in the near future is by no means so great as some of those through which the industry has already passed, this principle is probably responsible for much of the pessimism which is now abroad in some sections.

It is a pretty safe idea for the average man to adopt, that when anything goes wrong with the work in his charge it is at least partly because of some act or some omission of his, so that he is at least partly responsible. When anything happens, therefore, or fails to happen, his first question should be, "What should I have done that I didn't do?" It is surprising what such an attitude on the part of the man in charge of a property will do in the way of effecting improvements, if it is consistently applied in a broad way, and what a spirited organization it will build up. It is much more comfortable for the average man when anything goes wrong, however, to feel that his record is entirely clear and that the fault lies elsewhere, and few have the courage to try to shatter this idea.

Where the right spirit prevails the property may not always be on a profitable basis, but if it is not the officials will surely know why and will have definite plans to put it on such a basis. At the very least, they will have specific information of the economies which could be effected by the purchase of certain amounts of up-to-date equipment or by the investment of various sums of new capital in other ways, and they will not have hesitated to make such investigations merely because the money to utilize them was not in sight.

It seems pretty certain that we shall have cities for a long time to come and that these cities must have local transportation. It is quite probable also that this transportation can be furnished by electrically operated cars running on rails to better advantage than by any other means now known. It would seem economically desirable that the business of supplying such transportation should remain in the hands of the companies now engaged in it, provided that they can work out the necessary problems. The officials and employees of these companies are, as a rule, energetic and capable of solving their difficulties. We believe, however, that much of the success achieved in any undertaking depends on the mental attitude with which one tackles the task, and at this time, when even the bravest are sometimes discouraged, we suggest the above idea for whatever it may be worth.

The Future of the Quick Service Car

While the Exact Field of the Quick Service Car Is Not Fully Determined, It Is Well Adapted to a Large Proportion of the Roads in This Country

By G. M. Woods

General Engineer Railway Department
Westinghouse Electric & Manufacturing Company

TRANSPORTATION and railway engineering men are already familiar with the economies effected by the operation of quick service cars either through personal experience or through the numerous articles on the subject which have appeared in the technical press. The favorable impression which these cars have made on the car-riding public and the satisfaction of the car operators are results which have not been given such wide publicity, when as a matter of fact the importance of the favor with which these cars have been regarded by the public is equal to or greater than the economies.

The public satisfaction is due to several causes: First, the cars have been made attractive in appearance and easy riding. Most of the cars have been built along standard lines, and the simplicity of design and absence of "gingerbread" are pleasing to the eye. The truck springs are more buoyant than those of older single and double-truck cars, and "galloping" has been eliminated. The second cause is the more frequent and faster service usually provided by quick service cars. The average man is chiefly concerned with the total time he must spend between his home and place of business, regardless of whether the time is spent waiting for a car or riding on the car. The time of waiting for a car is reduced by reduced headway. The reduced headway also tends to lessen the number of stops. There is a tendency on the part of the operator to accelerate and brake more rapidly, and the result is decreased running time. The third cause of satisfaction is the feeling of the patrons of a line that they are especially favored by the traction company in that the newest development in car designs is operated on their line. The various safety devices and other provisions for operation by one man arouse their interest and put their minds in the proper frame to realize the actual advantages of the new cars.

The operator usually is pleased with the quick service cars, not only because most railway companies have found it profitable to raise his pay 2 or 3 three cents per hour, but also because he has a certain amount of self-satisfaction with his added responsibility. Instead of simply starting and stopping the car or collecting the fares, he is now in complete charge. The personal factor has been wisely enhanced on some roads by having a card with the operator's name placed near the entrance.

Adverse rulings by legislatures, commissions and town councils are serious obstacles in some places to the adoption of cars operated by one man. Nearly all these regulations may be traced to ignorance of the results of operation with one man and the consequent feeling that such operation is inherently unsafe. The facts that must be impressed on legislative bodies are that these cars are safer than the two-man type, because the passengers are under direct charge of one man only, and there is no chance for misunderstanding signals or other division of responsibility between conductor and motorman. The operator's mind is not inactive during stops, and hence he is kept in a condition of mental alertness.

There is no doubt that the quick service car has a very real field of application in the transportation world and will eventually be used for certain classes of service in preference to any other type. The boundaries of its field are still under discussion. Actual operating results indicate that the service met on the lines of lighter traffic in cities of any size can be handled more satisfactorily and more economically by quick service cars than by any other vehicle. It is certain, however, that the quick service car in its present form cannot be applied successfully to all city lines. Where the traffic already is congested with large cars, the increased congestion resulting from the use of a greater number of smaller cars would be prohibitive.

It is to be expected that the development of cars for operation by one man will continue until their field of application is broadened considerably. It is difficult to foresee just what the construction of the quick service car of the future will be. Provision may be made for train operation, and improved details to facilitate boarding, alighting, collecting of fares and issuing of transfers may be devised. These problems will be met and solved by those interested in street railway transportation.

The fundamental fact at the present time is that there are now cars on the market which will effect great savings in cost of operation. There is no element of financial or physical risk in the adoption of these cars on a large proportion of the roads in this country. While prices are abnormally high at present, cost of operation is proportionately high, and it is doubtful whether prices will ever return to the low level of before the war. The railway that purchases quick service cars now is the road that will reap the harvest now and in the future.

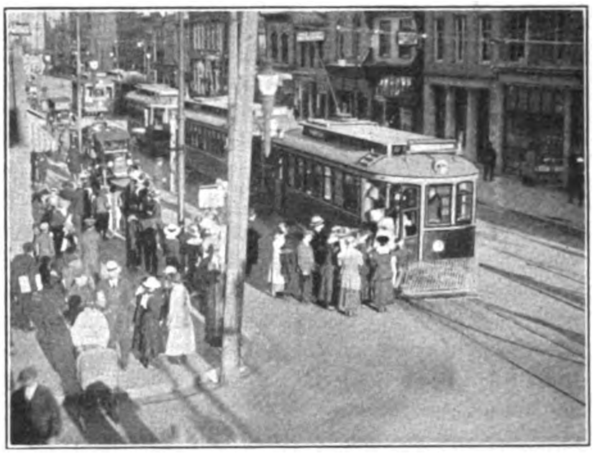
Owing to the publicity that has been given the conservation of men and materials and the actual scarcity of labor, the present is the opportune time to introduce the quick service car to the general public.

One-Man Car Operation in Calgary, Alberta

Municipal Railway in Canadian City With a Population of 60,000 Operates Forty-two Reconstructed Cars on the One-Man Plan

By Thomas H. McCauley

Superintendent Calgary Street Railway
Calgary, Alberta, Canada



CALGARY, like other cities in western Canada, was over-constructed during the boom days of 1909 to 1913 in anticipation of continued growth. Beginning in July, 1909, with two cars and 3 miles of track the street railway system grew in five years to have seventy-nine cars and 71½ miles of track. The details of this growth and of the layout of the system after seven years of development were covered in an article published in the ELECTRIC RAILWAY JOURNAL of Nov. 4, 1916, page 962. Including 3½ miles of track to the Sarcee military camp, added in 1916, the total mileage is now 75 and the city owns ninety-one cars of all classes. The railway represents a total cost of $2,280,000.

During prosperous days nearly $600,000 was set aside as a sinking fund and depreciation reserve, and the railway is credited with approximately $18,000 per year interest on surplus and depreciation funds.

INAUGURATION OF ONE-MAN SERVICE

In 1914 one-man car operation was tried on three outside stub lines, and in June, 1916, six additional one-man cars were placed on the "belt line." The cars were installed on this line because, in a way, it served every section of the city, and at the same time it was a slow line with a schedule speed of but 8 m.p.h. These cars were of the single-truck type. The long rear pay-as-you-enter vestibule was closed in and used as an observation and smoking compartment, and a single door at the front was used for both entrance and exit.

In January, 1917, the small cars were fitted with separate entrance and exit at the front and an emergency exit at the rear. They were received with such favor that in March they were replaced with double-truck cars similarly fitted, these cars having a seating capacity of forty passengers in the main body, and twelve passengers in the rear smoker. These, in turn, were so satisfactory that ten more were reconstructed and placed on two crosstown lines on April 22, followed by six additional cars, 46½ ft. long and seating sixty passengers, which were placed on another crosstown line. Six 32-ft. cars were also assigned to two sparsely-settled lines.

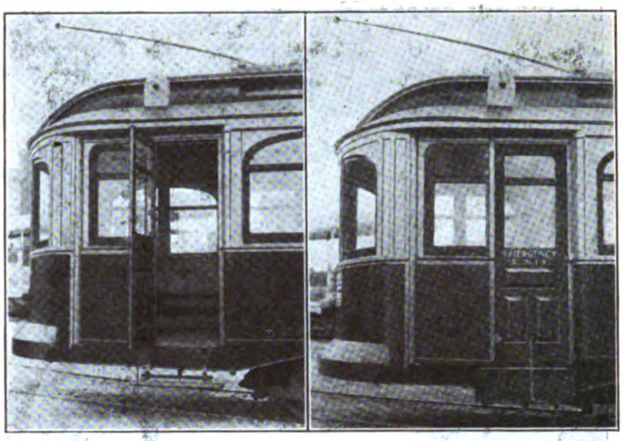
Finally, between July 1 and the present time, eight additional 41-ft. cars were reconstructed and placed on two lines operating on long grades of 8 per cent to 10 per cent, and other cars have been added until we now operate a total of forty-two cars of three lengths—32 ft., 41½ ft. and 46½ ft.

All of these one-man cars are operating on exactly the same schedule as when operated by two men, making from 8 to 15 m.p.h. on headway from five to thirty minutes on their respective runs. They overlap in such a way that in the city there is an average headway of from one to two minutes in each direction. Only five regular and six extra cars are now operated with two men. The latter are used to carry from 800 to 1000 employees to and from the Ogden shops of the Canadian Pacific Railway night and morning. They are at present being converted for train operation so as to seat in the trailer eighty-four passengers and in the motor car seventy passengers. They will be operated with a motorman-conductor and a trailer conductor in each train.

CAR RECONSTRUCTION FOR ONE-MAN OPERATION

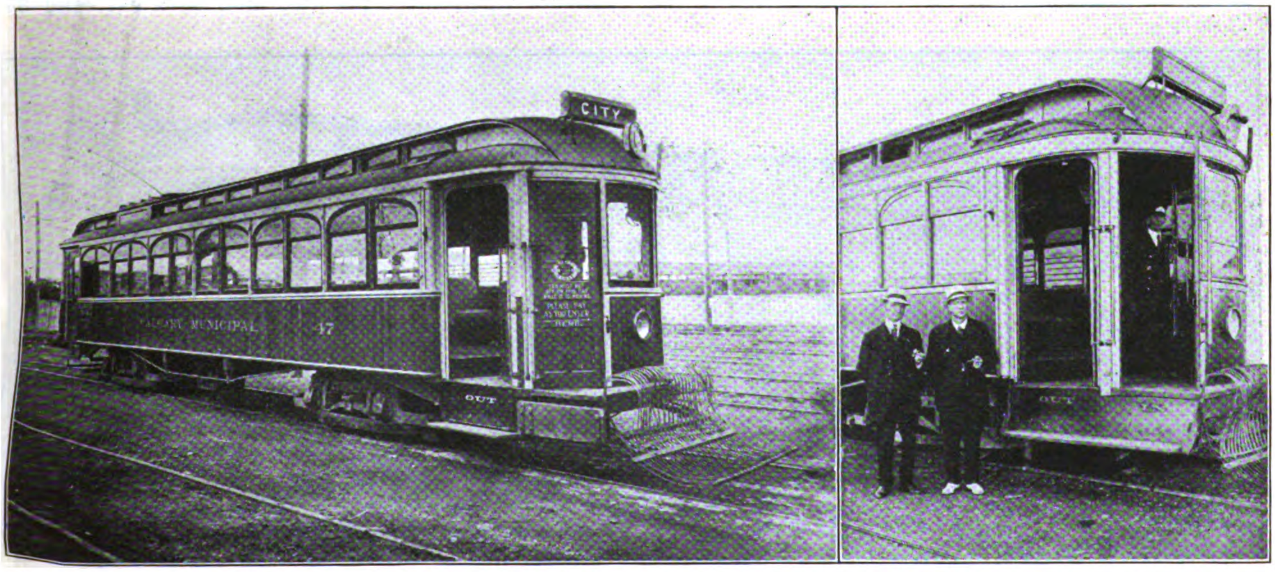
The Calgary car, which was designed by the writer, had a front vestibule 4 ft. long and a rear vestibule 7 ft. long, arranged for pay-as-you-enter operation. To furnish entrance and exit at the front two-thirds of the bulkhead was removed, as was also the right-hand front panel of the front vestibule. The sliding door taken from the bulkhead was placed in this panel and arranged to swing outwardly over an extended vestibule and step. A folding step was provided with control for door and step, completing the entrance.

The former outer vestibule door was made to fold out forward or left as it was to open inwardly, depending upon the original construction, manual control being so arranged as to open or shut one or both doors with one movement and raise or lower the step at the same time. Previously some of the cars had folding doors and some had full-sized swing doors. These were utilized in making the changes so that now there are three different styles of exit doors. The door preferred by the operators folds inwardly to the front of the car, an arrangement which permits both the "in" and "out" doors to swing forward on opening and backward when closing. This permits the operator to utilize the momentum of the doors, which are released just before the car starts or stops, in closing and opening.

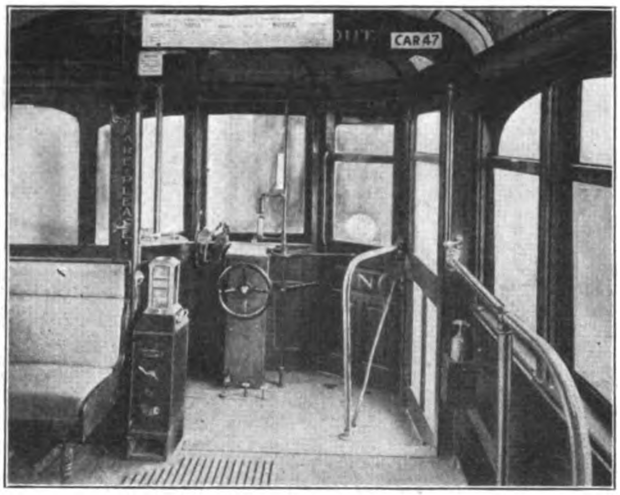

One-Man Operation in Calgary—Rear Emergency Exit Door Open and Closed

The door arrangement described gives an entrance almost in front of the operator, and an exit at the side, as is shown best in the vestibule illustrations accompanying this article. Passengers may thus enter and leave at the same time, paying as they enter and receiving tickets and transfers as they leave, a railing being provided to separate entering and leaving passengers and furnish support for them while doing so.

The double-truck cars have both air and hand brakes, the staff and gearing of the latter being inclosed in a wooden housing, the top of which forms a small table for the motor-conductor's punch, transfers, etc. Two switch irons are carried in each car, hung through the floor for easy



One-Man Operation in Calgary—Double-Truck One-Man Car, and Close View of Entrance and Exit Vestibule



One-Man Operation in Calgary—Equipment at Front End of Car

operation. The ventilation is so designed that the operator from his location in the front vestibule can, by means of levers, open or close the ventilators to any extent desired. The single-truck cars are not equipped with air brakes but have special hand brakes designed by the writer.

On all of the cars the rear platform has been closed in and arranged with seats for twelve passengers as an observation and smoking compartment. A rear emergency door is provided, controlled by levers at front and rear. When the door is released the step is lowered, and the seat which is across the door is raised if it is not occupied. An emergency stop is also provided, the operating knob being hung over the cash box. Pulling this knob, which passenger may do in emergency, applies air and trips the circuit breakers.

The seating arrangement adopted for the one-man cars comprises one 6-ft. longitudinal seat on the left-hand side of the entrance and a similar seat on the right-hand at the rear, looking from front to back. The remainder are cross seats. The lights in the car are shaded, and a cluster is placed in the ceiling of the vestibule with a push button so that the operator may turn it off and on conveniently. A shaded lamp from the car body circuit is inserted in the car post at the fare box, reflecting its light on the receiver or trip pan. All of these details are clearly shown in the illustrations.

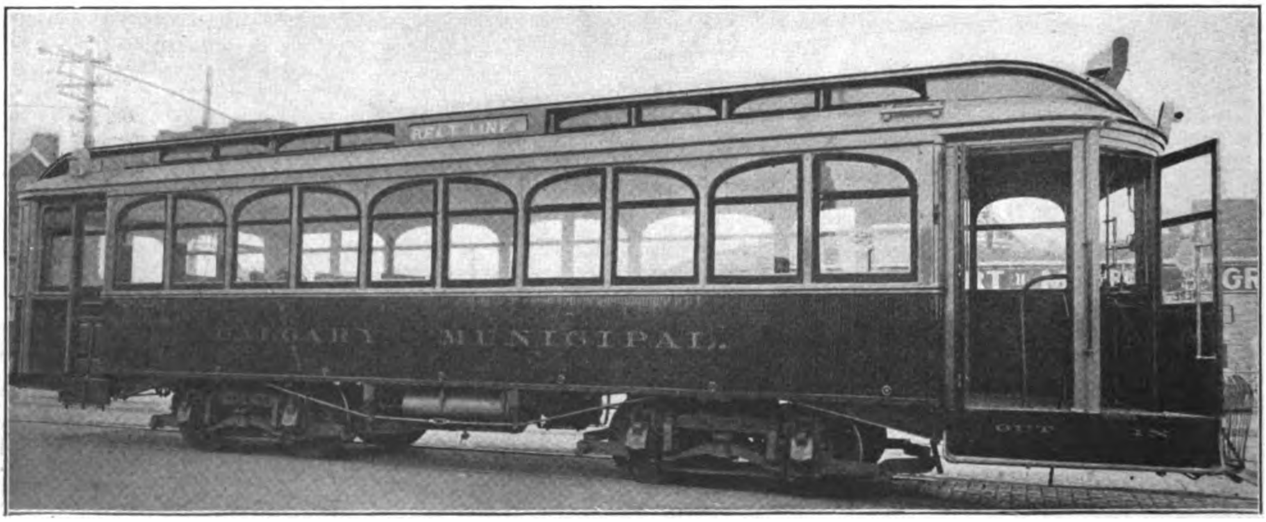
An automatic fender is placed under the rear vestibule so that should a car back up pedestrians will be protected. The car trucks, also, are guarded in such a manner that should a passenger stumble in front of the car he will not be injured.

The cost of converting single-end pay-as-you-enter cars, including arranging seats and emergency door in rear vestibule; removing the front bulkhead, extending the platform and placing the door in the right front panel and adding the necessary control levers; shifting the long step to the front and the short step to the rear, with other changes in location of controller and brakes; arranging the light-shading, advertising spaces and ventilating boards on the ceiling, represented an expenditure of $85 per car, not including painting, or $150 per car complete. The writer has applied for patents on the original features represented in these improvements.

Operating Features of the One-Man Cars

On our cars the fares charged are as follows: Regular fare with transfer, 5 cents; six regular tickets, 25 cents; twenty-five regular tickets, $1; work tickets, good from 6 to 8 a. m. and 5 to 7 p. m., eight for 25 cents; school and children's tickets, ten for 25 cents. Eighty per cent of our passengers use tickets. Transfers, which are issued when passengers leave the car, are designed to be as simple as possible so that the motorman-conductor can punch a number at once. If not used within a specified time they can be punched for a later hour. Transfers for each route have a distinct color to prevent abuse.

The wage schedule in Calgary calls for 32 cents per hour for the first year for motormen and conductors when there are two men on a car, and 37

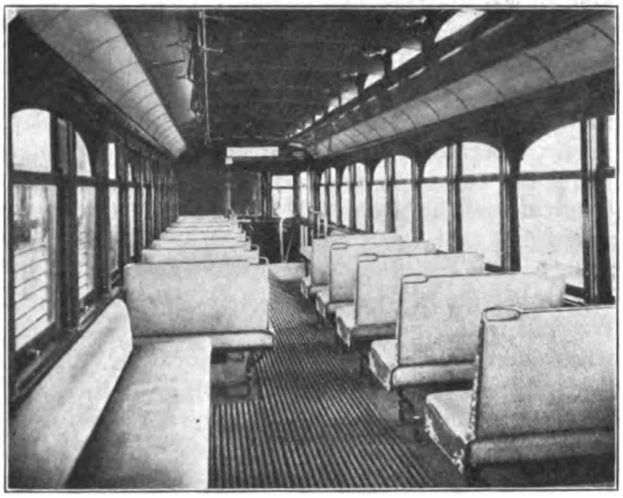


One-Man Operation in Calgary—View of Car with Exit Door Folding Outwardly cents for the motorman-conductor with one man on the car. The rates are increased to 37 cents and 42 cents respectively for each year of service up to seven and one-half years, after which they are constant. Most of the men receive the maximum wage, so that there is a platform saving of 32 cents per hour in one-man operation. The largest number of hours operated in one day during July by one-man cars was 950, representing a saving of $304 at the rates given. It was actually more than this, however, for time and one-half was allowed on this particular day, which was Dominion Day, or July 1, so that the saving was actually $456. The average daily hours operated in July by one-man cars were 629, and the total saving for the month was about $6,400.

Our records show that the operation of one-man cars has not in any way decreased the traffic, but rather increased it. There is also less loss of fares, partly because the location of the fare box is such as to make it difficult for passengers to enter the car without paying fare. At the same time the motorman-conductor is in a conspicuous position with respect to the passengers and is thus under constant inspection.

The railway department of the city pays the power department at the rate of 1½ cents per kilowatt-hour for energy up to 400,000 kw.-hr. per month, which is 3 cents per car-mile. Above this amount the rate is three-quarters of a cent, or 1½ cents per car-mile. We find that less energy is used on the one-man cars, which fact we explain by the greater care taken in starting, stopping and coasting due to the increased feeling of individual responsibility. We take advantage of the low rate for power by sending out extra cars to relieve congestion, which we can do at 42 cents per hour for labor and 12 cents for energy.

Since we have been operating the one-man cars we have not had a single step accident and only one slight collision accident which could be attributed to one-man operation. This result has been achieved in spite of the fact that the period has been one of training of motormen and conductors to be motormen-conductors, and it has also covered that of the Alberta Provincial Exhibition, involving the operation of fifty-two one-man cars carrying 50,000 fare passengers and 10,000 transfer passengers per day.

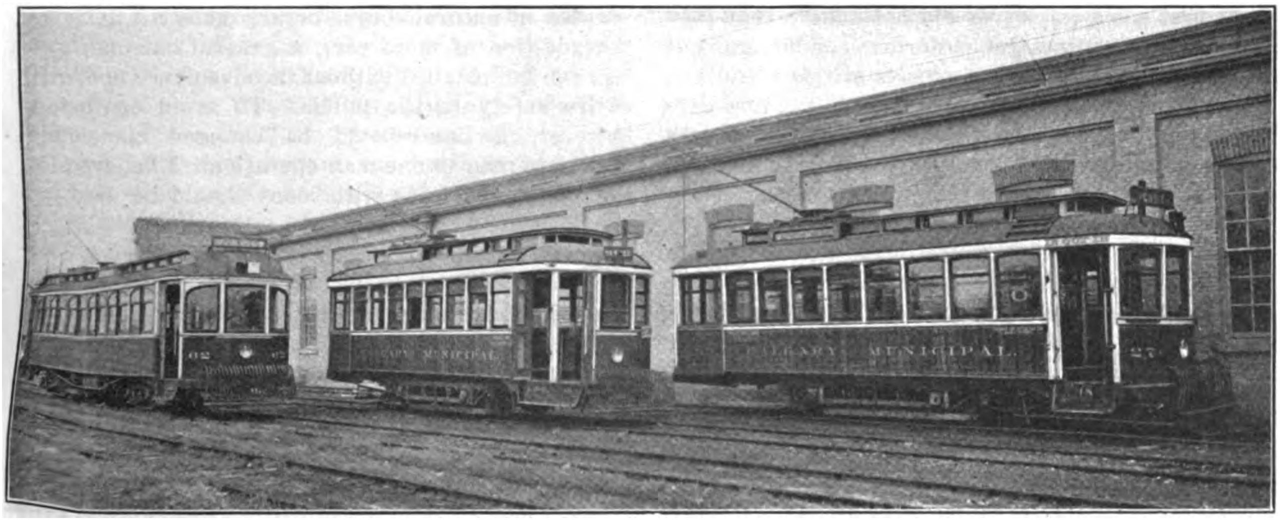


One-Man Operation in Calgary—Interior View Showing Seating Arrangement

OPERATING DETAILS

We have had very few operating difficulties with the one-man cars. Operators are supplied with change-makers, and, as explained, the punching of transfers has been made as simple as possible. Fare collection is simplified also by the fact that many passengers purchase $1 books. Our cars are equipped with whistles, where compressed air is available, for the purpose of communicating with cars on intersecting lines. One whistle signal means, "Wait for transfers"; two "All clear—go ahead." One whistle signal from a waiting car means "Have you transfers?" and one in reply by the approaching car means "Yes," while two mean "No."

In order that the motorman-conductor may be



One-Man Operation in Calgary—View of Large Before and Small Car Before and After Reconstruction able to see the fare box plainly a mirror is placed in front of him. No registers are used on the cars. All cars have electric signal bells and buttons, with a bell and rope in addition extending through to the rear smoker for the use of standing passengers. Operators are permitted to make change while the car is in motion on outside lines when they can see that it is safe to do so.

We find that the trolley wheels rarely leave the wire, but the cars are provided with trolley catchers, and trolley guards are used on all railway crossings. We find that as operators use much greater care when entering switch points than formerly, the upkeep of the latter has been reduced. For the same reason switches and broken trolley wires are less numerous than they were. As we do not operate shuttle cars the operator is only required to turn signs at the ends of the runs.

The names of streets are called by the motormen-conductors, and these are also able to render much assistance to elderly passengers and children. The carrying of baby go-carts and small buggies, which has been customary on our system, made a little extra difficulty at first, but this has been removed by suitable arrangement of the interior of the car.

We do not operate over any main line steam railroad crossings, but do cross a number of sidings or spur tracks. These crossings are protected by semaphores operated by the railway crews using the spur. When signals are set against our operators it is their duty to insure safety by leaving the car and looking in both directions.

RELATIONS WITH EMPLOYEES AND THE PUBLIC

When the one-man plan of operation was adopted some employees were naturally set back but, by the use of tact, other occupations were found for the men no longer needed for platform work. Some men were given employment in the rolling stock, track and line departments, where they were valuable in keeping down depreciation rather than spending their time standing on the rear of cars. As a consequence our equipment is kept up much better than formerly.

At first some employees did not believe that they could become successful motormen-conductors, but most of them have become experts at this work, and I am satisfied that the majority would not now care to return to former positions. In selecting men we chose alternately a motorman and a conductor according to seniority. Under the present conditions the men not only earn more money, but they state that their work is more interesting. As they are alone responsible for results they are not now dependent upon a second man for signals and can consequently avoid delays. In fact, the operator is "captain of his own ship," and it is his interest to make schedule time, to insure safety to passengers and to treat them courteously. As there are fewer men required to operate the cars it is correspondingly easier to maintain harmony among them.

At first a part of the public feared that the railway department would reduce the privileges of mothers with respect to the carrying of go-carts, etc., and an appeal was made to the local Council of Women to insure the continuation of this privilege. By some slight changes in railings and grab handles it was possible to meet the wishes of the Council and this opposition to the adoption of the one-man car was withdrawn. The Board of Trade went into the matter of the one-man operation also, and unanimously approved it; the same action was taken by the Rotary and Advertising Clubs.

The leading papers strongly indorsed the one-man car as an economic means of keeping down the fare and supplying good, safe service. As a whole, the public is satisfied that the car is safer, quite as speedy and more economical than its predecessor.

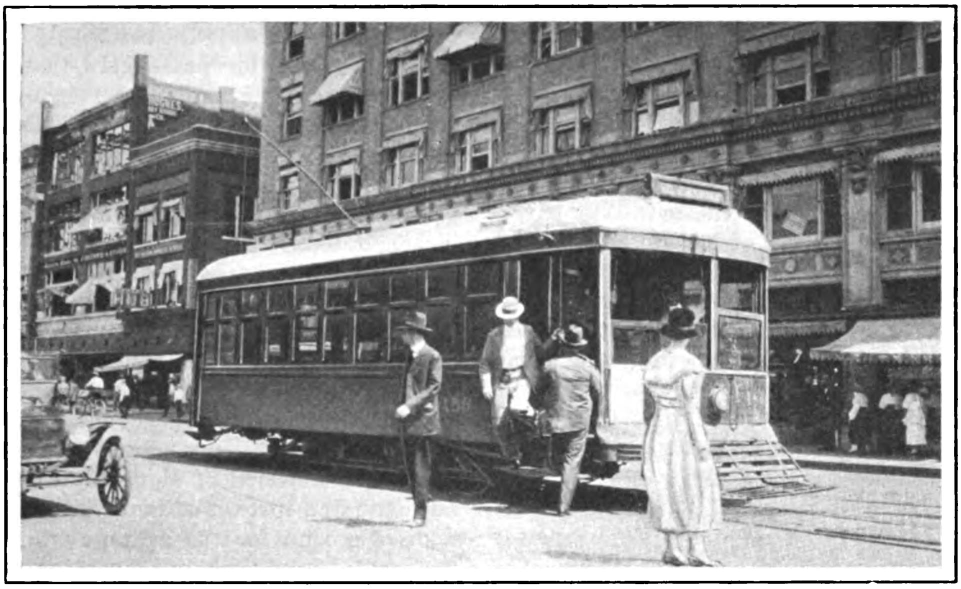
SUMMARY AND CONCLUSIONS

From our experience I am convinced that the one-man car is the only solution of the present problem of more economical operation on many lines in large cities and altogether in cities up to 75,000 population. It affords a means of meeting jitney and private automobile competition. The belief has prevailed to some extent that only small cars can be operated satisfactorily with one man. Under many conditions the light-weight car is the ideal, but with reasonably cheap power the double-truck car of medium size will, in my opinion, prove to be the most popular where the traffic warrants its use.

At first I was pessimistic regarding the operation of 46-ft. cars by one man, but experience proved them to be very satisfactory. When we began we stationed conductors on these cars during rush hours, while the motormen-conductors were being trained in their double duties, but this was shortly found to be unnecessary. I believe that any type of front-entrance and exit car could be operated by one man during slack hours, or say twelve hours per day, and two men could be used during rush hours or nine hours per day. I wish to emphasize, however, that extra wages should be paid for the one-man operation, as this encourages the operators to become competent to handle the cars alone. In making the transition, as positions are vacated in natural course or are made available by the addition of more cars, a general one-man system can be installed without inconvenience and with entire safety to the public. To avoid confusion, however, a line should be changed completely from two-man to one-man operation. I believe also that single-end cars with loops should be used, as shuttle cars require too much attention.

Finally, if operators are provided with such conveniences as to make it reasonably easy for them to operate cars alone, and if inducements are given to the public to purchase and use tickets, there is no reason why conductors should be employed. To speak generally, a motorman is idle while the car is at rest and the conductor is not fully employed when it is operating. The motorman-conductor is occupied all the time, because he is caring for his passengers when not operating the car, and operating the car when not handling passengers.

Development of Light-Weight Safety Car on Illinois Traction System



Original Light-Weight Safety Car in Service on Main Business Street, Wichita, Kan.

The Considerations Which Led to the Adoption of This Special Type of Car and Governed Its Development Are Related—The Practices of the Illinois Traction System in Operating Cars with One Man and a Description of the Latest Type of Bosenbury Car Are Also Given

IN the medium-size town the resident turns the faucet and draws water of the same pressure and as fit to drink as he would in the great metropolis. He picks up his telephone receiver and gets the operator almost immediately, just as he would in the large city. He snaps a button and his electric lights burn as brightly and as steadily. His office has all the conveniences and refinements of a New York office. It will not be in a forty or a twenty-story building, but what there is of the building, if modern, will be just as good. He may stop at the hotel in his town and have every comfort. It will not have a thousand rooms and a thousand baths, but it will provide him with a service very like that of his Chicago or Boston stopping place. With all these accommodations closely approximating in quality similar service in a metropolitan district, he naturally expects to be given approximately metropolitan service by the electric railway company.

It was in about these words that J. M. Bosenbury, superintendent of motive power and equipment Illinois Traction System, summed up the reasonableness and necessity of providing more service in the smaller cities. Under the direction of H. E. Chubbuck, vice-president executive, Mr. Bosenbury has been one of the leading spirits in the industry in developing and fostering the light-weight safety car idea, and he was the first to build cars embodying the essential features of the present safety car design.

The railway men in the medium-size towns, he went on to say, have pursued the wrong course in attempting to furnish a service comparable with that in the metropolis, for instead of providing an approximation in the way of speed and frequency, they have made use of the big city car. The electric light company and the telephone company have furnished their equivalent service by providing a plant commensurate in size with the needs of the community. The railway men, however, have installed big, beautiful, double-truck cars such as are used in the large centers, but cars entirely out of proportion to the size of the town. They have attempted to reproduce the plant rather than the service. How can this situation be remedied?

The better service generally demanded by the public cannot profitably be given with the type of car at present in common use. One of the requirements of the public is that the cars be operated at a higher rate of speed. But to operate the present cars at a higher schedule speed would increase the costs of giving the service very materially. Any increase in costs is out of the question, for most of the roads cannot afford to give even the present standard of service. This fact then leads to the alternative of producing an electric railway car of such characteristics that the saving in energy consumption will be sufficient to warrant the building of new cars which are adapted to the better service requirements.

And thus came about the incentive which has produced the light-weight safety car and which is now forcing the railway men to look to it for relief. It has been developed not so much as the result of genius foresight as from plain necessity. One of the more startling necessities for the new type car is brought out in the statement of Mr. Bosenbury that it has been estimated with reasonable accuracy that 50 per cent of the available passengers in the medium size town are now riding in private automobiles. These are the most serious competitor the urban railway company now has. The jitney bus is not the real competitor that it was for a time thought to be, but to its advent can be credited the important lesson of higher schedule speed and greater car frequency.

Carrying passengers is an out and out power proposition, according to Mr. Bosenbury's views. The people want rapid, frequent service at all times of day. The most economical way to provide this is the one which will result in the smallest energy consumption, or, in other words, the one which will involve the least idle weight haulage. If a traffic of 500 passengers per hour originates at a certain point during one or two hours in a day, while this same point provides a load of only fifty or 100 passengers an hour during the remainder of the day, it is certainly wasteful to operate the same big unit all day long, although it may be well suited to the peak period. It is impractical to lengthen the headway between the big cars and thus make the number of passengers carried per car-mile higher, for in the medium size town, if the passenger misses one car and knows he must wait fifteen minutes for another, he walks. The most flexible arrangement to care for this common condition is the use of small car units running frequently enough so that it will be much quicker to wait for the next car than to walk, and then greatly to increase the number of these small units for the rush-hour period. By such a scheme the current consumption and maintenance charges are more nearly in proportion to the number of passengers carried than they are where the larger cars are operated with many vacant seats during a large part of the day.

After it was learned that it was unnecessary to run a heavy double-truck car and new design work had begun, it was found that with a single-end, single-truck car it was possible to provide a seating capacity larger than most of the single-truck cars in use and almost equal in capacity to the double-truck cars, and at the same time so to design the car as to realize considerable reduction in weight and consequent current consumption. Then, as the rising costs of operating a railway necessitated further economies, the next step was to operate the car with one man. City officials and the public immediately raised the objection that the cars were unsafe with only a one-man crew. This criticism was followed by the development of labor-saving and safety devices which would completely overcome this deficiency. In fact, the control which was originated for this purpose made the car with a single operator even more safe for passengers than the ordinary two-man car. The undivided responsibility, to begin with, tends to eliminate the accident hazard. Then the safety devices developed have completely forestalled any serious accident which might happen in the event of the operator's becoming suddenly incapacitated.

Mr. Bosenbury says that from observations made in service, the use of the single operator with a properly equipped car in no way retards the schedule speed. On the contrary, the light-weight safety car makes possible a speeding up of the schedule through taking advantage of the savings of fractions of seconds gained in the operation of doors, transmission of signals, etc., where there is but one mind instead of two to think. He claims it takes a second for the average trainman to think and act. Thus, with one operator, half the time consumed in giving and interpreting signals, etc., is saved. The men become very expert in the operation of their cars, and while the schedule speed is apparently slowed up on the first installation of fully equipped safety cars, it can soon be increased over the previous two-man operation.

HOW MUCH WILL THE LIGHT-WEIGHT CAR SAVE?

Extensive use of the light-weight safety car has not yet been made on the Illinois Traction System, but this is not because of any lack of appreciation of the economic possibilities it holds forth. Mr. Chubbuck is completely "sold" on its use and says that many of this type of car will be installed on the various city properties as rapidly as is expeditious with the prevailing money and material market conditions. Quite general use has been made of cars operated by one man on light-traffic lines on some of the city properties of the I. T. S. for many years (in Ottawa, Ill., for twenty years), but these cars embody only the saving in platform expense and do not comprise the features vital to the public interest and to further economies for the company. A number of cars have also been converted for one-man operation, but this scheme does not to any great extent lighten the weight and results, therefore, in little saving in the cost of car propulsion. For instance, on one city property, the annual saving to be gained by the use of twelve light-weight safety cars as compared with twelve converted one-man cars was carefully estimated to be $19,466 in favor of the new light-weight cars. This procedure will therefore not be pursued by the company to any great extent, since it includes but part of the possible savings and does not make readily possible the improvements in service which are desired in fostering the "public-be-pleased" policy.

Mr. Bosenbury has made analyses of the operation of the eleven light-weight safety cars which the company has had in service since 1912. In general, these show that a saving in platform expense and current consumption of from 25 to 30 per cent over the similar expenditures for two-man operation can be effected. These figures include an increase in car miles over the two-man car schedules, meaning improved service of from 25 to 40 per cent. The detail figures involved in the estimate of the costs and advantages of installing new cars of the one-man, light-weight type on one complete line of one Illinois Traction city property, and on the entire system in another Illinois Traction city, were computed two years ago and showed very attractive savings. In the latter city the proposed scheme of cars and operation included a general rerouting of cars and the changing of 2650 ft. of track from one street to another in the down-town district to make possible the looping of all lines and permit the use of single-end cars. In the former city, the proposed operation showed a net annual saving over the then operating costs in favor of the light-weight safety car of 24.7 per cent, at the same time providing for a 15.4 per cent increase in seat miles per year and a 11.1 per cent increase in regular car service with a large increase in rush-hour service. In the latter city, the detail figures for the conditions and prices then prevailing showed a net saving, including the interest on the track rearrangement, investment, etc., of 23.6 per cent in favor of the safety car, at the same time providing a 28 per cent increase in car-miles per year.

More recent estimates made for another city, and including a complete change to the light-weight safety car, showed that with the purchase of thirty new cars, thus increasing the capital account $150,000, the net earnings after deducting operating expenses would be increased from 8 per cent to 11 per cent on the total investment. This did not include any allowance for increased receipts which would doubtless result from the more frequent and faster service.

EXPERIENCE IN WICHITA AND QUINCY

Definite operating figures from Wichita, Kan., given below provide a concrete instance of the savings possible with the safety cars. As these were the pioneer light-weight safety cars to be built and operated by the McKinley properties, they do not show as marked a saving as later cars which have been developed and improved as the result of experience with these first ones. They weigh from 7500 to 10,000 lb. more than the later designs and hence have a correspondingly higher current consumption. The maintenance on the newer cars has also been reduced due to improvements in the control systems. In Wichita, the North Riverside-South Emporia line, on which the safety cars are now run, was formerly operated with five single-truck two-man cars, such as the one shown on this page. These cars weighed approximately 26,000 lb. and seated twenty-eight passengers. Four of these cars were run through from one end of the line to the other, while the fifth was operated on a branch stub line on a shuttle service. As each car came out to the connecting point, the conductor would leave his car and take the shuttle car to the end of the stub line and back while the motorman went on to the end of the main line and returned with the other car. Then the stub car was left standing there without attendant until the next outbound car arrived. Thus, but eight men were required to run the five cars with a fifteen-minute headway, or sixteen men for the full 19.2 hours a day service. The schedule speed was one trip an hour or 7.82 m. p. h.

OPERATING DATA FOR THE RIVERSIDE-EMPORIA LINE, WICHITA, KAN.

	Two-Man Cars Formerly Used	Light-Weight Safety Cars
Number cars in regular service	5	6
Headway, regular service, minutes	15	10
Schedule speed, miles per hour	7.82	7.82
Average energy consumption per car-mile, kw.-hr.	1.55	1.27
Energy cost per car-mile, cents	1.86	1.52
Average wage platform men, present scale, cents	28	30
Car-miles per year, regular service	199,412	314,265
Seat-miles per year, regular service	5,583,536	11,627,805
Car-hours in regular service per year	34,684	41,621
Man-hours in regular service per year	55,494	41,621
Energy consumption per year, kw.-hr.	309,088	399,116
Energy cost per year	$3,709	$4,789
Total yearly platform expense	$15,538	$12,486
Total energy plus labor cost per year	$19,247	$17,275
Saving energy plus labor cost per year	......	$1,972

Illinois Traction—Type of Single-Truck Car Replaced on Riverside Line, Wichita, Kan.

When the safety cars were installed in September, 1913, the five cars formerly used were replaced with six new ones running with a ten-minute headway and with every other car alternating on the stub line and on the main line, so that beyond this junction point, a twenty-minute service is supplied. The same schedule speed of 7.82 m. p. h. is maintained with the safety cars, since the forked line with one branch longer than the other and the alternate service complicate seriously the working out of a different time-table. Otherwise advantage would be taken of the slightly higher schedule speed possible by eliminating the short layovers and utilizing better running speed. The six cars require twelve men for the 19.2 hours a day service. They weigh 23,500 lb. and seat thirty-seven passengers.

The Riverside-Emporia line is considered one of the heavier traffic lines of Wichita. It operates from the southern section of the city, through the main street of the business section and then to the north side of the city, where it serves Riverside Park and the Municipal Bathing Beach. On Sundays and holidays the traffic to and from the park and bathing beach is very heavy, and extra service is usually provided by running two-man cars. The one-man cars carry sixty and seventy passengers each and still keep to the same schedule, and the two-man cars can do no better. Outside of the business district and parks, the remainder of the route traversed by the Riverside line is through residential districts. The population of Wichita at present is approximately 65,000. The total car-miles operated in 1916 was 2,069,864. The number of revenue passengers carried in 1916 was 1,249,891 and the gross earnings were $60,552.96.

In computing the platform expense comparison above, the present scale of wage was used in both cases. This averages 30 cents an hour, including the 10 per cent annual bonus, for the single-operator cars, and 28 cents for the two-man cars. The maintenance figures were not available for inclusion in this article, but these are estimated by A. M. Patten, assistant general manager Illinois Traction System, to be 20 per cent higher for the single-operator cars than for the old cars, owing to the large amount of special apparatus installed on these particular cars, a large portion of which is eliminated on the fifteen new light-weight cars just being placed in operation in Wichita at the time this issue goes to press.

The saving exclusive of maintenance which has been realized through these one-man cars is only $2,000 per year, and this would probably be consumed in the increased maintenance. But this is not the significant point in connection with the change to the safety car. The really important consideration is the fact that an increase in service measured by a 57.6 per cent increase in car-miles operated, 108.2 per cent increase in seat-miles provided, and a ten-minute instead of a fifteen-minute headway, were possible and were given without any increase in operating expenses. As these were the pioneer cars, the showing is not so good as would have been possible with the new cars now being installed in Wichita. These would have made possible a further energy cost saving of approximately $1,000, thus bringing the saving per year around $3,000. A marked lower maintenance also would have added still more to the net savings.

FARE PASSENGERS AND GROSS EARNINGS BY YEARS IN WICHITA

Year	Fare Passengers	Gross Earnings
1912	1,017,404	$49,055.00
1913	1,071,397	51,675.56
1914	1,076,163	51,967.85
1915	1,122,346	54,317.62
1916	1,249,891	60,552.96

These figures thus far have not taken into consideration any increase in business resulting from the better service provided. Just how much advantage can be attributed to the better service is very difficult to estimate, since so many factors take part in influencing the amount of travel on the electric cars. Perhaps the fact that the Wichita gross earnings have shown a substantial increase, as given in the accompanying table, despite the competition of jitneys and four 5-cent fare auto-bus lines, and worst of all, a private automobile for every ten inhabitants, is as good an indication as any of the value of the more frequent service.

The Quincy (Ill.) Railway has in use four of the same type cars as those on the Riverside line in Wichita. Three of these are required in the regular schedule on a cross-town factory service. The schedule speed maintained is 8.25 m. p. h. with a twenty-minute headway which can be increased to ten minutes when the traffic is heavy. W. A. Martin, general superintendent, states that these cars are saving the company amounts approximately as shown above, when compared with the older design two-man cars and same frequency of service.

SAVING IN QUINCY RESULTING FROM USE OF FOUR SAFETY CARS

Saving in labor per car per day	$3.10
Saving in maintenance per car per day	1.06
Saving in energy cost per day	1.04
Saving in maintenance of way per day	.19
Total saving per car per day	$5.39

DEVELOPING THE LIGHT-WEIGHT CAR DESIGN

The first cars on the Illinois Traction System, and in fact the first in the country built specifically as light-weight, one-man units, included an installation of eleven, of which four have been in use in Quincy, Ill., one in Oskaloosa, Ia., and six in Wichita, Kan., since 1913. These were sufficient to equip one line complete in each of these towns. Through the downtown district in each case, they are operated over the same track as cars of other types, and they have not in any way retarded the schedule. These cars were fully described in the ELECTRIC RAILWAY JOURNAL for Oct. 1, 1916.

These first Illinois Traction light-weight cars weighed 23,500 lb. and furnished a seating capacity for thirty-seven people. They were arranged for single-end operation with a sliding exit and entrance door at the front, and with an emergency exit door at one side of a rear vestibule closed off from the main body of the car by a bulkhead and sliding door and used as a smoking compartment. Only longitudinal seats were installed, leaving a wide aisle which provided a standing room capacity possibly equivalent to the seating capacity. The car floor was continuous from bumper to bumper, since the omission of drop platforms greatly simplified the underframe construction and thereby reduced the necessary weight. The body was of composite construction, with steel underframe and yellow pine side posts and side sills, poplar letterboards, etc. The roof was of the plain arch type with wooden construction. The dimensions follow:

Length over all	32 ft. 4 in.
Height from top of rail to top of roof	10 ft. 9 in.
Height from rail to car body floor	28 in.
Height from rail to top of first step	14 in.
Height from first step to car floor	14 in.
Width of car over side plates	8 ft. 2 in.

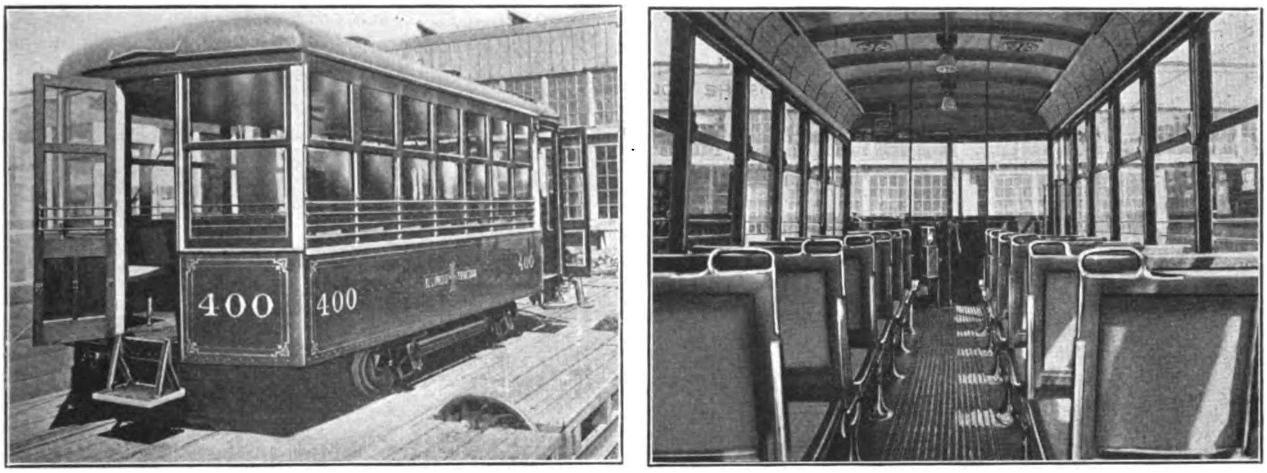
These first cars were equipped with various safety appliances, including a deadman's control combined with the Westinghouse HL control, air-operated doors and steps and a pneumatically interlocked emergency rear door, all arranged so that the car could not be started when the doors and steps were open and the doors and steps could not be opened when the car was in motion. From the effort made to provide the automatic safety features for these cars, it was found desirable to make use of compressed air, and with this established, air brakes followed as a natural sequence. The air brakes and door operation were then interlocked to be operated by a single lever in a system described in the issue of this paper for Sept. 2, 1916.

It is Mr. Bosenbury's opinion that all the labor saving and safety devices of proved worth on the market to-day should be installed on the light-weight type cars. He says that the operator should be given every device possible to facilitate his work and should then be made to realize that he is a merchant with a service for sale. The use of air brakes in this connection is especially important. A 15,000 lb. car running at 20 m.p.h. has 200,400 ft.-lb. of kinetic energy which must be dissipated in bringing it to a stop. To do this work manually, where a car is making an average of six stops per mile on a schedule speed of 9 m. p. h. (which means 486 stops in a nine-hour day, or easily 500 brake applications in a day including slow-downs), is arduous, and the operator may reach a state of fatigue at some point in the day's work between the first and 500th brake application, when it will be easier to turn his head and "not see" a passenger than to stop. According to Mr. Bosenbury, it is only necessary to skip two or three passengers a day to pay the interest and depreciation on the air-brake equipment.

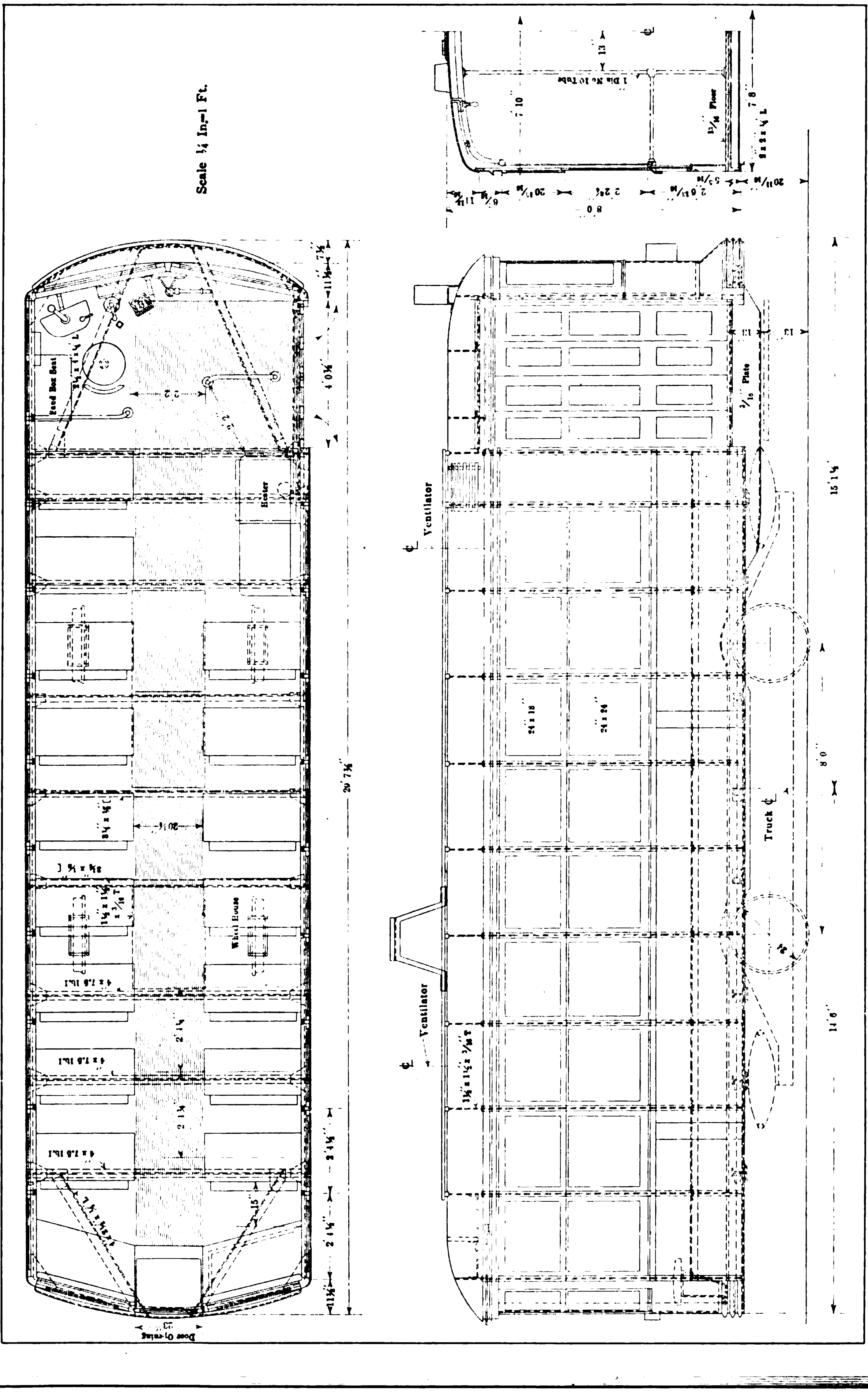
THE 10,000-LB. SAFETY CAR, THE NEXT DEVELOPMENT

Further study in the design of the small unit type of car by Mr. Bosenbury brought out in 1916 a single-end, one-man car with a seating capacity of thirty passengers and a weight of only 10,000 lb., or 333 lb. per seated passenger. The first eleven cars of the safety type weighed 635 lb. per seated passenger. Profiting from the experience with the first design, effort was made to eliminate all things possible that did not add to the comfort and safety of passengers. This 10,000-lb. weight of the second car includes the body, truck, electrical and air-brake equipment, and the pneumatic door engines, etc., complete like the previous cars. The floor is continuous from bumper to bumper, but use is made of transverse seats instead of longitudinal seats. The main door at the front end of the car, 32 in. wide, is used for both exit and entrance purposes, in order to minimize the amount of space required and hence reduce the weight. This door is of the two-leaf, folding type and is arranged to open outwardly in such a manner that the retardation of the car has a tendency to assist in opening the door, while accelerating the car has a tendency to assist in closing the door. The door and step are operated pneumatically and controlled by the brake valve handle. The rear emergency exit door is placed directly in the center of the car. It is held securely in position by two locks, one operated pneumatically and the other manually. The pneumatic lock is unlocked automatically by an emergency application of the air brakes, which may be obtained at the will of the operator, or by an emergency cord that extends through the car, or automatically if for any reason the operator suddenly removes his hand from the controller handle. After the door has been unlocked pneumatically by any of these means, it is still in a locked position until someone releases the manually-operated lock. The latter is attached to the seat immediately in front of the door, and it is impossible to release this lock while a person is sitting on the seat. This arrangement was installed simply as a safety measure. When the rear emergency door opens, the seat immediately in front of it folds backward and down to form a step.

This 10,000-lb. car is 22 ft. 4 in. long by 7 ft. 8 in. wide, and 9 ft. 11 in. from top of rail to top of car



Illinois Traction—Views of the 10,000-*Lb. Safety Car,* 22 *Ft. Long and Seating Thirty Passengers*

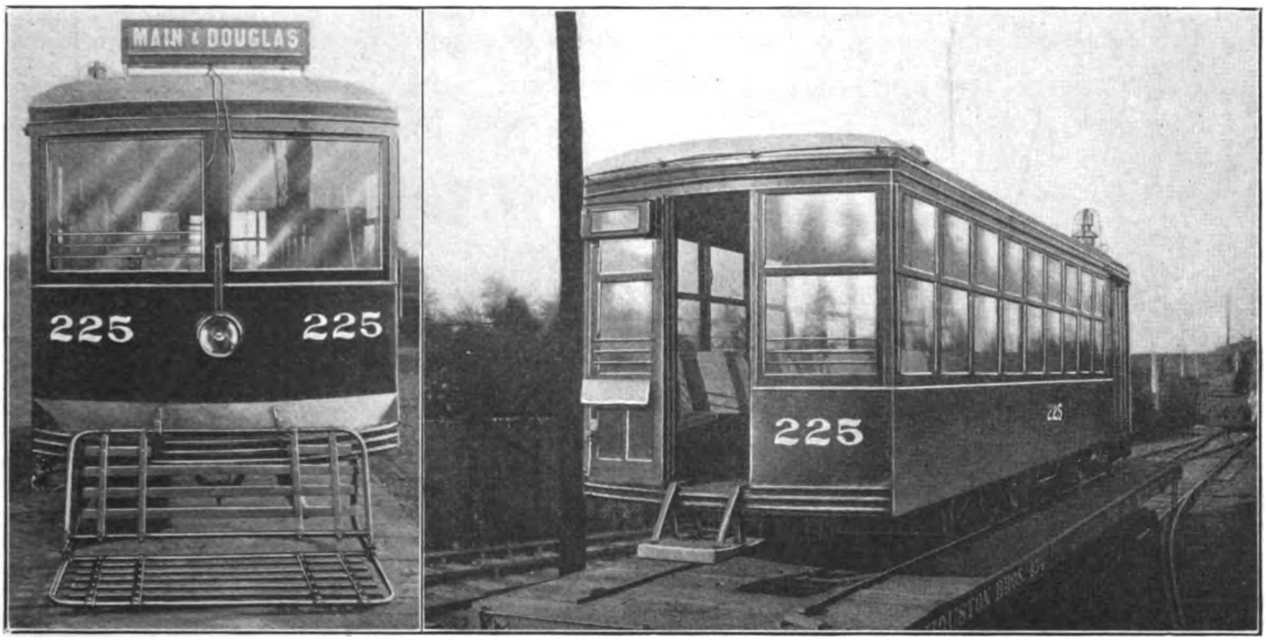

Scale ¼ In.=1 Ft.
Sand Box Seat
Heater
Wheel House
Door Opening
29' 7¼"
Ventilator
Ventilator
Truck
8' 0"
15' 1¼"
14' 6"
1 Dia No 10 Tube
Plate
Floor
24 x 18
24 x 24

Illinois Traction—Plan and Elevation Details of Latest Type of Safety Car roof. It is mounted on a specially-designed truck with 24-in. wheels which bring the height from top of rail to first step at 13½ in. with another 13½-in. step onto the car floor. In general, the car has straight sides and arched roof and is constructed of steel. This car was exhibited at the last convention of the American Electric Railway Association by the St. Louis Car Company, which built it as a sample stock car.

LATEST TYPE ILLINOIS TRACTION CAR

The fifteen new cars just being placed in operation in Wichita represent the latest type of Bosenbury car, although these are somewhat larger and heavier than the designer would build as a standard for the system. They are approximately 30 ft. long, weigh 16,000 lb. and seat forty-one passengers, giving a weight of 390 lb. per seated passenger. The hot-air heater used reduces the seating capacity to thirty-nine during part of the year. The main items making up the total weight are as follows:

Car body	9,050 lb.
Truck	4,200 lb.
Electrical equipment	2,000 lb.
Air brake equipment	750 lb.
Total	16,000 lb.



Illinois Traction—Pressed-Steel Anti-Climber Bumper Feature of Front End, and Rear Emergency Door Open and Seat Tipped Back to Form Step, Latest Type of I. T. S. Car

These cars are equipped with two GE-258-A motors and K-10 control, and the Safety Car Devices Company air-operated step, door and automatic emergency control, with the Westinghouse DR-10 compressor.

The bodies of these cars are constructed of steel except for the roof structure and are built without bulkhead or platform. The seats are Hale & Kilburn cross-seats of the springless type, except for one longitudinal seat next to the front door. The rear emergency door is located in the center of the car and is double locked, mechanically and pneumatically, as on the 10,000-lb. car. Separate entrance and exit doors of the two-leaf folding type with wire glass panes in the lower halves are used. All doors are operated from the motorman's position by Safety Car Devices Company door engines and mechanism. The steps at the opening operate in conjunction with the doors and are raised and lowered through a train of bevel gears. The steps are spring counter-balanced.

The underframe is a very simple steel construction made up with pressed-steel angle side sills extending the full length of the sides of the car in combination with No. 16 rerolled, resquared, patent leveled sheet-steel side sheathing which is bent around the corner posts. The cross-sills are also of pressed steel members except for those sills which are used as truck connections, and these are 4 in. 7½-lb. I-beams. These cross-sills are connected to the side sills with pressed-steel gusset plates. The bumpers at both the front and rear ends of the car are formed from a three-ribbed pressed-steel anti-climber which extends across the end of the car from post to post in one piece. These bumpers are secured to the side-sill angles on the closed side of the car with gusset plates and with the connection formed by flattening out the flanges on the bumper and using the web for a connection angle. Bumper braces of 4-in. x 2½ in. x ¼-in. pressed-steel angles extend diagonally between the bumper ends and the first cross-sill.

The dashes are constructed of No. 18 rerolled, resquared, patent leveled sheet steel, with No. 16 gage sheet-steel bumper shields. The steel sheathing panels on the inside of the dash have been pressed with corrugations about 10 in. apart to stiffen the construction. The side posts and carlines which extend in one length from side sill to side sill are formed from 1½-in. x 1½-in. x 3/16-in. rolled-steel tees. A wood filler is bolted on each side of the webs of the tee posts and ash roof furring is similarly bolted to the web on the carline section of the tees. The vestibule corner posts are also formed from rolled-steel tees of heavier weight metal and are continuous from side sill to side sill.

The letterboards and drip mouldings are formed from one piece of pressed steel and riveted to each of the side posts. No. 16 gage sheet steel is used for this letterboard, and it is spliced with inside splice plates pressed to fit the shape of the letterboard and spot welded in place. The letterboard is reinforced over the vestibule door opening by a similar section of No. 16 gage sheet fitted to the inside of the letterboard. The roof is of the plain arch type with narrow tongue and grooved poplar boards fastened to the ash furring on the carlines, painted with white lead and covered with No. 8 cotton duck applied in one piece.

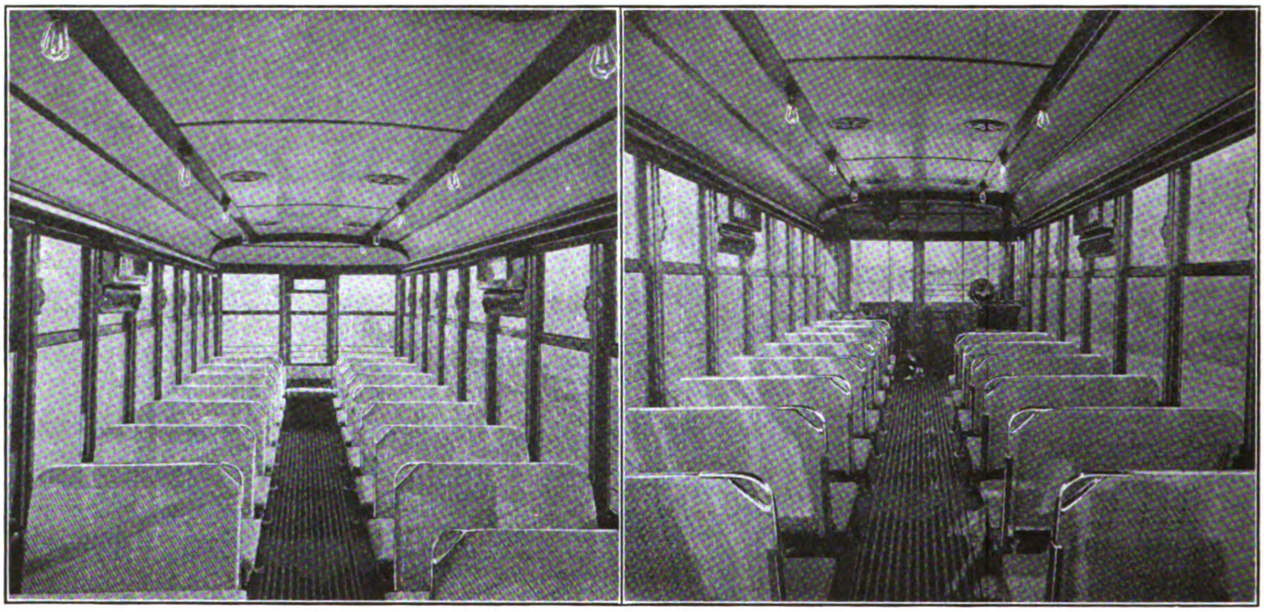
Interior Finish and Arrangement of New Cars

The window sash, doors, moulding and general interior finish of the cars is in mahogany. The wainscoting is of mahogany veneer. The headlining is painted cream color and fitted with a double advertising card rack. The upper-deck headlining is of three-ply poplar veneer, while the lower card rack is of galvanized iron. This lower card rack extends around the ends of the car also.

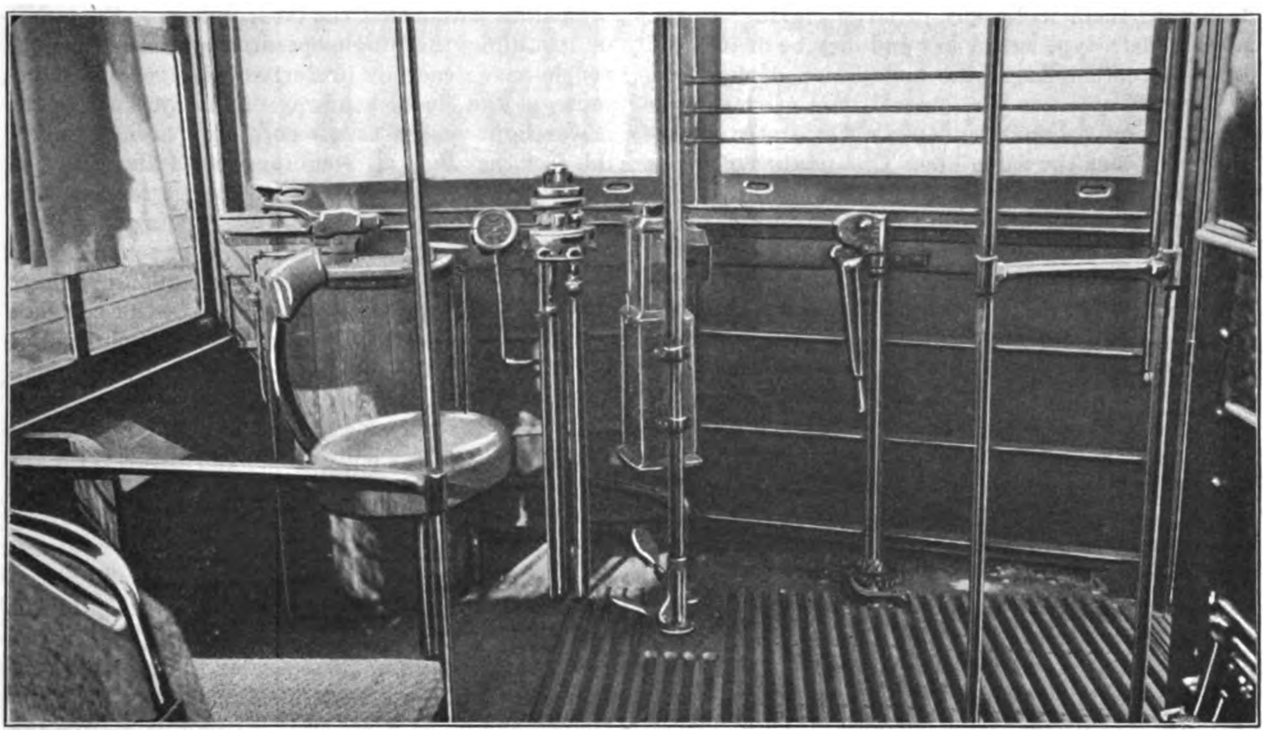
The yellow pine tongue and grooved flooring beneath the seats is screwed to the ash furring which is bolted to the underframe members. The aisle floor is covered with ½-in. high x ¾-in. wide hard maple mat strips, as is also the front vestibule entrance and exit floor space. Grooves in the underside of the flooring are provided to allow the electric cables and air-brake piping to run above the cross-sills and other underframe members. Sheet-steel wheel boxes, which are made leakproof by a gasket between the floor and the box, are provided in the floor of the car to allow a lower floor construction.

The window sash are made in two parts with the upper sash stationary and with continuous rails, and the lower sash arranged to raise. The rear vestibule side sash are also arranged to be raised. The vestibule sash in front of the operator's position is arranged to drop, as is also the right-hand front window. The window guards on the sides of the car are in two sections and are formed with pressed-steel ribs and five bars of ⅜-in. rods. The fastenings which hold the window guard to the side posts are also of malleable iron.

Interior Arrangement of Car


Illinois Traction—First View, Looking Toward the Rear End; Second View, Looking Toward the Front End. Latest Type of I. T. S. Car

The arrangement of the car operator's equipment at the front end of the car is clearly shown in the halftone on page 529. This equipment is so arranged at the left-hand side of the vestibule that the operator may retain his seat and be conveniently situated to collect fares or operate the car. The Woods fare box used is mounted on a stanchion in the center of the car where the passengers must pass by it as they enter and where it is under the close surveillance of the operator. Fares and transfers are recorded on a clock register by means of two foot levers at the bottom of the fare-box stanchion, which are also within reach of the operator from his seat. A foot rail installed at the right of the controller and behind the piping permits the operator to straddle the piping and be in a comfortable position for operating the car or collecting fares. One feature in the installation of the control equipment which improves the interior appearance of the cars is the fact that none of the apparatus is located on the ceiling. The various apparatus carried on the interior of the car, such as



Illinois Traction—Arrangement of Control Equipment and Fare Box in Newest I. T. S. Car

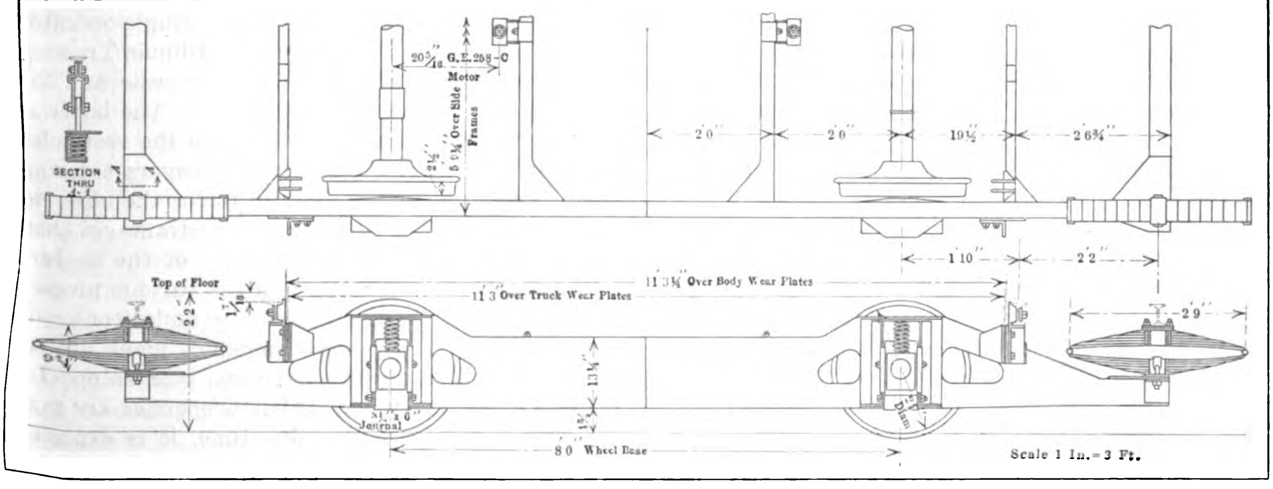
the circuit breaker, Consolidated buzzer system, resistance, switches, etc., are mounted on the side of the car at the left of the operator and below the belt rail.

SPECIAL TRUCK DESIGN

The principal feature of the trucks used with these cars, which were designed by the St. Louis Car Company under the direction of Mr. Bosenbury, is that they are made up entirely of pressed-steel sections whereby it was possible to gain the maximum strength with the minimum weight. While the wheel base of the trucks is 8 ft. long, the car body is supported on four elliptic springs which are placed on cantilever supports extending beyond the wheels to bring the supporting points for the car body 16 ft. apart. The entire load of the car and truck is then transmitted to the car axles through two coil springs over each journal box which are under compression. The action of the full elliptic spring is dampened by two coil springs on each of the end cross-members of the truck which come into compression as the elliptic springs open up and thus prevent galloping. The details of this truck are quite clearly shown in an accompanying drawing.

ONE-MAN CAR OPERATION ON ILLINOIS TRACTION PROPERTIES

While the Illinois Traction System has had but eleven cars of the light-weight safety type in use up to the present time, yet ten of its city properties have been making use of from two to eighteen cars operated with one man for some time. Altogether there are approximately 100 cars being operated on the various Illinois Traction System properties with one man. The operating practices which have been



Illinois Traction—Light-Weight Safety Car Truck Built of Pressed Steel Sections used with them will apply in large measure to the more modern type safety car and may be of interest to those contemplating the installation of cars run by a single operator. In general, cars of the single operator and two-man type are not operated simultaneously over the same line. This mixing of types of cars is sometimes done in providing extra service and through the downtown district, but in every case the local superintendents have reported that the one-man car does not slow up the schedule of the other cars in the least. It is the general aim to avoid using the two different types of cars on the same line, however, because of the confusion which would result when passengers get off and on at the front end of the one-man car and at the rear of the two-man cars. All of the one-man cars on the system have been equipped with vestibule doors, and most of these are hand operated. Practically all of the Illinois Traction one-man cars are equipped with Woods non-registering locked fare boxes and International double registers. Transfers are ordinarily punched in advance so that the operator has only to punch the time and the destination when the transfer is issued.

No rigid rule against the operator starting his car before completing all fare transactions is enforced on any of the Illinois Traction properties. Change is made and transfers are punched and issued in some instances after the car is on its way. This practice prevails more particularly in the residence district, where a comparatively few passengers are picked up, and here only when it is necessary in order to maintain the schedule. In the downtown business districts, the fare collection transfers are completed before the operator is allowed to start his car. It is interesting to note in this connection that the use of the one-man car has brought with it no new form of accidents, with the exception of the experience in Wichita and Topeka, Kan. Here it has been found that some accidents have occurred resulting from boys hanging on and stealing rides, also from some bicyclers hitching on to the rear end of the cars. These accidents did not occur with the conductor on the rear end of the car, as these trespassers would come under the eyes of a company employee. However, fewer accidents have been had with the one-man cars, including this new variety, than with the standard two-man car. The absence of the conductor from the train crew has not added any difficulty to the settlement of claims, in the experience of the Illinois Traction System.

No particular assistance is given to the operators in the way of change packages to facilitate their work. This has apparently not been found necessary in the service so far rendered. Some of the properties put nickels up in $1, $2 and $5 packages for ready issuance to operators. A wage inducement in favor of the one-man car of from 1 cent to 3 cents an hour is made on all the Illinois Traction properties except in two or three cities where all or a very large proportion of the cars are one-man cars and hence are the standard of service in that town. No difficulty has been experienced by any of the companies with either the labor unions or the public in installing the single-operator car service. The people have generally preferred this type of car because of the closer headway. Moreover, where the newer light-weight safety cars have been installed, the fact that they were equipped with air brakes as compared with the hand brakes on the former cars, made a good talking point in introducing them.

The average schedule speed of the one-man cars in the various cities is all the way from 6.2 m. p. h. to 8.5 m. p. h., but in only one city has the schedule speed of the two-man cars been greater than that of the former. In the majority of the cities, no assistance, such as a conductor through the downtown district or a fare collector at heavy loading points, has been found necessary for the operator. In Decatur, Ill., two men are used on the single-operator cars through the downtown district at all times. In Topeka and Wichita, Kan., fare collectors are supplied at busy points when traffic is unusually heavy.

The near-side stop is used without exception on all of the properties. The common practice at railroad crossings is for the operator to get off his car to look up and down the steam tracks and then board his car and cross if the way is clear. This practice is followed even with two-man cars in Wichita and Topeka, where the motorman gets off and flags his own car. The one-man cars are used on all classes of line; namely, main lines, branch lines, stub lines, etc. The extent of the use of all types of one-man cars on the various Illinois Traction properties is given in the following table:

DATA FROM ILLINOIS TRACTION SYSTEM CITIES USING SINGLE-OPERATOR CARS

City	Population	Number Single-Operator Cars	Number Two-Man Cars	Average Daily Car Miles Entire City	Average Daily Passengers Entire City
Decatur, Ill.	37,000	13	7	2.710	16.200
Atchison, Kan.	18,000	12	4	3.351	8.620
Champaign, Ill.	25.000	2	10	1,522	8,070
Cairo, Ill.	18,000	11	0	1,246	3.350
Oskaloosa, Ia.	10,400	7	0	680	2.860
Jacksonville, Ill.	16,000	7	3	814	3.000
Quincy	40,000	6	32	3,100	10.500
Jefferson City, Mo.	17.000	6	1	585	2,000
Topeka, Kan.	50,000	12	39	5,152	30,508
Wichita	65,000	18	36	5,874	33.199

The principal advantages of the single-operator cars, as summed up by the various Illinois Traction operators, is the saving in platform costs and the reduction in the number of accidents. The latter is the result partly of putting doors on the vestibules and partly to the fact that all passengers entering and leaving the car are directly under the observation of the operator. Much greater advantages than these are anticipated, as more cars of the modern type are placed in operation on the various properties. Several of these cars are now under construction in the St. Louis Car Company's plant, in addition to the fifteen which have just been shipped to Wichita from this plant. Other properties are preparing for their use. In due time, it is expected that many will be installed on the various I. T. S. properties.

Equipment of the Light-Weight, Safety Cars

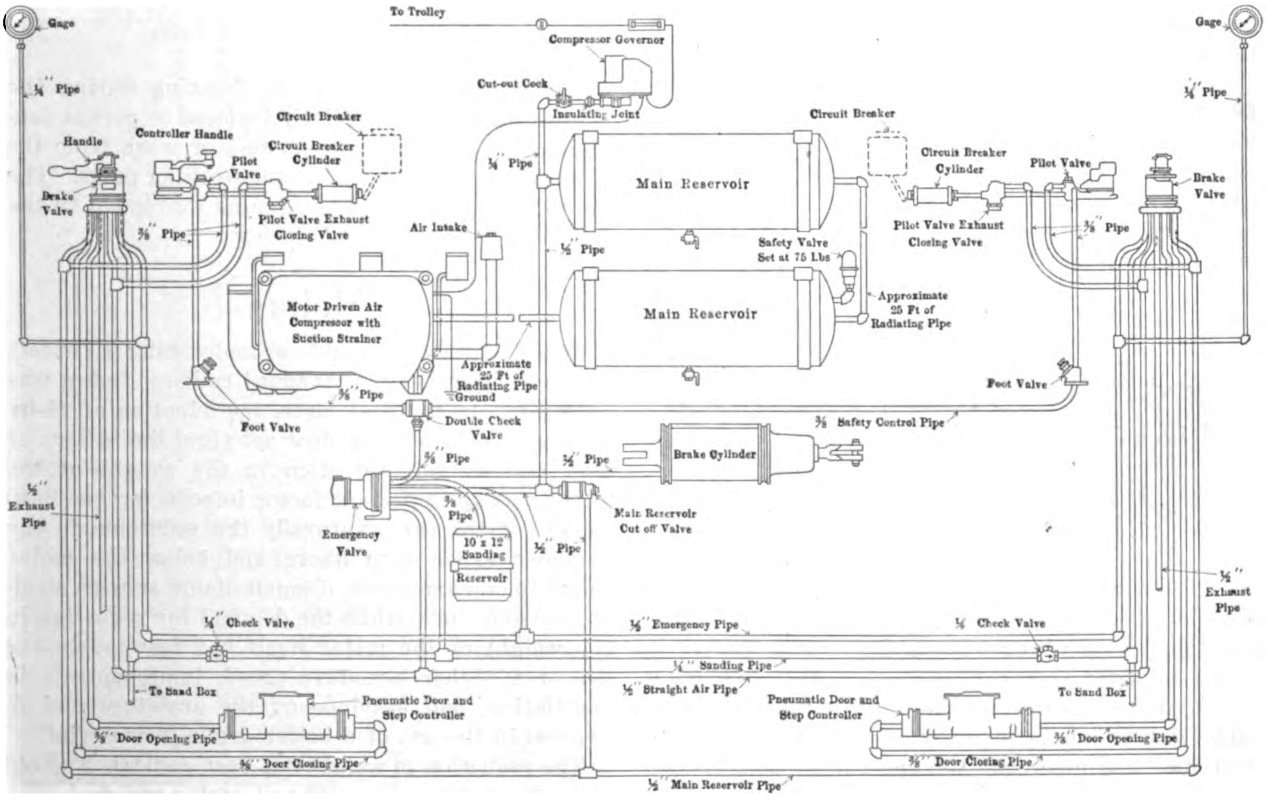
Showing How These Cars Have Been Equipped for One-Man Operation by Using Special Automatic Air-Brake, Door and Step Control, and Light-Weight Motors, Controllers, Trucks and Miscellaneous Apparatus of New Design

It is the purpose in the following pages to describe the equipment that has been developed particularly to meet the requirements of one-man safety car operation. In the design of this equipment safety, lightness and automatic operation were the three objectives. Since the reduction of the car crew from two men to one would naturally reduce the schedule speed if the equipment was not changed, it was essential to produce a car whose automatic features would be so complete that its progress over the line would not be delayed by one-man operation. From the railway's standpoint it was also desirable to relieve the operator from physical and mental strain as far as possible. This has been done by making the operating equipment so convenient and efficient that the operator's movements have been reduced to a minimum, with the result that the added conductor's duties have not been burdensome to the operator. The economy of using a light-weight car has already been so fully discussed elsewhere in this issue that comment here is unnecessary.

Air-Brake Door and Step Control

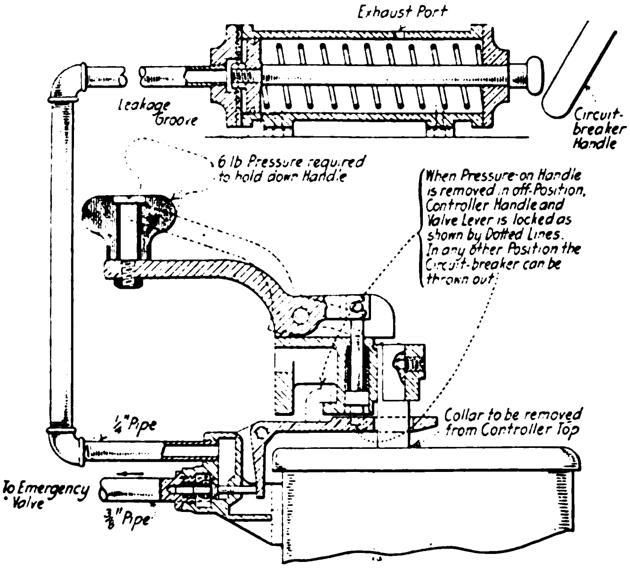
To make the operation of a car as automatic as possible the Safety Car Devices Company has devised a combination air-brake and door and step operating equipment in which the control of the air brakes and the door and step mechanism is combined in one brake valve. This valve is interlocked with the electrical control so that it is practically impossible to operate the car incorrectly without bringing into play one or more safety devices.

The Westinghouse straight air-brake equipment, with the automatic feature whereby the breaking of the air pipes or similar failure will cause an emergency application of the brake has been adopted. The air-brake system, the door and step operating mechanism and the electrical controller are so interlocked that simultaneously with an emergency application of the brakes the power is shut off, sand is



Gage
¼" Pipe
To Trolley
Compressor Governor
Cut-out Cock
Insulating Joint
Circuit Breaker
Controller Handle
Handle
Circuit Breaker Cylinder
Pilot Valve
Brake Valve
⅜" Pipe
Pilot Valve Exhaust Closing Valve
Air Intake
¼" Pipe
½" Pipe
Main Reservoir
Main Reservoir
Safety Valve Set at 75 Lbs
Approximate 25 Ft of Radiating Pipe
Motor Driven Air Compressor with Suction Strainer
Approximate 25 Ft of Radiating Pipe
Ground
⅜" Pipe
Foot Valve
Double Check Valve
⅜ Safety Control Pipe
⅜" Pipe
½" Pipe
Brake Cylinder
½" Exhaust Pipe
⅜ Pipe
Emergency Valve
10" x 12" Sanding Reservoir
½" Pipe
Main Reservoir Cut off Valve
¼" Check Valve
½" Emergency Pipe
¼ Check Valve
¼" Sanding Pipe
½" Straight Air Pipe
To Sand Box
Pneumatic Door and Step Controller
⅜" Door Opening Pipe
⅜" Door Closing Pipe
½" Main Reservoir Pipe

Diagram of Air Brake and Safety Control Equipment for Double-End Car applied to the rail, the front door is opened, the steps are lowered and the rear door in single-end equipments is unlatched so that it can be readily pushed open. The car cannot be started until the steps are up and the doors closed, because the brakes cannot be released with the doors open; and owing to the deadman's handle feature on the controller, if the operator takes his hand off the controller handle while the car is in motion an emergency brake application will follow. A foot valve, interposed between the controller and the emergency valve, can be pressed by the motorman to relieve him temporarily of the necessity for keeping his hand on the controller handle.

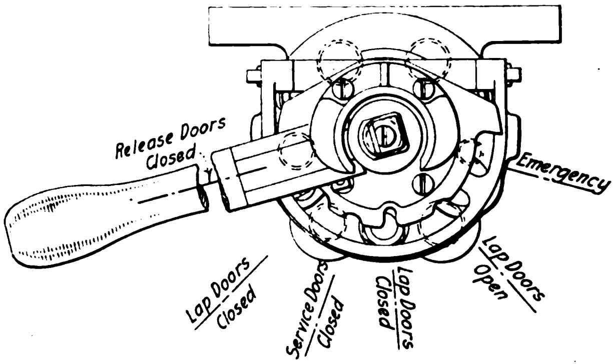

Exhaust Port
Leakage Groove
Circuit-breaker Handle
6 lb Pressure required to hold down Handle
When Pressure on Handle is removed in off-Position, Controller Handle and Valve Lever is locked as shown by Dotted Lines. In any other Position the Circuit-breaker can be thrown out.
¼" Pipe
Collar to be removed from Controller Top
To Emergency Valve
⅜" Pipe

Deadman's Handle Feature of the Controller and Method of Operating Circuit Breaker

The control of the brakes, the doors, the steps and the sanding apparatus is centered in one brake valve, shown in the illustration on page 531. The six control positions are as follows: Release (doors closed); service (doors closed); lap (doors closed); lap (doors closed, brake handle off); lap (doors open), and emergency (doors open). The reasons for having three lap positions are as follows: One lap (doors closed) position is used while the car is being retarded and another is used when removing the brake controller handle. The third lap position is necessary to hold the car on a grade after a stop has been made and the doors have been opened to discharge or receive passengers. The operating handle of the brake valve is hinged and arranged so that a downward movement operates a poppet valve admitting air from the main reservoir pipe to the sand box. Thus the rail can be sanded without causing the operator to remove his hand from the brake handle.

Pneumatic Door and Step Controller

An important part of the operating apparatus is the pneumatic door and step controller, the parts of which have been so perfected that they are absolutely interchangeable. The controller can be changed from right-hand to left-hand operation by simply moving a plug supplied for that purpose. The size and weight of the doors to be operated are often not known with sufficient exactness when the machines are ordered from the factory, but difficulties from discrepancies of this kind are readily cared for by the use of positive bushing plugs, which, when once installed, are not adjustable. This means that a uniform operation of the doors is insured. This door and step controller is supplied by the National Pneumatic Company. It is bolted to the car underframe and is designed to prevent condensation traps which would give trouble by freezing during the winter months. It is entirely inclosed to permit central lubrication and prevent dust or wash from the street from reaching any of the working parts. The engine gives a positive cushioning movement to the door both in opening and closing.

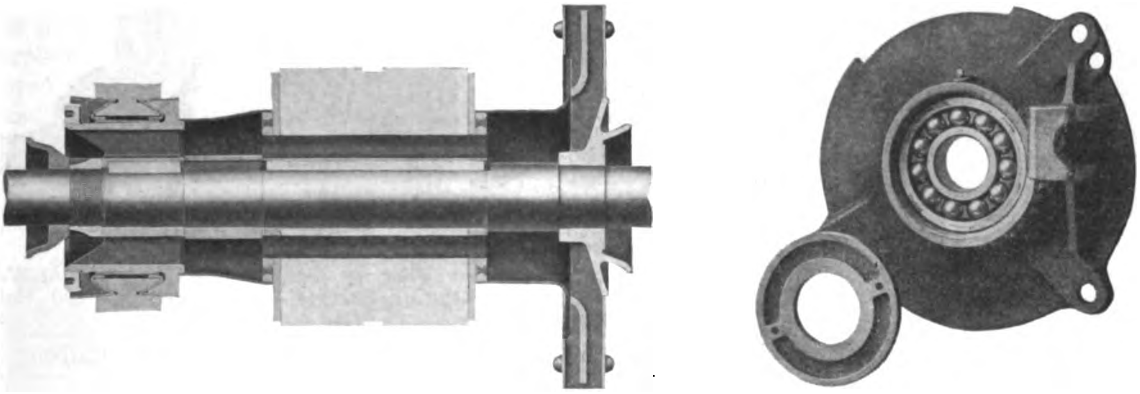

Release Doors Closed
Emergency
Lap Doors Closed
Service Doors Closed
Lap Doors Closed
Lap Doors Open

Control Positions of the Air Brake and Door and Step Control Valve

Motors

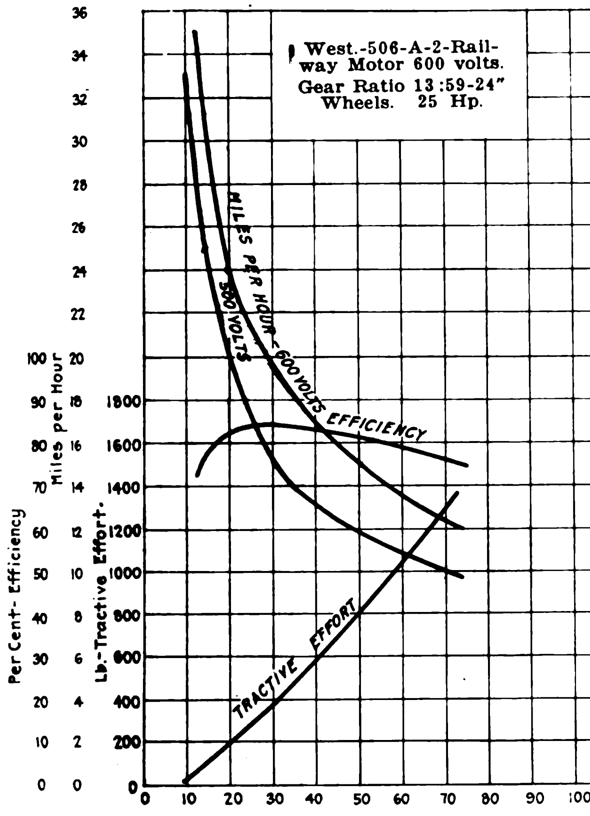
To obtain a light-weight car motor a design widely different from the old standard railway design was necessary. In the first place, the adoption of 24-in. wheels and the low car floor set rigid limitations of size, and second, reduction in the weight of the motor was an important factor in reducing the total weight of the car. Naturally the reduction in the available space both above and below the motor called for an armature of small diameter with a relatively long core, while the demand for reduction in the weight of the motor itself has resulted in the use of a higher armature speed, improvements in ventilation, ball bearings on the armature and in general in the use of a better grade of material.

The reduction in weight has been radical. The old style standard 35-hp., 600-volt motor weighed 2000 lb., or nearly 58 lb. per horsepower, and the pioneer low-floor car motors, rated at 35 hp. weighed 1750 lb., or 50 lb. per horsepower, while the latest motors, developed to meet the lightweight car requirements, although rated at 25 hp., weigh only 885 to 900 lb., or about 36 lb. per horsepower. Thus in the jump from the modern 35-hp. motor to the present lightweight car motor, a reduction in weight of approximately 50 per cent has been obtained with only 30 per cent reduction in power.

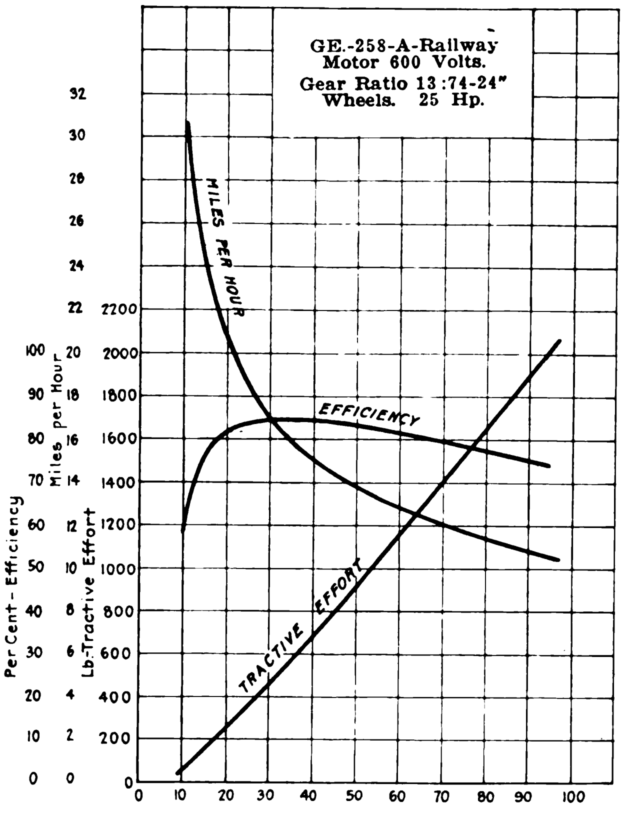


Sectional View of Armature of West.-506 Motor and Armature Ball Bearing of Same Motor

With a given amount and quality of material the most practical way of increasing the capacity of a motor is by improving ventilation, and the amount of air that can be drawn through a self-ventilated motor is mainly dependent on the armature speed. The armature speed has, therefore, been increased, and this has led to the use of ball bearings on the armature. With a small diameter of armature shaft and the limitations of space the use of the ordinary sleeve bearing would, it was thought, incur the risk of an extremely short life for both the bearings themselves and the gearing, due to the lengthening out of the gear centers as the bearings wear. The use of ball bearings seems to have solved the problem, and their adoption permits the use of a smaller air-gap than would be permissible with sleeve bearings. This, of course, increases the efficiency of the motor. Although there is still some question as to the adoption of ball bearings, the records of those which have been in service for considerable time indicate low maintenance costs for both the balls and the bearing itself. Reduction of lubrication expense and the elimination of the troubles caused by oil from

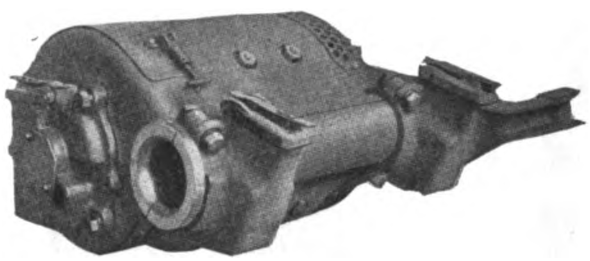


Characteristic Curves for West.-506 Motor for Light-Weight Cars



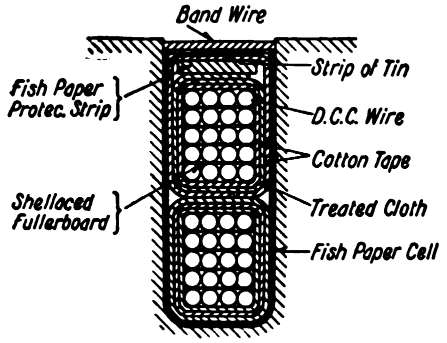
Characteristic Curves for GE-258 Motor for Light-Weight Cars the sleeve bearings getting to the motor are additional advantages.

The Westinghouse motor developed for the light-weight safety car is known as No. 506. This design has been made to accommodate either sleeve bearings or ball bearings, so that should the maintenance of the latter prove excessive they can be replaced by some type of sleeve bearing. The motor is of the box-frame type with through cap-bolt construction, commutating poles, and other details as follows:



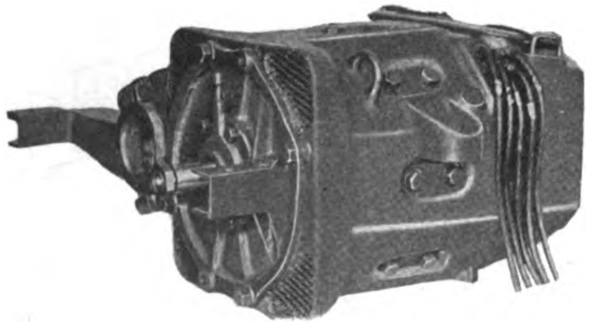
General View of West.-506 Motor for Light-Weight Safety-Car Service—Rating 25 Hp., 600 Volts

Rating at 600 volts	25 hp.
Armature speed (37 amp., 600 volts)	1050 r.p.m.
Weight of motor with gears and case	900 lb.
Clearance beneath gear case (24-in. wheels)	3⅛ in.
Clearance beneath motor frame (24-in. wheels)	3 11/16 in.

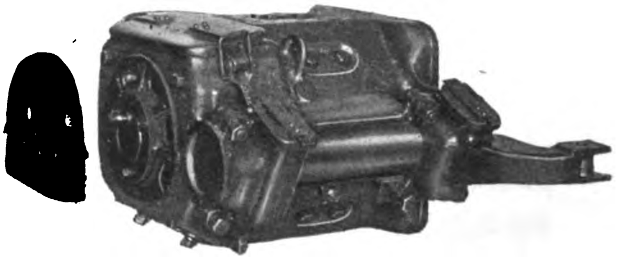


Cross-Section of West.-506 Motor Armature Slot Showing Method of Insulating Conductors and Coils

An interesting problem in connection with the design of these motors came up in deciding on the proper location of the motor on the trucks. The motor was so short that if the gear hub had been placed against the wheel, a very large part of the motor weight would have come on one wheel. It was finally decided to place the motor midway between the wheels. This required a special axle layout, different from the previous American Electric Railway Association axles, and resulted in the addition of two new axles suitable for such a motor mounting to the list of American Electric Railway Association standards.



Frame of GE-258 Motor Showing Screened Ventilating Openings



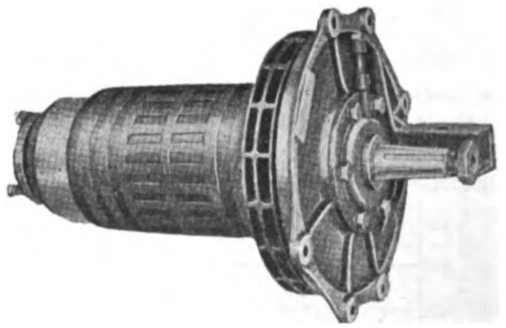
General View of GE-258 Motor for Light-Weight Safety-Car Service—Rating 25 Hp., 600 Volts

The General Electric Company's motor used extensively on the Birney and other types of light-weight safety cars is the GE-258 type. The details of this motor are as follows:

Rating at 600 volts	25 hp.
Armature speed (37 amp., 600 volts)	1236 r.p.m.
Weight of motor with gears and case	885 lb.
Clearance beneath gear case (24-in. wheels)	2¾ in.
Clearance beneath motor frame (24-in. wheels)	3 5/16 in.

The high armature speed, 1236 r.p.m. at the hourly rating (37 amp.), increases the ventilation of the motor and gives it a high continuous rating of 35 amp. at 450 to 600 volts. The high speed has also necessitated the use of a finer pitched gearing than had hitherto been standard, but from the records now available it is expected that the life of the new 4¼-pitch gearing will be equal to that of the 3-pitch and 3½-pitch gearing used on larger motors. The adoption of ball bearings on the armature is another feature which, as previously noted, was brought about largely as a result of the higher armature speed.

Two of these motors under a Birney car with the average passenger loads handle somewhat under 4 tons per motor and make unusually fast schedules. The average acceleration rate is 2.5 m.p.h.p.s. Under normal city schedules the motors have capacity enough to handle considerably more weight.

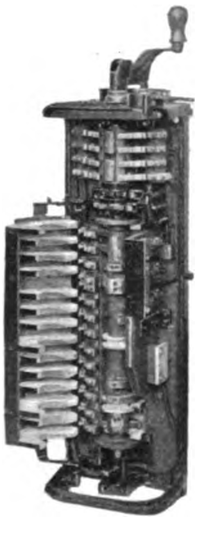


Armature of GE-258 Motor Showing the Double Ventilating Fan on the Pinion End

Electrical Control

Although a large number of the cars have been equipped with type K10 controllers, a newer and an extremely light-weight design is the K63. Two of these controllers weigh 270 lb. as compared with 410 to 450 lb. which represents the weight of two controllers previously standard on motor cars. The new controller is smaller than the K10, and it has an improved type of blowout and a wooden cover. When handling the comparatively small currents taken by the light-weight cars it can be relied upon effectively to disrupt all arcs without any danger of platform explosions. The controller is said to have a capacity to handle two 40-hp. motors on 600 volts.

In connection with the control the rheostats came in for consideration also. The resistors which were first furnished weighed with their insulators about 200 lb., and occupied a space about 48 in. long, 11 in. wide and 13 in. deep. It was found difficult to install them in the limited space on the under side of the car, and more or less trouble was experienced from breakage or from snow and water causing short circuits due to the small clearance above the track. An improved form is now being made in which grids of much smaller cross section are used, each grid being supported at three points instead of four and having pressed steel ends. This construction gives good mechanical strength to the frame and reduces vibration to a minimum. Only one frame of these grids is required per car and it occupies a space about 24 in. long and less than 8 in. deep. Its weight is only 65 lb., making a saving of 135 lb. over the previous standard rheostats. The new type is also more easily installed and is better protected from injury.



K-type Controller Light-Weight Design

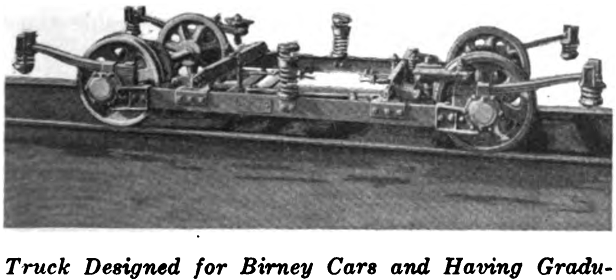
Trucks

For the Birney safety cars a special type of truck known as the 78-M has been made by The J. G. Brill Company. It weighs 3300 lb. complete and has a wheelbase of 8 ft. Twenty-four-inch wheels are used except in special instances where conditions necessitate 26-in. wheels. The use of the larger wheels raises the step height 1 in. This is said to be the lightest single truck ever built. It has a spring system composed of quarter-elliptic and spiral springs of the graduated type, a spring-cushioned side easement and a spring brake link connection to take the draft.

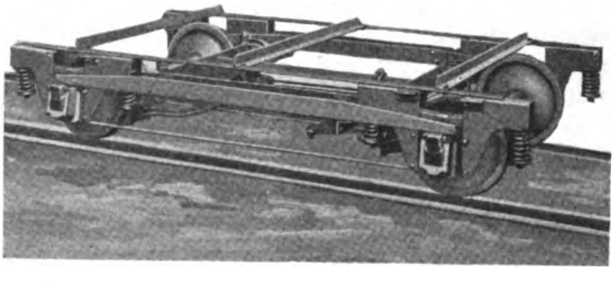
The first truck illustration shows the location of the spiral springs at the center of the side bars and suspended at the ends of the quarter-elliptic springs. It also shows the graduated spring arrangement in which extra springs of lighter capacity than the regular body springs carry the car body when there is only a full-seated load in the car. These extra springs have their action stopped by the spring caps coming in contact with the spring seats before the springs are completely compressed. The device by which the small spiral springs are suspended from the elliptics consists of an eye-bolt which pivots in a casting on top of the elliptic springs and has an adjusting bolt on the bottom to support the spiral spring seat. This device, together with the slight torsional play of the spiral springs, provides a cushioned side easement at curves and on uneven parts of the track that is said to be effective in eliminating all harsh motion.

New Design for 24-Inch Wheel

As in the Brill trucks of the bolster type there is a spring friction link connection between the truck and the car body. This connection takes the draft from the springs; in other words, it prevents independent longitudinal movement between the truck and the car body, but does not hamper the side motion. With the journal boxes bolted directly to the side bars, this light-weight truck differs markedly from the other single-truck designs. The absence of pedestals results in a reduction of weight and obviates wear on the journal boxes. Although not so easy to dismount from the axles, there is less reason to do this as it is necesary to change the wheels only at long intervals. The channel cross members of the truck serve both as motor supports



Truck Designed for Birney Cars and Having Graduated Coil Springs and Quarter Elliptic Flat Springs



Light-Weight Car Truck Having 9-Foot Wheel Base and Using Semi-Elliptic and Coil Springs and for the attachment of the brake hangers. The journal boxes are usually of the ball or roller bearing type. The standard Brill 21-E truck has also been used on some of the one-man cars.

In the light-weight car truck developed by the Baldwin Locomotive Works, and shown in the second plate, semi-elliptic plate springs in series with coil springs are used to obtain easy riding qualities. As in some other types of light-weight trucks the car-body under-frame serves also the purpose of truck side-frames, as it is bolted directly to the truck plate pedestals. The truck has a 9-ft. wheelbase, practically the maximum which can be used on 34-ft. radius curves. There is a light beam construction to support the motor suspension and inside-hung brake work.

A special light-weight radial truck, not shown, has been developed by the Philadelphia Holding Company and used on eight one-man cars operated by the Corpus Christi Railway & Light Company, Corpus Christi, Tex. As is generally known, this truck has an extended wheelbase which keeps the overhang at a value no greater than what it would have with double trucks. This steadies the car and facilitates the distribution of weight, while the evils of nosing and galloping are avoided. The character of the construction also relieves binding on curves and thus reduces flange and rail wear.

As the truck developed by the St. Louis Car Company is described in the article in this issue on the development of the light-weight car on the Illinois Traction System it is not necessary to review it here.

In connection with the light-weight trucks a new design of the Davis manganese rim wheel has been developed especially for the light-weight safety cars. This is a 24-in. wheel with six perforations in the plate, and the weight has been reduced to 186 lb. The wheels have been thoroughly tested, withstanding a static load of 25 tons with no perceptible deflection or permanent set.

Individual-Drive Car

An effort has also been made to develop a light-weight safety car driven by four automobile-type electric motors, one geared to each of the wheels. Four cars of this type were built and are in use at Tucson, Ariz., as described in the issue of this paper for Jan. 1, 1916. A new car using the same system of drive is now being built at the Brill works under the direction of the Imperial Electric Motor Company, owner of this system of drive. The car, which will seat thirty-five passengers, with over-all length of 28 ft. and wheelbase of 12 ft., will weigh complete 8700 lb., of which the weight of the four motors and two-axle truck will represent 4000 lb., and the body and rest of equipment 4700 lb.

Fare Boxes and Registers

As the time of the car operator must be economized to the limit in the collection and registration of fares the advent of the one-man car has greatly stimulated the development of devices for these purposes. Fortunately much of the equipment could readily be adapted to the new requirements, thus keeping down the development costs. Two types of transfer machines have been developed. One is a combination fare box and transfer printing and issuing machine, while the other is an independent device which issues transfers properly punched but does not print them. These two machines are described in greater detail on pages 539 and 540.

The one-man cars which have been built or are under construction for the Stone & Webster properties are equipped with the Johnson fare boxes. These are made in two types, the standard registering fare box for cash fares only, and the larger size box which will register cash fares and metal tokens of two sizes. The latter type has four sets of indicating dials, one for each of the two types of metal tokens, a third set of dials for the cash fares and a fourth set for totalizing all of the fares collected.

The so-called "rapid-transit" equipment of the Ohmer Fare Register Company has been promptly adapted to one-man operation. For simple one-man operation the vertical grip is installed so that the motorman can operate it without moving from his position. The indicator and register are located in the usual position overhead at the end of the car body. Indication is made in the standard way by rotating the grip and registration by a downward pull upon it. One-man cars have recently been equipped with the Ohmer apparatus by the Wausau (Wis.) Street Railroad Company, the Menominee and Marinette Light & Traction Company, Menominee, Mich., the Southern Public Utilities Company, Charlotte, N. C., and others.

Flexibility of the transmission equipment makes it possible to equip cars readily for both one-man and two-man operation with the Ohmer devices. For this double purpose one grip can be located near the brake handle and a second at the conductor's stand. The latter may be placed for either front-end or rear-end collection, and the usual rod and cord arrangement will permit registration from any point in the car. For two-man operation the motorman's handle is locked and the conductor's handle is made operative.

On the one-man cars of the Three Rivers (Que.) Traction Company and the Moncton Electricity & Gas Company, Moncton, N. B., the Coleman non-registering fare box has been used. This box is about 5 in. square, and is suspended by two brackets from the car railing. The cash box is telescoped into the outside case, with resulting economy of inside space. The box is suitable for cash or tickets, or both.

One of the latest devices for registration of fares which has been developed with the requirements of one-man operation in mind is the coin and paper-ticket registering fare box of the American Railways Equipment Company. The apparatus has been tried out with promising results by the City Railway Company of Dayton, Ohio. The fare box is equipped with four counters, for registering respectively passengers per trip, total passengers, transfers and cash. Transfers are also cancelled and delivered into a locked box automatically.

As to fare registers the Wichita Railroad & Light Company and others use the International type. This manufacturer also makes a combination coin register and fare box which differs from other makes in that the registering dials are mounted on a pipe support where they can be readily seen by the passenger. Thus the benefit of a public registration of fares is obtained, together with the convenience of the registering fare box. Extra registering dial sections permitting tickets and transfers to be rung up by hand are made for use with this equipment.

The manufacturers of the Cleveland non-registering fare box have not made any changes in their standard design in furnishing their boxes for one-man cars.

The use of the Rooke register in which the passenger makes the registration himself by inserting the fare directly into the slot of the machine is one means of removing the operator from any temptation to be dishonest. It also clears him of any suspicion of making misappropriations.

A number of railways in Massachusetts have adopted the MacDonald ticket holder for use on one-man cars. Among these is the Plymouth & Sandwich Street Railway of Plymouth. The plan is especially adapted to service on interurban or suburban lines, the procedure being for the motorman to issue a receipt as the passenger enters the car and to lift it as he leaves. This holder is a small, light affair which can be carried in one hand and which, with slight adjustment, delivers tickets with the amount of fare paid and the termini of the passengers' trips plainly indicated.

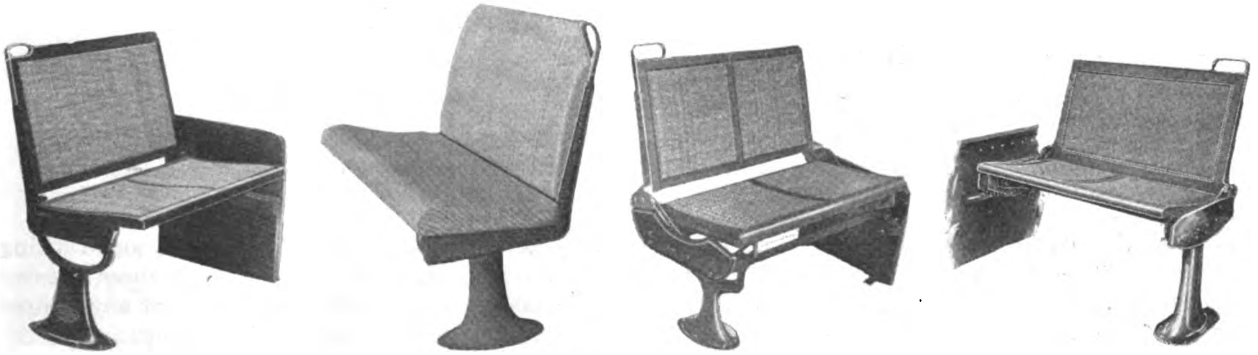
Seats

In the design of seats for the safety car, lightness again has been the chief objective, but the necessary strength and the passengers' comfort have not been sacrificed. The use of pressed steel for the pedestals and most of the other metal portions and rattan for the seating material is characteristic of the latest designs. The seats also have a hinge which permits operation substantially like a theater chair and makes it possible for the passenger next to the window to have egress without forcing the other occupant of the seat into the aisle. This feature facilitates cleaning the cushions and the car floor.

Heywood Brothers & Wakefield have developed a non-reversible seat, shown below in Fig. 1, which weighs only 24 lb., and a reversible seat of the same type weighing 42 lb. In the construction of these seats pressed steel has been used for the pedestals and for the principal parts of the supporting frames. The seat bottoms and backs have hardwood frames, paneled with cane seating. Another light-weight design which has been used extensively is the Hale & Kilburn seat in which steel is the only metal used. In one type the seat cushions and back are made of canvas-lined rattan framed with hardwood, and in a second type the concave-convex shaped cushion and back serve to increase the passenger's comfort. This type is illustrated in Fig. 2. These seats are also hinged, and where it is desirable to place them close together the back is recessed or set in, thus increasing the knee room. This seat weighs about one-half as much as the older types in which heavy iron castings and an elaborate framework and upholstering were used.

The type of seats used in the Illinois Traction Company cars and made by the St. Louis Car Company is Fig. 3 in the illustration below. This is a reversible seat, having two aisle arms, one fastened to each end of the seat back frame. There are six levers, three on the aisle end and three on the wall end, and these fasten on one end to the aisle arms and on the other end to the end plates of the seat supports. This produces a mechanism by means of which it is very easy to move the seat back forward and backward.

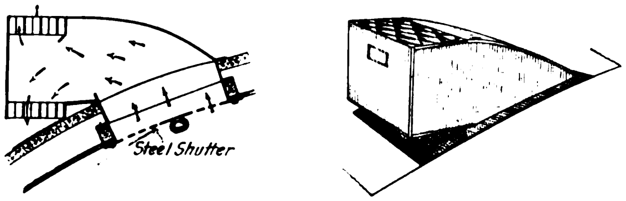
For the Birney cars the American Car Company has made a light-weight seat weighing 40 lb. in the reversible type and 25 lb. in the non-reversible. In both types pressed-steel pedestals and pressed-steel wall plates are employed. The reversible seat, illustrated in Fig. 4, has the Brill double-lever arrangement at each end of the back, and a sliding rocker-shaped casting supporting each end of the cushion



Four Types of Seats Used on Light-Weight Safety Cars. Fig. 1—A 24-lb. Non-Reversible Seat. Fig. 2—Seat with Concave Convex Cushion and Back. Fig. 3—Seat Used Extensively by the Illinois Traction System. Fig. 4—Reversible Seat Used on Birney Cars and shifting it by means of cranks made to work in unison and operated by the back levers. The non-reversible seat has a 2-in. extension on the side of the cushion, making a total width of 32 in. as against the 30 in. of the reversible type. The seat sets 3 in. out from the wall.

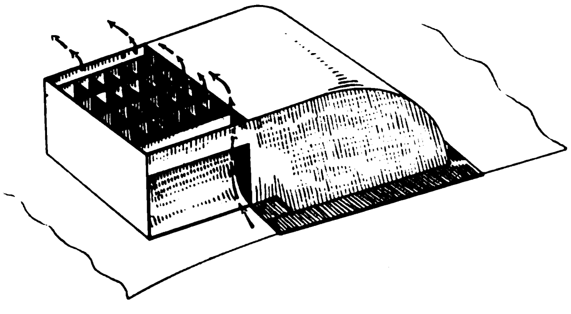
Ventilators

No radical changes in the standard systems of ventilation have been necessitated by the development of the automatic safety car. Obviously the old method of ventilating the car by opening the deck sashes of a monitor roof is unsatisfactory in any car, and is still less desirable where there is no conductor on the car to regulate the sash openings. In fact, any method of ventilation which passengers can regulate to suit their individual desires should be avoided. Hence the removal of all operating levers and the adoption of ventilators whose operation is entirely automatic is essential.



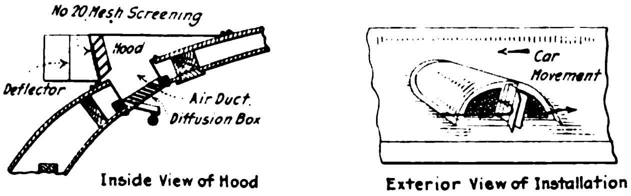
Exhaust Ventilator in Common Use on One-Man Cars

Following is a brief summary of the different types of ventilators which are automatic in their operation, at the same time providing against currents or direct blasts of air striking the passengers. The Railway Utility apparatus, shown above and used extensively on the Birney and other types of safety cars, depends on a current of air blowing across a honeycombed opening, thus producing a sucking action which draws the air from the car. The Garland ventilator, shown below, is somewhat similar, but a curved duct deflects the wind caused by the motion of the car so that the air passes with considerable velocity over the honeycombed exhaust passages. This draws the air from the car in a positive manner. In the Globe ventilator, also, the action of the air striking against an external hood is depended upon to produce a partial vacuum which draws the air from the car. The ventilator has a dome-shaped top the lower edge of which is turned up to form an exhaust port. In the foregoing types the construction is extremely simple, dependence being placed upon a leakage around the doors and windows for the supply of fresh air.



Ventilator Using a Curved Duct to Deflect the Wind and Increase the Exhaust Action

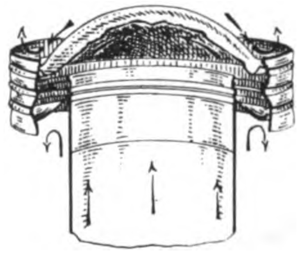
In the diffusion type of ventilator of the Automatic Ventilator Company the drawing in of air through the doors and windows is largely eliminated by providing a positive fresh air supply through one side of the ventilator itself. When the car is in motion the air strikes against an external deflector which directs it into the car through the diffusion box, the horizontal louvers of which send the air along the ceiling of the car. After losing its initial force the incoming air, being cooler and heavier than the impure air, descends to the breathing and floor levels. At the rear of the external deflectors a partial vacuum is set up which, assisted by the pressure of the incoming air, induces a strong exhaust of the impure air through the port behind the deflectors.



Details Showing Operation of Diffusion Type Ventilator

Miscellaneous Equipment

In curtain materials there is no change from standard practice. The curtain fixtures also are not essentially different from standard, but the details have been adapted to the new designs of window frames. The Curtain Supply Company, whose fixtures are popular on safety cars, has made a special type of ring fixture with a smaller and lighter head or tip to fit the grooves in these cars. Window fixtures, like curtain fixtures, are not radically different. The O. M. Edwards fixture, which has been specified extensively, consists of a sash lock, a rack, a sash lift, and two anti-rattling devices for each sash. By means of these fixtures the sashes are held safely and firmly at any desired height and are prevented from rattling.



Ventilator Having Dome-Shaped Top with Lower Edge Turned up to Form Exhaust Port

On cars having but one operator it is especially important that every surface on which passengers walk or step should be so constructed both as to shape and material that slipping or tripping on account of the nature of the surface is impossible. Practically all of the safety cars are being equipped with some form of anti-slip tread on the steps and certain portions of the platform and floor, and to attain the full measure of safety the use of the anti-slip tread should be extended to cover every metallic surface upon which a passenger can step.

A practical way to obtain a satisfactory anti-slip metallic surface is to have an abrasive grit such as alundum or carborundum embodied in the tread surface at the time of casting. Such a surface is extremely durable and is effective against slipping even when covered with mud or slush. An abrasive metal of this nature known as "Feralun," and composed of iron with alundum cast in the wearing surface, is the material used on the majority of safety cars. The Mason safety tread is composed of rolled, unperforated steel or hard brass with alternate U-shaped and dovetailed grooves, the dovetailed grooves being filled with non-slippery, soft-metal lead or with carborundum grains. When the carborundum grains are used they are securely bound together and held to the steel base by a chemical cement. In the Universal safety tread grains of alundum are held together in a compact mass by a soft-metal binder composed chiefly of lead, the idea of using a lead binder being to prevent snow and ice from sticking to the tread. This mixture of lead and alundum is fastened to a steel base plate.

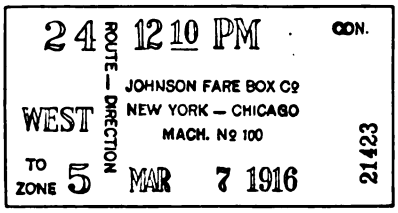
Obviously when there is no conductor on a car to watch the trolley rope when passing locations where the overhead work is in bad condition, trolley catchers are an important detail of the equipment. An efficient buzzer system is likewise essential since there is no conductor to signal the motorman when a passenger wishes to alight. For this purpose the Faraday signal system operating directly on the trolley current of 500 or 600 volts has done away with the inconvenience of handling batteries. The buzzers are wound to a resistance of 1000 ohms and are used with an additional external 600-volt resistor. Single-stroke or vibrating bells are sometimes used instead of buzzers.

Electric heaters with thermostatic control are the most suitable and commonly used equipment on the cars having but one operator. A man performing the duties of both motorman and conductor has no time to care for coal heaters, and in regard to heat regulation, experience has shown that even on two-man cars dependence cannot be placed on the crew to give this matter sufficient attention to secure either a desirable degree of comfort for the passengers or a reasonable economy in the use of energy.

Transfer-Issuing Machines

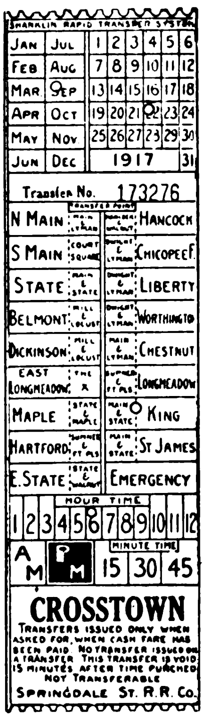
Relieving the operator of as much work as possible is one of the prime requisites of the one-man safety car equipment, and the issuing of transfers is one field in which there is an admitted need of labor-saving apparatus. Transfer printing and transfer issuing machines have been under development for several years, and there are two makes which have reached such a state of perfection that it is believed they will be a particularly practical addition to the automatic equipment of the safety car.

The Johnson Fare Box Company has developed a combination fare box and transfer printing and issuing machine which in its present form is but slightly larger than the standard Johnson registering fare box. The transfer shown above is printed by pressing a key or setting a lever to indicate the car line to which the transfer is to be issued. It is understood that this machine will be motor driven.


24 12 10 PM CON.
ROUTE — DIRECTION
JOHNSON FARE BOX Co
NEW YORK — CHICAGO
MACH. No 100
WEST
TO ZONE 5 MAR 7 1916
21423

Transfer Printed by Combination Fare Box, Transfer-Printing and Issuing Machine

Instead of having the machine print names of car lines to which transfers are issued, the route is divided into zones of five-minute or ten-minute running time apart. When a passenger asks for a transfer to such and such line, the conductor knows that it is in the third or fifth zone and he punches the proper key or sets a lever at the proper point so that that zone number will be printed on the ticket. The time of arriving at that transfer point is automatically printed, since the conductor has previously set the starting time at the beginning of the trip and this governs the time which will be printed for each zone key. The time, the route number from which transfer is made, the direction, the zone number, and the date are the points of information which the receiving conductor should see at a glance, and these are given prominence on the transfer. The use of this machine obviously eliminates the cost of printed transfers.


SHANKLIN RAPID TRANSFER SYSTEM

JAN	JUL	1	2	3	4	5	6
FEB	AUG	7	8	9	10	11	12
MAR	SEP	13	14	15	16	17	18
APR	OCT	19	20	21	22	23	24
MAY	NOV	25	26	27	28	29	30
JUN	DEC	1917					31

Transfer No. 173276

TRANSFER POINT

N MAIN			HANCOCK
S MAIN	COURT SQUARE		CHICOPEE F.
STATE	MAIN & STATE		LIBERTY
BELMONT	MILL & LOCUST		WORTHINGTON
DICKINSON	MILL & LOCUST	MAIN & LYMAN	CHESTNUT
EAST LONGMEADOW			LONGMEADOW
MAPLE	STATE & MAPLE	MAIN & STATE	KING
HARTFORD		MAIN & STATE	ST JAMES
E. STATE			EMERGENCY

HOUR TIME
1 2 3 4 5 6 7 8 9 10 11 12

A M P M
MINUTE TIME
15 30 45

CROSSTOWN
TRANSFERS ISSUED ONLY WHEN ASKED FOR, WHEN CASH FARE HAS BEEN PAID. NO TRANSFER ISSUED ON A TRANSFER. THIS TRANSFER IS VOID 15 MINUTES AFTER TIME PUNCHED
NOT TRANSFERABLE
SPRINGDALE ST. R.R. Co.

Typical Transfer Properly Punched by Transfer-Issuing Machine

The Shanklin Equipment Company has made a machine which issues transfers automatically and can deliver them at the rate of sixty per minute. It also records each transfer delivered, thus placing the transfers under the positive control of the auditing department, and where transfers have to be paid for, it gives an exact record of the number of transfers issued. As shown in the illustration of the machine there are a number of individual buttons on top. These represent either intersecting car lines or other transfer points, and it is necessary for the conductor in issuing a transfer to press only one of these buttons and operate a foot lever. This action delivers to the passenger a transfer punched with the month, day, hour, and line to which the transfer is issued. Transfers are supplied in the machine in rolls of 500 or 1000, in which form they are cheaper than the old transfer pads. A typical transfer issued by this machine is the lower one shown on the previous page.

The machine consists of an aluminum box 4½ in. wide, 14 in. long, and 8 in. deep. This is mounted on a pedestal with a base 8 in. in diameter attached to the platform. The height to the top of the machine is 42 in. from the floor. The box is portable so that it can be transferred from end to end of the car if necessary. The total weight of box and base is 30 lb.

It is the intention to have this machine loaded by some one in the auditing department, and the only accessory transfer carried by the conductor should be an emergency pad for use in case the roll should be exhausted by an unexpected or unusual demand for transfers. This emergency transfer can absolutely be checked so that there is no opportunity for its misuse, as every such transfer is numbered. A conductor in using these emergency transfers must at the same time report either the failure of the machine or non-delivery of transfers.

Transfer-Issuing Machine in Operation

Data on One-Man Cars

(See pages 541, 542 *and* 543 *for Table of One-Man Car Data)*

On the Basis of a Canvass Made for This Special Issue the Accompanying Table Covering the Salient Structural and Operating Features of the Single-Operator Car Has Been Prepared

IN order to bring out the important facts regarding the present status of the one-man car the ELECTRIC RAILWAY JOURNAL has made a direct canvass of all railways reported to have cars of this type in operation or under construction. Information was received from a large proportion of these roads in time to be grouped in tabular form and is thus presented on the three following pages.

A few additional reports were received too late to be included in this table, but, with any others which come to hand later, will form the basis of a supplementary table to be published in an early issue. If any roads operating one-man cars failed to receive a set of the data blanks sent out by this paper, the editors will appreciate information along the lines covered by the compilation. This will be included in the supplementary table.

On account of space limitations it was not possible to reproduce all of the data collected, but enough are given to indicate the principal operating conditions under which the light-weight cars are being used. Taken in connection with the articles which discuss the traffic situation with respect to these cars in a number of cities with populations covering a wide range the data furnish an impressive exhibit of the progress made in a very short period.

An important question in connection with the use of one-man cars is the effect of their introduction on schedule speed. The reported schedules for the one-man car are given in the table, but not those for the supplanted two-man cars. Comparison with the data regarding the latter indicates that in practically all cases the one-man cars have no difficulty in making as high schedule speeds as the two-man cars which they replace. The headway so far has apparently not been reduced much in many cases although, of course, the tendency is to give more frequent service with the lighter cars. A number of roads have very materially reduced headway, and the possibilities of stimulating traffic through doing so are pointed out in several of the special articles.

In any study of the table it must be remembered that many of the cars listed are reconstructed cars of various types and previous condition, so that they cannot be considered as typical of present best practice in this line. For this reason no attempt has been made to average the data, because at this early stage in the progress of the light car such averages would be meaningless.

DATA ON ONE-MAN CARS

Company	Population (1917) of Cities Served	Number of Cars of All Types Owned	Number of One-Man Cars Operated	Length Over all of Present One-Man Cars	Width of Same Over Sheathing	Weight of Same Without Load, Pounds	Single or Double End	Seating Capacity	Type of Motor	Gear Ratio	Door and Step Control Used, and Hand or Air-Operated	Are Air Brakes Used?	Do Controller and Brake have Automatic Features?	Are Fare Boxes Used?	Sched. Speed in M.p.h. with One-Man Cars	Normal Headway in Minutes, Using One-Man Cars
ALABAMA																
Selma St. & Suburban Ry.	20,000	20	7	26'	8'2"	10,000	Double	24	West. 12a	14:67	Hand	No	No	Yes	8	15
ARIZONA																
[1]Douglas Trac. & Lt. Co.	18,000	9	6	30' (2) 40' (4)	......	24,000 (2) 32,000 (4)	Double	....	G.E. 67-202	17:67	......	Yes	No	No	10	......
Tucson Rapid Transit Co.	20,000	9	3	27'6"	6'	20,000	Double	26	G.E. Auto Type 1063 E.I.-W.I.	1:9	Hand	No	Yes	Yes	7.5	12
ARKANSAS																
Intercity Terminal Ry.	(Has five	cars and	four auto	uses												
Ft. Smith Lt. & Trac. Co. at Van Buren	6,000	42	1	29'10"	7'2"	18,000	Double	36-40	West. 12a	14:68	Hand	No	No	Yes	10	30
Hot Springs St. Ry.	15,000	24	24	24', 25'7", 26' and 36'	7'4" and 8'5½"	....	Double	22, 28 and 36	G.E. 52-54 West. 101B	....	None	Yes (6 D.T.)	No	Yes	8	7-9
Little Rock Ry. & Elec. Co.	75,000	85	5	29'6"	7'8"	22,000	Double	26	G.E. 67	15:69	Hand	No	No	Yes	8	10
[2]Pine Bluff Co.	28,000	22	12	33'8"	......	19,000	Double	32-36	G.E. 219 West. 506a	....	Hand	No	....	Yes	10-12	5-6
Southwestern Gas & Elec. Co. at Texarkana S.T. D.T.	20,000	24	12	30'1" 42'	8' and 8'6"	18,000-35,000	Double	24 and 28	G.E. 54a, 57a, 201-I, 203	14:67, 15:69, 15:71, 16:69	Hand	Yes (D.T.)	No	No	7.5	15
CALIFORNIA																
United Railroads of San Francisco S.T. D.T.	540,000	727	12 (9) (3)	26'10" 33'8"	8'8½" and 9'3"	20,300 and 35,840	Double	26 34	G.E. 1,000	17:67	Hand Air	Yes (D.T.)	No	Yes	7.36	10
San José R. R.	30,000	54	13	25'8"	7'9"	24,000	Double	26	West. 58	1:3	Hand	No	No	Yes	12.5	10
Union Trac. Co. at Santa Cruz	10,000	17	5	30'-36'	7'6"	17,000	Double	32-34	G.E. 80	19:67	None	Air & rope	No	No	11	15
COLORADO																
Greeley & Denver R. R.	10,898	6	3	29'	8'	17,500	Double	28	G.E. 200K, 800	14:67	Hand	No	No	No	11	10
[3]Trinidad Elec. Trans. Ry. & Gas Co.	14,000	8	8	5—30' 3—40'	......	22,000 and 50,000	Double	....	West. 68C, 101B, 93a	18:64	None	Yes (Int.)	No	Yes	9	City 20 Int. 60
GEORGIA																
City & Suburban Ry. at Brunswick	16,000	7	7			40,000	Double	50	....	....	None	No	No	Yes	12	10
[4]Columbus R. R.	23,000	43	......	27'9½"	7'8½"	12,300	Double	28	G.E. 258a	13:74	Air	Yes	Yes	Yes	10-12	12
[5]Rome Ry. & Lt. Co.	16,000	22	......	30'	8—8'6"	22,000-25,000	Double	28 and 32	G.E. 67, 219 West. 101B	14:68-16:68	Hand	No	No	No	8	10 and 20
ILLINOIS																
Sterling, Dixon & Eastern Elec. Ry.	20,000	7	7	32'	8'4"	20,000	Single	28	G.E. 78, 70	14:69, 15:71	Hand	No	No	No	10	20
[6]East St. Louis & Suburban Ry. at Belleville	25,600	151	5	37'	8'1½"	33,933	Double	....	G.E. 67	15:69	Hand	Yes	No	Yes	15	20
Illinois Northern Utilities Co. at Freeport	20,000	12	8	31'11"	8'3"	....	Double	30	G.E. 247, 70 West. 12a, Allis-C. 501	15:71, 14:68	Hand	Yes	On 1 car only	Yes	8	15
Kankakee Elec. Ry.	20,000	10	10	32'	8'2"	12,500	Single	32	West.	....	Hand	Yes	Yes (1)	Yes	......	......
Central Ill. Pub. Service Co. at Mattoon and Charleston	23,000	5	5	30'10"	7'8½"	16,000	Double	25	G.E. 800, 80, West. 49	14:67, 15:71, 14:68	Hand (1)	No	No	Yes	10	10, 15, 20
Chicago, Ottawa & Peoria Ry. at Princeton	4,131	....	1	20' S.T.	(Also havi	ng one modern	car built si	milar to I.T.S.	car used at Qui	ncy, Ill.)						
Northern Illinois Lt. & Trac. Co. at Ottawa	12,000	8	6	31'	......	....	Double	....	....	....	None	No	....	No	12	......
Quincy Ry.	40,000	38	6	30'	8'2"	23,400	Single	30	West. 328	14:49	Air	Yes	Yes	Yes	8.25	20
INDIANA																
Union Trac. Co. of Ind. at Marion	25,000	350	7	29'4", 30', 32'6", 32'10" and 33'8"	7'3", 7'5" and 7'6"	24,000	Double	31 (Aver.)	West. 92	3.6, 4.6	Hand	No	No	Yes	9.5	15
Central Ind. Ltg. Co. at Columbus	11,000	6	3	30'9"	7'6"	21,000	Double	26	G.E. 1000	17:67	Hand	No	No	Yes	8	30
IOWA																
Iowa Ry. & Lt. Co. at Marshalltown	1,800	14	14	26'-32'	......	16,000-24,000	Double	24	G.E. 54, West.	14:68	Hand	Yes (6)	No	No	8	15
Cedar Rapids & Marion City Ry.	(Intends	to opera	te one-man	cars by No	v., 1917)											
Charles City Western Ry.	7,000	4	2	28'	8'3"	20,000	Double	34	G.E. 217B	15:66	Hand	No	No	Yes	10	30
Clinton St. Ry.	27,000	32	5	31'	8'8"	24,000	Double	32	G.E. 52	14:67	Hand	Yes	No	Yes	9	15
Tri-City Ry. Co. of Iowa	(Operati	ng one or	dinary sing	le-truck car	in Davenp	ort. Contempla	ting use of	one-man cars in	Muscatine)							
Iowa City Elec. Ry.	13,000	10	5	26'	8'6"	19,000	Double	32 and 34	G.E. 54, 800	14:67	Hand	No	No	No	8.5	20
Keokuk Elec. Co. at Keokuk and Hamilton, Ill.	42,000	21	3	32'	7'8"	24,000 & 13,000	Double	28	G.E. 258a	13:74	Air	Yes	Yes	Yes	9	15
[7]Mason City & Clear Lake R. R.	22,000	39	5	30'9½"	8'	18,000	Double	28	West. 506a	13:59	Air	Yes	Yes	Yes	10	15
Waterloo, Cedar Falls & Northern Ry.	33,097	59	27	31'	9'	24,200	Double	32	West. 323a	15:69	Steps, none Doors, ha'd	No	No	Yes	15	6

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[1] One-man cars operated daily until 2 p. m.

[2] Company has not had a platform accident with one-man cars in fourteen months of operation.

[3] Cars are of two-man type but operated one-man.

[4] Eight one-man cars ordered—To be delivered about Nov. 1.

[5] Converting single-truck cars for one-man operation by installing vestibule doors and folding steps and modifying fare-register system—To have been ready about Sept. 15.

[6] Use two men during rush hours.

[7] Cars purchased for delivery about Oct. 1.

CONTINUED ON PAGE 542

DATA ON ONE-MAN CARS—Continued from page 541

Company	Population (1917) of Cities Served	Number of Cars of All Types Owned	Number of One-Man Cars Operated	Length Over all of Present One-Man Cars	Width of Same Over Sheathing	Weight of Same Without Load, Pounds	Single or Double End	Seating Capacity	Type of Motor	Gear Ratio	Door and Step Control Used, and Hand or Air-Operated	Are Air Brakes Used?	Do Controller and Brake have Automatic Features?	Are Fare Boxes Used?	Sched. Speed in M.p.h. with One-Man Cars	Normal Headway in Minutes, Using One-Man Cars
KANSAS																
Kansas Elec. Utilities Co. at Lawrence	15,000	17	8	33'	8'6"	30,000	Both	32	Allis-C. 35R	16:68	Hand	No	No	Yes	8	10 and 12
Manhattan City & Inter. Ry	8,000	5 (City)	5	28', 30' and 36'	......	18,000 and 32,000	Double	30 and 40	G.E. 1000, 54, 57	....	None	No	No	No	6	......
Topeka Ry. S.T.	50,000	50	11	......	......	....	......	....	....	....	Hand	No	No	Yes	8.3	15
D.T.		28	1													
KENTUCKY																
Henderson Trac. Co	11,000	13	7	18' and 20'	8'	20,000	Double	....	G.E. 54,800	14:69	None	No	No	Yes	7	15
Louisville Ry	223,928	....	......	16'–18'	......	(Operate small cars with one man as "owl cars" between midnight and 5 a.m.)										
Owensboro City R. R.	20,000	36	12	29'4"	7'10"	15,000–17,200	Double	30	G.E. 800 West. 68	14:66	None	No	No	Yes	10	10
LOUISIANA																
Baton Rouge Elec. Co	23,000	9	6	31'	8'8"	30,000	Double	32	G.E. 80	15:71	None	No	No	No	8.2	12
MARYLAND																
[8]Hagerstown & Frederick Ry	25,000	43	6	31'6¾"	7'11"	11,420	Single (2) Double (4)	30	G.E. 88	....	Hand	Yes	No	Yes	12	15
Towson & Cockeysville Elec. Ry. at Towson, Southerville and Timonium	4,426	1	1	26'1½"	......	18,312	Double	24	G.E. 1027	15:93	Hand	No	No	No	15	......
MASSACHUSETTS																
[9]Bay State St. Ry. at Boston	745,439	2130	......	Rec. 31'5" S. & W. 27'10"	7'6½" 7'8"	21,540 15,440	Double Double	28 28	G.E. 1000 G.E. 258	16:63 13:74	Air Air	Yes Yes	Yes Yes	Yes Yes	....	....
Worcester & Warren St. Ry. at No. Brookfield	2,947	....	(One car ordered to be same as for Stone & Webster properties)													
[10]Brockton & Plymouth St. Ry. between Brockton and Plymouth	Pop. served 26,600	28	2	27'9½"	7'6"	13,500	Double	31	G.E. 258a	13:74	Air	Yes	Yes	Yes	......	......
MICHIGAN																
Detroit United Lines at Ann Arbor	15,000	....	11	31'	7'4¼"	20,500	Double	30	West. 68	14:68	Hand	Yes	No	Yes	7.5	10
Menominee & Marinette Lt. & Trac. Co. at Menominee and Marinette	25,117	23	23	28' (2), 30'6" (12), 32' (8), 36'4" (1)	7'6" (22) and 8'6" (1)	16,000 aver. (1–24,000)	Double	30 aver.	West. 323a G.E. 52, 54	14:67	Hand	No	No	No	8.5	12
MINNESOTA																
Duluth St. Ry	100,000	99 (Duluth)	2	37'7"	8'4¾"	40,200	Double	38	G.E. 67	15:69	None	Yes	No	No	13.89	30
Wisconsin Ry., Lt. & Pwr. Co. at Winona	20,000	14	7	35'	8'3"	22,000	Double	32	G.E. 54, 258	15:69, 15:98	Hand	Yes	No	No	9	12
MISSISSIPPI																
Delta Lt. & Trac. Co. at Greenville S.T.	15,000	7	4	14'	6'8"	14,500	Double	32	West. 12a	14:47	Hand	No	No	Yes	8	15
D.T.		4		24'												
Hattiesburg Trac. Co	15,000	13	6	33'	......	23,000	Double	28	G.E. 80, 81, 54, 67, West. 323a, 49	....	Hand	No	No	Yes	10	......
Jackson Lt. & Trac. Co	30,000	21	10	25'	7'9½"	15,000	Double	30	G.E. 247 West. 505X	15:58, 14:68	Hand	No	No	No	12	15 and 20
[11]Meridian Lt. & Ry. Co	25,000	25	15	33'8"	8'2"	20,000	Double	28	G.E. 67, 80, 81 West. 323a	15:69	Hand	No	No	No	12	10
Pascagoula St. Ry. & Pwr. Co. at Moss Point and Pascagoula	7,300	3	3	29'	8'4"	20,000	Double	28	G.E. 219b	15:79	Hand	No	No	Yes	12	30
Vicksburg Lt. & Trac. Co	25,000	20	4	32'	8'7"	19,500	Double	32	....	13:75	......	No	No	Yes	8	20
MISSOURI																
Cape Girardeau-Jackson Inter. Ry	14,000	6	4	31'	......	....	Double (3)	40	West. 12a	14:68	Hand (2)	No	No	Yes	6	......
City Lt. & Trac. Co. of Sedalia	25,000	40	8	31'	8'	14,500	Double	34	G.E. 258	13:74	Air	Yes	Yes	Yes	10	10
MONTANA																
Great Falls St. Ry	35,000	23	23	39'9" (19) and 29'6" (4)	8'2"	34,500 (12), 30,500 (7) and 16,200 lbs. (4)	Double	40 (19) and 26 (4)	West. 323 (7) G.E. 80 (12), G.E. 54 (4)	16:81 (7), 15:71 (8), 14:67 (4) 17:69 (4)	Hand	Yes (19)	No	No	8–9	7.5 and 15
Helena Lt. & Ry	15,000	29	7	33'–38'	7'8"	20,000–36,000	Double	32–38	G.E. 52, 80	17:69 or 14:67	Hand	Yes	Yes	No	9.5	20
Missoula St. Ry	18,000	13	11	40'	8'2"	36,000 & 50,000	Double	32–48	G.E. 219	15:71	Hand	Yes	Yes	Yes	9–12	20
NEBRASKA																
Lincoln Trac. Co	55,000	79	2	26'	8'2"	17,000	Double	28	G.E. 54	14:67	Hand	No	No	Yes	8.5	15 and 20
Omaha, Lincoln & Beatrice Ry	55,000	5	1	27'9½"	7'2"	12,500	Single	28	G.E. 258a	13:74	Hand	No	No	No	8.5	15
NEW JERSEY																
Public Service Ry. at Kearny	25,000	2586	7	29'4" & 31'	7'6" & 7'8"	19,000 & 24,800	Double	26 and 28	West. 68	14:68	Hand	No	No	Yes	......	......
NEW YORK																
Buffalo & Lake Erie Trac. Co	(Operates one-man car on one mile of line having very light traffic)															
International Ry. at Lockport	20,000	8	8	31'3½"	8'1½"	22,000	Single	36	G.E. 200	14:67	Hand	Yes	No	Yes	9.51	15

Ogdensburg St. Ry	15,000	15	7	30'	9'	20,000	Double	29	West. 323a	16:81	Hand	No	No	Yes	10	12
Putnam & Westchester Trac. Co. at Peekskill	15,000	....	2	30'	......	17,000	Double	30	G.E. 101b	....	Hand	No	No	Yes	......	......
NORTH CAROLINA																
North Carolina Public Service Co. at Greensboro	30,000	33	(Intended to put twelve one-man cars in operation about Sept. 1)													
OHIO																
[12]Toledo, Bowling Green & So. Trac. Co. at Findlay	18,000	30	5	28'	8'9"	30,000	Double	36	G.E. 88, 58	23:60	None	No	No	Yes	......	12
OKLAHOMA																
Tulsa St. Ry	48,000	25	15	30'	8'	20,000-24,000	Double	32	G.E. 54, 80, 200	14:67 & 15:71	Hand	Yes (2)	No	Yes	......	7½, 8 & 12
PENNSYLVANIA																
West Penn Rys. at McDonald and Oakdale	5,200	3	2	32'11"	8'3"	20,000	Double	32	West. 56	18:64	Hand	No	No	Yes	8	30
[13]Northwestern Penn. Ry. at Meadville	18,000	45	9	28' and 32'	8' and 7'6"	14,000 & 20,000	Double	28	G.E. 258A 1000	13:74, 17:67	Hand and air	Yes	Yes	Yes	9	20
Citizens' Trac. Co. at Oil City	15,657	Three one-man cars ordered. Expected to be in operation about Nov. 15														
SOUTH CAROLINA																
Southern Public Utilities Co. at Anderson	9,654	6	6	29'	8'6"	12,900	Double	28	"Wee" 506 Y	16:64	Hand	No	No	No	4.5 & 16	15
SOUTH DAKOTA																
Aberdeen Railroad Co	14,000	12	12	26'	8'8"	14,000	Double	26	G.E. 258a	13:74	Hand	No	No	No	8	10 and 20
TENNESSEE																
Jackson Ry. & Lt. Co	22,500	20	14	33'	......	....	Double	32	West. 12a, 92a, 323a	....	Hand	No	No	Yes	10	15
TEXAS																
Amarillo St. Ry	17,000	12	5	30' and 33'	......	....	Double	32	G.E. 54, 1,000	14:67	Hand	No	No	No	8.5	......
Austin St. Ry	45,000	44	7	30'1"	7'10"	18,000	Double	32	West. 323a G.E. 258a	13:74	Air	Yes	Yes	Yes	10	15
Corpus Christi Ry. & Lt. Co	14,000	14	8	26'	7'9½"	12,000	Double	24	West. "Wee" 505	....	Hand	Yes	No	Yes	8.5	15 and 20
Northern Texas Trac. Co. at Fort Worth	90,000	227	10	27'9½"	7'8"	13,400	Double	31	G.E. 258C	13:74	Air	Yes	Yes	Yes	10	10
Greenville Ry. & Lt. Co	14,000	7	4	32'	8'	23,000	Single	24	G.E. 216	....	Hand	No	No	Yes	7.5	......
Paris Transit Co	12,469	(Operating with one-man single-truck double-end cars)														
Texas City St. Ry	3,500	4	2	30'	8'	22,000	Double	24	West. 323a	16:81	Hand	No	No	Yes	12	15
UTAH																
Salt Lake & Utah Railroad Co	10,000	....	1	(This car makes but three or four short trips a day)												
VIRGINIA																
Charlottesville & Albemarle Ry	15,000	12	7	31'	8'	18,000	Single	36	G.E. 200	1:5	Hand	Yes	No	Yes	12	5
WASHINGTON																
Puget Sound Trac., Lt. & Pwr. Co.:																
[14]Bellingham Div	29,700	39	18	27'9½"	7'6"	13,500	Double	32	G.E. 258a	13:74	Air	Yes	Yes	Yes	11.2 max. & 9.2 min.	10
Seattle Div	280,000	418	2 (1 new & 1 remod.)	22'10" (new)	7'6"	10,000	Single	30	G.E. 258a	13:74	Air	Yes	Yes	Yes	8	6.6
Lewiston-Clarkston Transit Co. at Clarkston and Lewiston, Idaho	12,500	5	3	26'6"	8'6"	17,500	Double	26 and 38	West. 505X	16:64	Hand	No	No	Yes	8	20
Puget Sound International Ry. & Pwr. Co. at Everett	30,000	21	11 (4 new & 7 remod.)	22'10" (new)	7'6"	10,000	Single	30	G.E. 258a	13:74	Air	Yes	Yes	Yes	9	7
[15]Yakima Valley Transp. Co. at North Yakima	20,000	20	8	39'10"	8'2"	32,000	Double	38	G.E. 80a	17:69	Hand	Yes (4)	No	No	9	30
[16]Washington Wtr. Pwr. Co. at Spokane	130,000	191	44 (36 regular)	44'10"	8'8"	....	Single	42	G.E. 80	15:71	Hand	Yes	No	No	9	7.5, 10, 12, 15, 20 & 30
Tacoma Ry. & Pwr. Co	88,000	100	5	31'	7'8"	22,000	Double	29	G.E. 58	17:67	Air	Yes	Yes	Yes	8.8 & 7.9	12
WISCONSIN																
Wisconsin Trac., Lt., Ht. & Pwr. Co. at Appleton	16,000	19	3	26'7"	7'7"	24,000	Double	24	West. 12a	14:67	None	No	Yes	Yes	6	......
Janesville Trac. Co	15,000	8	4	30'1"	8'4"	25,000	Double	30	G.E. 200	14:67	Hand	No	No	Yes	7.74	20
La Crosse & Onalaska St. Ry	36,500	1	1	26'	8'2"	12,000	Double	20	G.E. 80	15:67	Hand	......	....	No	20	
[17]Wisc. Valley Elec. Co. at Wausau and Merrill S.T.	28,000	12	12	33'	7'6"	24,000	Double	28	G.E. 81a	14:67	Hand	Yes	No	No	12⅔ (Int.)	15
D.T.				43'	8'	48,500		48	West. 101B2	15:69					11 (City)	
CANADA																
Calgary Munic. Ry	60,000	85	42	32', 41'6" and 46'6"	8' and 8'6"	22,000, 38,000 and 40,000	Single	28, 40 and 48	West. 101B, G.E. 80	15:69, 17:67 and 17:69	Hand	Yes (41'6" & 46'6")	No	Yes	8-10	5, 10, 15, 20, 30
Lethbridge Munic. Ry S.T.	11,000	10	9	32'	8'6"	20,000	Both	31-40	West. 101B2	15:69	Hand	Yes (D.T.)	Yes	Yes	12	12
D.T.				41'		40,000										
Brandon Munic Ry	16,000	20	7	34'	7'	27,000	Double	34	West. 101B2 G.E. 80	15:69 17:69	Hand	No	Yes	Yes	8.5 (Aver.)	10
[18]Port Arthur Munic. Ry	15,000	26	3	33'	8'4"	20,000	Single	38	West. 101B2	16:66	Hand	Yes	No	Yes	12.5	20-30-40
Sherbrooke Ry. & Pwr. Co	21,000	20	7	29'-32'	7'-8'6"	14,000-20,000	4 single & 3 double	22-32	West. 101B2	15:69	Hand	No	No	Yes	9	10
[19]Three Rivers Trac. Co	22,000	12	12	23'6" (3) 33'2" (9)	8' (3) 8'6" (9)	12,000 (3) 27,800 (9)	11 single & 1 double	32	West. 506a (3) West. 101B2 (9)	....	Air (3) Hand (9)	Yes	Yes (3)	Yes	9	5

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[8] Without electrical equipment or trucks.

[9] Owns two one-man cars, one made from two-man car, the other of Stone & Webster type. Has never operated with one man. Petition now before Public Service Commission for permission to operate nineteen one-man cars on fifteen routes in seventeen cities and towns.

[10] Cars were to be in operation about Sept. 15.

[11] Has successfully operated with one man during summer seasons four double-truck, fifty-six-passenger cars with air brakes and hand-operated door mechanism.

[12] Has operated one-man cars since 1887, using at first the ordinary 16-ft. car.

[13] Recent fire destroyed most of one-man car equipment. New Birney cars on order. Data for both old and new cars are given.

[14] Six cars were built in company's shops with body design of Birney type and using old trucks and equipment. Rush hour service consists of trippers, double or triple heading regular service.

[15] Three lines overlap on main street making headway there 10 min.

[16] Rush-hour headways are as follows; 6 min. on line using 12 min. regularly. All others same. With two-man cars headways were 5 min. on line using 12 min., 10 min. on line using 15 min. while 10 min. line remains the same.

[17] On suburban line two men are used from 6 to 8.30 a. m. and from 2 to 8 p. m.

[18] One-man cars used on belt line only.

[19] During rush hour two cars are operated on schedule of regular car.

Companies under Stone & Webster management have under order a total of 246 safety cars of Birney type. These are to be 27 ft. 9½ in. long over all and 7 ft. 8 in. wide over sheathing. Cars to weigh without load 13,000 lb. (single-end) and 13,500 lb. (double-end) and to seat thirty-two and thirty-five passengers respectively. Controllers and brakes to have automatic features and door and step control to be air-operated. Fare boxes will be used. Motors to be G. E. 258C and West. 506AN2, 306ON2 and 306AN2. Gear ratio 13 : 74.

AMERICAN ASSOCIATION NEWS

Speakers for Oct. 9 Conference

Program Is Now Practically Complete—Speakers of Prominence Have Been Secured to Lead Discussions on Topics Vital to the Industry

Supplementing the preliminary announcement appearing in the issue of this paper for Sept. 8 regarding the program for the New York conference, to be held on Tuesday, Oct. 9, Secretary E. B. Burritt has announced a nearly complete list of speakers. The topics and names of those who have accepted invitations to discuss them are as follows:

1. "General Survey of Present Electric Railway Problems," L. S. Storrs, president the Connecticut Company, New Haven, Conn.
2. "Is the 'War Bonus' Practicable as a Means of Wage Adjustment in the Electric Railway Industry?" E. G. Connette, president International Railway Company, Buffalo, N. Y.
3. "Female Substitutes for Male Employees," F. W. Brooks, president and general manager Detroit United Railway, Detroit, Mich.
4. "Pending Applications for Fare Increases in New York State," J. K. Choate, vice-president J. G. White Management Association, New York, N. Y.
5. "Topical Discussion on Various Methods of Increased Fares." (a) "Charge for Transfers," Frank Hedley, vice-president and general manager Interborough Rapid Transit Company, New York, N. Y., leader; (b) "Increases in Flat Rates for Present Zones," leader to be announced; (c) "Shortening Present Single Fare Zones," Edwin Gruhl, statistician Milwaukee Electric Railway & Light Company, New York, N. Y., leader.

This conference, which is to be of an informal character, will take the place of the usual annual convention of the association. It will be held the day after the meeting of the executive committee. President Storrs extends a cordial invitation to all operating railway men and manufacturers who can be spared from other duties to attend the conference, for the topics to be discussed relate to matters vital to the welfare of the industry. The conference will be held in the building of the United Engineering Societies, 29 West Thirty-ninth Street, New York City, opening promptly at 9.30 a. m.

Atlantic City Company Praised

Despite Unprecedented Rush at Seaside Resort, Atlantic City & Shore Railroad Makes Notable Record

The Atlantic City & Shore Railroad, Atlantic City, N. J., of which A. J. Purinton is general superintendent, was the subject of the leading editorial in the Atlantic City *Gazette-Review* of Sept. 13. Under the caption "Breaking a Time-Honored Precedent" the paper said:

"With a full realization that it is violating all former ethics of local newspaperdom and running directly at cross purposes to popular sentiment hitherto prevailing in regard to local trolley service, the *Gazette-Review* dares to congratulate the management of the Atlantic City & Shore Railroad for its handling of the enormous traffic demands made upon its resources during the summer season. We'll concede at the beginning that the service rendered was far from perfection, but it must be remembered that the crowds here at times reached proportions approximating the 400,000 mark, and three lines of trolleys instead of one would have been necessary for a strictly first-class service.

"The Atlantic City & Shore Railroad utilized the resources at its command to the best possible advantage and left but little opportunity for fault finding to its fair-minded patrons. One of the features of the service that stood out prominently during the unprecedented rush of visitors was the unfailing courtesy of trolley crews. The consideration shown by conductors and motormen to age-enfeebled patrons, the care that they exercised in the handling of unaccompanied children and their polite attitude toward all patrons evoked widespread comments of approval on all sides, particularly among visitors, many of whom found the demeanor of the local railway employees in glaring contrast to the abrupt treatment accorded them by men engaged in the transportation business of their home communities.

"There was also a notable lack of accidents during the entire season, showing that the employees on all lines running through the resort and across to the mainland were as careful of the safety of their passengers as they were courteous in their treatment of them."

Status of Electric Railway Labor

A Volume of More than 1100 Pages of Statistics in Regard to Electric Railway Employees Has Just Been Issued by the U. S. Department of Labor

The Bureau of Labor Statistics of the United States Department of Labor has just issued bulletin 204 containing 1131 pages of statistics in regard to wages, hours of labor and working conditions in electric railway operation in this country. The data were gathered in the latter half of 1914 and the early part of 1915. A more extended review of this report will probably be published in an early issue of this paper. A few facts are given now, however.

The first chapter of the report is devoted to the wages of trainmen, the data being given by companies. The total shows that in 1914 10 per cent of the motormen on the surface lines earned less than 24 cents per hour, 24 per cent less than 26 cents, 43 per cent less than 28 cents, 61 per cent less than 30 cents, 85 per cent less than 32 cents, and 98 per cent less than 34 cents. The wages of conductors are not quite so high. Of the regular conductors, 13 per cent earned less than 24 cents per hour, 33 per cent less than 26 cents, 51 per cent less than 28 cents, 67 per cent less than 30 cents, 88 per cent less than 32 cents, and 99 per cent less than 34 cents. Figures are also given for extras, the practice followed in regard to reckoning of time, time allowances, guaranteed wage to extra men, overtime, snow service, etc.

The second chapter relates to the time of runs. These are divided into three classes, namely, Monday to Friday runs, Saturday runs, and Sunday runs. A tabulation of 30,438 Monday to Friday regular runs on surface lines shows 3 per cent were runs of less than eight hours on duty, 5 per cent between eight and eight and one-half hours, 11 per cent between eight and one-half and nine hours, 19 per cent between nine and nine and one-half hours, 23 per cent between nine and one-half and ten hours, 22 per cent between ten and ten and one-half hours, 9 per cent between ten and one-half and eleven hours, 4 per cent between eleven and eleven and one-half hours, 2 per cent between eleven and one-half and twelve hours, and 2 per cent of twelve hours or over. These figures relate to the time on duty. The statistics for the hours within which these 30,438 regular runs are completed show that the outside time of 1 per cent was less than eight and one-half hours, 3 per cent between eight and one-half and nine hours, 6 per cent between nine and nine and one-half hours, 7 per cent between nine and one-half and ten hours, 7 per cent between ten and ten and one-half hours, 5 per cent between ten and one-half and eleven hours, 6 per cent between eleven and eleven and one-half hours, 8 per cent between eleven and one-half and twelve hours, 10 per cent between twelve and twelve and one-half hours, 10 per cent between twelve and one-half and thirteen hours, 10 per cent between thirteen and thirteen and one-half hours, 11 per cent between thirteen and one-half and fourteen hours, 5 per cent between fourteen and fourteen and one-half hours, 3 per cent between fourteen and one-half and fifteen hours, and 7 per cent over fifteen hours.

Besides other statistics of trainmen and other electric railway employees, the report contains a history and copy of the constitution of the American Electric Railway Association and of the Amalgamated Association, as well as a chapter on agreements between employers and employees. A charge of 75 cents is made by the Department of Labor for copies of this report.

News of Electric Railways

Traffic and Transportation
Financial and Corporate Personal Mention **Construction News**

Puget Sound Arbitration Begun

Men Engaged in Putting in Their Case—Much Technical Testimony—Cost of Living Data Presented Men Cross-Examined

Arbitration of the questions at issue between the employees of the Puget Sound Traction, Light & Power Company, Seattle, Wash., and the company began Sept. 10, before a board consisting of Dr. Henry Suzzalo, chairman, C. J. Franklin, representing the company, and James A. Duncan, representing the men. The questions involved are those of hours and wages and they affect both the Seattle and Tacoma lines. Attorneys A. J. Falknor and F. D. Oakley represented the company and C. A. Reynolds the men. Dr. Carlton Parker is secretary of the board.

PLEA FOR AMERICAN STANDARD OF LIVING

The employees set up a general theory of the case to the effect that the company is obliged to pay a wage and establish hours that will maintain an American standard of living according to present acceptance of what constitutes such standard. The company contends, or will contend, when its side is reached that the wage paid is such as will enable the men to live as well as any other men engaged in similar work requiring as high a degree of skill. The company makes schedules as nearly as possible on a basic ten-hour day. The working hours for swing runs are almost invariably ten hours and the elapsed time is made as short as is consistent, the companies contend, with efficient and satisfactory service. The men ask for a basic eight-hour day and the elimination of the swing run practice.

For the first two days all of the testimony was concerned with the cost of living, the purpose of the men being to establish as a fact that the wages paid will not permit the employees to live as they should. Witnesses were introduced to produce expert testimony on this subject by the submission of budgets on food, clothing and other necessaries of life. The various experts agreed that an American standard of living can be maintained on an average monthly budget for a family of five for a sum ranging from $126 to $133 a month gained from an eight-hour work day. The arbitration board will be asked by the men to make an award to that effect.

WHAT THE CROSS-EXAMINATION DISCLOSED

Cross-examination of the witnesses introduced by Mr. Reynolds from among the men to testify to their conditions of work and earnings brought out that the present hours of work average ten a day; that the earnings of regular and swing and relief run men range from $90 to $119 a month; that under the system of seniority they choose their own runs; that they do not wish to have the seniority system disturbed; that almost universally they remain in the service because they like the work, and that their earnings are better than in any other class of employment in which they had previously been engaged. Their complaint is not in reality against the employing company, but against harder living conditions. The evidence introduced was based on earnings under a wage scale approximately 14 per cent lower than that which has been in effect since July 1, or for a period dating back to two weeks preceding the strike.

The board heard considerable testimony on runs and schedules on the second day. This had to do in large part with the intricate and technical side of operation, and in order to get a better understanding of the methods and operating conditions practically all of Sept. 13 was spent by the arbitrators in the carhouses and the shops.

The presentation of the testimony of the employees will probably not be concluded for several days.

Amalgamated Convention Ends

Mr. Mahon Re-elected President—One-Man Car Question for Locals to Decide—Resolution on Seniority Adopted

William D. Mahon, Detroit, Mich., was re-elected international president of the Amalgamated Association of Street & Electric Railway Employees of America at the closing session of the fifteenth biennial convention of the society held in Providence, R. I. Chicago was selected as the place for the convention of 1919.

OFFICERS ELECTED

The convention in Providence lasted nine days and was concluded during the week ended Sept. 15. It was pronounced one of the most successful ever held. A feature of the final meeting was the presentation of a chest of silver to Mr. Mahon from the delegates at the convention. The officers elected are as follows: International president, William D. Mahon, Detroit; vice-presidents, William B. Fitzgerald, Troy, N. Y., William S. McClenathan, Chicago, Ill., J. P. O'Brien, Springfield, Mass., Benjamin Bowbeer, Oakland, Cal., Joseph Gibbons, Toronto, Ont., Fred A. Hoover, Vancouver, B. C., George A. Dean, Stockton, Cal., Frank O'Shea, Buffalo, N. Y., P. J. McGrath, Pittsburgh, Pa., and Thomas F. Shine, Boston, Mass.; treasurer, Rezin Orr, Fort Wayne; members of general executive board, R. L. Reeves, Pittsburgh, Pa., E. D. W. McMorrow, Chicago, Ill., Magnus Sinclair, Toronto, Ont., P. J. Shea, Scranton, Pa., C. J. Colgan, Chicago, Ill., John H. Reardon, Worcester, Mass., Allen H. Burt, Salt Lake City, Utah, William F. Welch, Wheeling, W. Va., and J. B. Lawson, Shreveport, La.

It was voted to remit all dues to members in the service of their country. These men, however, will not be entitled to benefits during their service. By a vote of more than two to one the clause on compulsory arbitration was kept in the constitution although delegates from East St. Louis made an attempt to have it removed. President Mahon and the leaders of the Chicago delegation favored retaining the clause.

SOME OF THE QUESTIONS SETTLED

The convention decided that the one-man car question should be a matter for decision by local boards.

Heaters in the vestibules of cars were indorsed by the convention. This measure was directed especially at the Boston Elevated Railway, but a clause was added making the request apply to all electric railways.

A resolution was passed by the convention pledging financial support to the men of the United Railroads, San Francisco, Cal., who are now on strike.

A resolution was adopted relating to the seniority of members who lose their positions temporarily. It was as follows:

"Whereas, In the past a motorman and conductor of experience having had the misfortune to lose their positions on roads where employed are compelled to seek employment with other roads, and as our rate of wages is of the graduated scale, these men are compelled to start in the new positions at the lowest rate of wage of the graduated scale then in force on that road;

"Resolved, That we insist that all future contracts and agreements entered into between local divisions of this association and their employing companies shall include a clause stating that a man who can show three years of service on one line which has been performed during four years preceding time of applying for position shall have his rate of pay start according to his years of service with former employing company."

Line to Camp Dodge Completed

Des Moines Inter Urban Railway Adds More Than Ten Miles of Line to Serve Cantonment Near That City

The Inter Urban Railway, Des Moines, Iowa, on notice of only sixty days must provide passenger and freight facilities to a city of between 45,000 and 50,000 people at Camp Dodge, the cantonment for the thirteenth division of the United States conscript army. Troops from Iowa, Illinois, Minnesota and North Dakota will be trained there. Camp Dodge will make a city as large as the third largest city in Iowa.

On June 27 Camp Dodge was formally chosen a cantonment location. It is 11 miles from Des Moines, the capital and principal city of Iowa. Sixty days ago the Inter Urban Railway operated twenty-eight single-car trains on its Perry division, carried 2000 passengers a day and employed thirty trainmen. Since that time 8 miles of track have been completed within the camp proper and 2½ miles have been built on the main line. Ninety-seven trainmen are now on the payrolls. The company is now operating fifty-eight passenger trains of from one to twelve cars each per day and is carrying 10,000 passengers daily.

Since the construction of the camp was started the company, in addition to its track construction work and passenger traffic, has carried over its single track 5000 cars of freight in and out of the camp. Each day between 2000 and 4000 workmen have been carried to and from the camp and only twice has this part of the work been delayed. On one of these occasions a dense fog made fast running impossible.

The Inter Urban is the only railroad with direct connections to the camp. Three depots have been built at the camp. They are equipped with turnstiles so that three ten-car trains can be loaded at one time. At the terminals within the city of Des Moines facilities have been provided to permit of loading two ten-car trains at the same time. All fares will be collected at the turnstiles so as to relieve the conductors. The company has placed orders for additional equipment, including five locomotives.

So well has the company done its work that the Greater Des Moines Committee, the principal commercial organization of the city, has written an indorsement of the handling of the work by the company.

M. J. Gormley of the American Railway Association, who has charge of the transportation end of six army cantonments, was in Des Moines recently and after going over the Camp Dodge situation carefully, he advised the camp quartermaster and the local commercial association that the service furnished to Camp Dodge was the best of any of the six camps over which he has supervision. One day while Mr. Gormley was in Des Moines the company operated eighty-nine trains over its road to Camp Dodge.

State Control of Subway Opposed

It is reported in Cleveland, Ohio, that Newton D. Baker, Secretary of War, will oppose the proposed subway commission advocated by Mayor Harry L. Davis of that city. Mr. Baker's principal objection, it seems, is that it may take the control of the electric railways from the city and place it with a board appointed under a State law. Friends of Secretary Baker believe he will exert himself to keep the control of the railway in the hands of city officials, because of his advocacy of home rule. He may make an address on the subject during the campaign. The people will have an opportunity to express themselves on the matter at the fall election.

A committee of the Hayden Avenue Improvement Association, East Cleveland, recently consulted with J. J. Stanley, president of the Cleveland Railway, on the possibility of a satisfactory settlement of the franchise trouble in that place. It is said that Mr. Stanley intimated that a 7-cent fare might be demanded for the Hayden Avenue line. At present a large part of the territory in the Hayden Avenue district has nothing but a shuttle service every twelve or fifteen minutes. This is entirely inadequate to the needs.

The extensions to the Madison Avenue and the East 156th Street lines were put into operation on Sept. 16.

Municipal Line to Be Extended

Council of Seattle Has Passed Bill for Purchase of Existing Suburban Property or the Construction of an Extension Paralleling It

The City Council of Seattle, Wash., at a recent meeting, passed a bill introduced by Councilman Oliver T. Erickson, authorizing the issuance of street railway utility bonds to provide for the purchase of the Loyal Railway, Ballard, owned by Harry Whitney Treat in Ballard, or the construction of an extension to the present municipal railway paralleling the Ballard line. The ordinance calls for the construction and furnishing of approximately 2 miles of railway, to be paid for by the earnings of the municipal railway. The city engineering department has estimated the cost of extending Division A from its present terminus at Thirteenth Avenue West to Leary Avenue and Market Street at $28,542. For this extension the Council has authorized a loan of $25,000 from the light fund.

The cost of an extension from Market Street and Leary Avenue to the north city limits, along the streets occupied by the Loyal Heights line, will be about $100,000, according to estimates of A. L. Valentine, superintendent of public utilities of the city. This estimate was made about two years ago. Since then there has been an advance of from 25 to 50 per cent in the cost of the materials that would enter into construction of the proposed line.

It is expected that H. W. Treat, owner of the Loyal Heights line, will offer that property to the city, as the bill authorizing the purchase of the line or the construction of an extension paralleling it was introduced, considered by two committees, and passed by the Council without a request from the engineering or utility departments for an estimate of the cost of the proposed extension. Mr. Treat offered the line to the city of Seattle about three years ago for $90,000, but the Council took no action in the matter.

St. Louis Civic League on Franchises

A meeting of the public utilities committee of the Board of Aldermen of St. Louis, Mo., was held on Sept. 13 to hear attorneys from the St. Louis Civic League, which is opposed to the two ordinances now under consideration looking toward a settlement of the differences between the United Railways and the city. Letters from the Civic League attacking both ordinances were read to the committee. In its letter attacking the so-called partnership ordinance, the league committee wrote that the ordinance would enact a new franchise. In the letter opposing the non-partnership ordinance, it declared the ordinance would be a renewal of existing franchises.

At the conclusion of the meeting on Sept. 13 members of the public utilities committee of the Board of Aldermen are reported to have expressed the opinion that the several public hearings on the United Railways franchise ordinances have aided them little, if any, in reaching a conclusion. It was said that few speakers attempted to analyze either of the two proposed ordinances and that most of the speakers showed prejudice and dealt in generalities. Other public hearings may be held, but the sense of the meeting was that the committee will glean facts upon which to base a preliminary report to the Board of Aldermen from attorneys for the Civic League and the United Railways and from C. E. Smith, consulting engineer for the city.

On Sept. 16 Charles E. Smith, consulting engineer for the city, issued a formal statement to explain his method of arriving at $60,000,000 as the valuation of the United Railways. Mr. Smith's valuation is recognized in each of two pending bills looking to a settlement between the city and the corporation. The explanation, Mr. Smith announced, is a summary of the analysis that he will present orally to the public utilities committee. The Civic League, the Central Trades and Labor Union and other organizations have contended that the Smith valuation was guesswork, and they hold that a careful appraisal of the properties should be made by experts as the first step in readjusting relations between the city and the company and in guaranteeing adequate service in the future.

Mediation Proposed in Chattanooga

On Sept. 15 John B. Colpays, United States mediator, submitted a proposition in writing to F. W. Hoover, vice-president of the Chattanooga Railway & Light Company, Chattanooga, Tenn., for the settlement of the strike of the trainmen of that company declared on Sept. 7. The text of the proposal was not made public, but the plan in general terms is understood to provide for recognition of the union, the reinstatement of the men who are now out and arbitration of the question of whether or not the thirty or forty men against whom the company had a special grievance should be reinstated or discharged.

In a full page advertisement in the issue of the Chattanooga *Times* of Sept. 13 the company said that one of the demands submitted by the union was that the company remove the Rooke registers which had recently been installed. A complete audit was made recently by the company of all transfers and a close check was kept of the numbers issued to conductors. In this manner it was determined how many transfers were being held over and substituted for cash fares during the following month. It was found that the company was losing approximately $250 to $300 a day. The management realized that it had been derelict in leaving a way open for the men to be dishonest. It was decided not to discharge the men, but to adopt a plan which would remove temptation. For this reason it adopted the Rooke system. Immediately following the installation of the register, the officials of the union demanded its removal. This demand the company declined. The company said in the advertisement that it "leaves it to its patrons to decide what they would do under similar circumstances."

Serious Coal Shortages

One System Forced to Suspend—Another Within a Few Hours of Having to Suspend

Because of the priority order from Washington by which all coal was to be sent by lake to the Northwest many industrial and utility plants in Ohio have been running very short. A few days ago the Lake Shore Electric Railway, Cleveland, found itself with a supply that would last only two or three days. The coal company which was supplying the railway did not dare to divert a supply from the lake trade to take care of the needs of the railway. The Lake Shore then wired the Public Utilities Commission of Ohio that it would be forced to suspend operations unless coal could be secured at once. The commission instructed the coal company to send a sufficient supply to keep the power houses running and a little later the Washington authorities so far revised the order as to allow coal companies to supply industrial coal where it was needed. It will be impossible, however, for consumers to stock coal for the winter months until navigation on the Great Lakes closes.

HOW THE KENTUCKY COMPANY WAS AFFECTED

Exhaustion of the supply of coal on Sept. 17 resulted in an enforced suspension of operation of the interurban lines of the Kentucky Traction & Terminal Company, Lexington, Ky., from 8 o'clock to 11 o'clock a. m. Two hours after bulletins were posted giving notice of the suspension of service, several cars of coal were obtained from yards and from other consumers in Lexington better supplied and it was possible to resume operations. S. H. Dailey, general manager of the company, made the statement, however, that unless the company received a sufficient shipment of coal within forty-eight hours it would be necessary to suspend service all over the system. The city lines and the local lighting plant were not included in the temporary shutdown. Coal for Lexington consumers has been obtained from West Virginia and southeastern Kentucky fields. Part of the southeastern Kentucky field has been tied up for six weeks by a strike of the mine workers and this has seriously reduced the supplies, besides increasing the demand on adjacent fields for coal. Mr. Dailey wired Coal Administrator Garfield at Washington, describing the state of affairs in Lexington and asking that some emergency relief be extended to the company.

Increase in Wages in Des Moines

The Des Moines City Railway and the Inter Urban Railway, Des Moines, Iowa, announced on Sept. 11 an increase in wages of 1 cent an hour to all trainmen who are working under a wage contract. The increase is retroactive to Sept. 1. The increase is voluntary on the part of the companies as the present agreement with men does not expire until March 1, 1918. In announcing the increase Emil G. Schmidt, president, stated that it was in appreciation of the efficient service rendered and to take care of the greatly increased cost of living. On the Inter Urban Railway passenger motormen and conductors will now receive 37 cents an hour. Freight motormen and conductors will receive 35½ cents. Brakemen will get 29½ cents. First year men on the city division will receive 28 cents an hour, second-year men will get 29 cents and third-year and older men will get 33 cents. It is estimated that the increase will cost the Inter Urban Railway an additional $1,000 a month, and the city railway nearly $2,000 a month.

Dallas Negotiations May Fail

It now seems likely that C. W. Hobson and J. F. Strickland, to whom the city of Dallas, Tex., granted franchises for electric railway and lighting privileges, will be unable to comply with the terms of such franchises and will forfeit them when the present extension expires on Sept. 27. The franchises granted to Messrs. Hobson and Strickland provided for a service at cost with a sliding scale and fixed returns on an agreed valuation of $8,500,000 for the consolidated electric railway properties. They also called for expenditures of $4,000,000 on interurban and city railway extensions, and for $2,000,000 on lighting work.

Messrs. Strickland and Hobson have spent thousands of dollars in obtaining these franchises, and the city of Dallas has been to much expense in employing experts to make valuations of the properties and prepare and pass the franchises. Extensions to Sept. 27 have already been granted and legal opinion is that the city of Dallas cannot grant additional time. In that event Messrs. Strickland and Hobson must forfeit their franchises and the transportation problem of Dallas will be just where it was when Mayor Lindsley took office three years ago.

The progress of the franchise negotiations at Dallas was followed closely by the ELECTRIC RAILWAY JOURNAL. Under the franchises as adopted it was proposed to organize two companies with Dallas capital, one by Mr. Hobson to take over the city railways and the other by Mr. Strickland to take over the electric light plant.

Public Service Increases Wages

The Public Service Railway, Newark, N. J., has announced an increase in the wages of its motormen and conductors to take effect on Oct. 1. Thomas N. McCarter, president, has issued the following statement:

"The Public Service Railway has decided to increase the wages of its motormen and conductors because of the increased cost of living due to war conditions. That household expenses are greater now than they were one year ago is patent to everybody. Nor are the increases in cost confined to household commodities. This company knows from its own experience how materials of all kinds have risen in price since the war started.

"Nevertheless it has been the company's policy from its organization to treat its employees as liberally as conditions would permit, and the company might be said to be straining a point in giving an increase at this time, but it feels that as the cost of living is so abnormal it wants to help its men bear the burden. Incidentally the action of the company will be a surprise to the employees, who had made no demands and had no idea that a raise was contemplated."

The new scale of wages starts at 28 cents an hour instead of 25 cents and increases the maximum rate of pay from 32 cents to 34 cents, with like increases for the intermediate steps. Overtime work will be paid for at the rate of 40 cents an hour. The increases will add about $300,000 a year to the company's payroll. The last previous raise in wages was made by the company in July, 1916.

Cincinnati Interurban Plans Presented

At a meeting of the Rapid Transit Commission of Cincinnati, Ohio, on Sept. 7, Frank S. Krug, chief engineer, presented two separate plans for interurban and loop subway stations in the heart of the city. One of them provides for an interurban subway station under Government Square, with a subway station for the loop on Walnut Street, and subway down Main Street to connect with the original line at Pearl Street.

The other plan was made with a view to the construction of a combined interurban and loop station under Fountain Square and Government Square for the entire distance between Vine and Main Streets. This would necessitate a change in the original plans by the construction of a subway on Vine Street betwen Canal and Fifth Streets, instead of on Walnut Street. No action was taken on either plan, as the comparative costs have not yet been worked out.

Plans and estimates of costs have been made for diverting the loop line from the canal bed from Mohawk Place to Brighton, as it is believed the original line runs too close to the hillside, and the expense of supporting the earth would be too great.

Engineer Krug reported that right-of-way plats from Canal and Plum Streets to Third and Whittaker Streets have been completed and records of deeds for all property between Canal and Plum Streets and South Road in Norwood have been obtained. This includes the entire east side of the loop.

A revised line along the hillside above Columbia Avenue has been completed. It is now so located that the concrete trestle will be as close to the hillside as practicable.

Strike-Ridden San Francisco

Strike of 30,000 Metal Workers Adds to the Problems of the United Railroads in Restoring Service

The plans of the United Railroads, San Francisco, Cal., for restoring full night service on its lines on Sept. 17 were canceled owing to acts of violence that day, said to have been the worst the company has experienced since the strike began. The situation for the railway was made worse by the strike of the workers in the metal trades. In this protest by organized labor are included twenty-five unions numbering 25,000 to 30,000 workers. Their going out affected the United Railroads in that the men who left the Union Iron Works proceeded to make a demonstration against the railway by stoning cars and attacking the men who were operating them. About a dozen motormen and conductors were treated in hospitals, but others slightly injured refused medical attention. Considerable damage was done to the property of the company. The police succeeded in quelling the disorder before it reached the stage of serious rioting. Many arrests were made. Fifty police machines patrolled the United Railroad tracks on the night of Sept. 17 until the last car reached the carhouse. On Sept. 18 about ninety machines each carrying two policemen performed similar service until 8.30 p. m. With the police thus on the alert few disturbances occurred.

At 11 a. m. on Sept. 17 all cars south of Market were withdrawn, except those of the Mission, Valencia and Third and Kearney lines. On some lines north of Market Street cars had to be turned back before they reached the end of the run, owing to disturbances. The so-called Municipal Special, operated by the city to the Potrero district, has been discontinued for the period of the ironworkers' strike, but the new municipal service on the Ocean Shore Railroad to Daly City was started on Sept. 18. This line will reach districts heretofore without adequate service.

The Board of Supervisors passed to print on Sept. 17 an ordinance which if finally adopted will remove practically all present restraint on jitney bus drivers and leave such regulation as there may be in hands of chief of police. The Supervisors also made an appropriation of $10,000 from the funds of the Municipal Railroad to be used by the board of public works for operating buses in the Bay View, Sanbruno, Visitacion Valley and Park Hill districts. This fund was necessary to make up the difference between the probable revenues and the cost of operation, the expectation being that these buses will have to be operated at a loss.

Quiet was restored in San Francisco on Sept. 20. Cars were being run without interruption, but the police were patrolling the lines.

The Railroad Commission has notified the Supervisors that it will comply with their request made in the resolution calling for an investigation into the financial status of the United Railroads, but that its jurisdiction does not empower it to "ascertain whether the refusal of the company to arbitrate or grant the demands of striking employees is justified on financial grounds"; nor to "ascertain if the operation of the system of the United Railroads would justify the city in giving the same wages and hours as are now maintained on the Municipal Railway if the city should conclude to buy out the interests of the present stockholders of the United Railroads." The commission addressed a letter to Mr. Lilienthal, president of the company, asking his assistance toward hastening the investigation.

New Power Plant for Kansas City

The Kansas City Light & Power Company, Kansas City, Mo., supplied now in part with energy from the plant of the Kansas City Railways, is proceeding with the immediate erection of a central station on twenty-five acres of land in the east bottoms of Kansas City, Mo., near the Missouri River. A contract has been let to the General Electric Company for two 20,000-kw. turbines, which are to be delivered in May and June, 1918. It is said that the company was able to get this equipment on the date mentioned because of the deferring of pending contracts for turbines by Milwaukee. The Kansas City Company is negotiating on contracts for boilers and for foundations. The plans provide that the unit of the central plant on which work has begun shall be completed by Nov. 1, 1918. Frederick Sargent, of Sargent & Lundy, Chicago, engineers for the new plant, was in Kansas City during the week ended Sept. 15, conferring with Joseph F. Porter, the new president of the Kansas City Light & Power Company, on the work.

Strike in Edmonton Settled.—The strike of the employees of the Edmonton (Alta.) Radial Railway, operated by the city, was settled on Sept. 11. At an informal meeting of the Council on that date the Aldermen agreed to reinstate as many men as possible, giving them their old standing if they returned at once. Many of the men decided to accept these terms and 125 men are said to have signed up before the close of the day.

Chestnut Hill Electrification by Jan. 1.—Officials of the Pennsylvania Railroad have announced that, due to labor conditions and lack of necessary material, work on the electrification of the Germantown and Chestnut Hill branch of the Pennsylvania Railroad will not be completed before Jan. 1. It is expected by that time the line will be in full operation. There are now sixty-six trains to and from Chestnut Hill, all of which will be operated by electricity. The wires and the poles are in position over the whole line. It is the work of eleiminating the grade crossings that is preventing the completion of the work of electrification this fall.

Rochester Men Opposed to Use of Interurban Men Within the City.—Union platform employees of the Rochester lines of the New York State Railways have rejected the 2-cent-an-hour wage increase voluntarily offered to the men provided that the union would permit crews on the Rochester, Syracuse & Eastern Railway and the Buffalo, Lockport & Rochester Railway to operate into the city terminals over the city lines. The crews of the interurban cars are members of the Railway Brotherhood and are not affiliated with the American Federation of Labor. The men on the Rochester city lines have a three-year agreement with the New York State Railways. Crews are changed now at the city limits.

Arbitration of Strike in Monroe.—The strike of the employees of the Monroe (La.) Municipal Street Railway will be arbitrated. The men went out on Aug. 31 and returned to work on Sept. 13. The strike was a protest on the part of the union against the action of the city government in voting to adopt one-man cars for use in Monroe. The men contended that their contract with the city called for a motorman and a conductor on each car. Pending arbitration of whether the intent of the contract between the city and carmen is for two men on each car, service was resumed on the one-man plan. Also pending arbitration, the men will receive a flat rate of 30 cents an hour, instead of 22 to 27 cents as heretofore. All strikers are reinstated with seniority rights.

Provision of Tulsa Franchise To Be Contested.—The Supreme Court of Oklahoma will probably be asked to decide whether a provision in the franchise granted by the city of Tulsa, Okla., to the Tulsa Street Railway to the effect that no electric railways could be built on streets included in the franchise but not availed of prior to April 5, 1917, can prevent the extension of a line on any of the streets thus specified. A test case has been brought in the courts at Tulsa and it will be appealed to the higher courts. C. H. Bosler, president of the Tulsa Street Railway, believes the city's construction of the franchise, to the effect that the extension of lines cannot be built on these streets, will not stand the test of the courts. He will probably attempt to build extensions on some streets in Tulsa thus affected.

Increase in Wages in San Diego.—William Clayton, vice-president and managing director of the San Diego (Cal.) Electric Railway, has announced increases in the wages of the employees of that company and the other so-called Spreckels companies in that city. Platform men have been receiving 27 cents an hour the first year, 28 cents the second year, 29 cents the third year, 30 cents the fourth year and 33 cents the fifth year and thereafter. The increase is a flat one of 3 cents an hour for each of the periods mentioned. The companies affected are the San Diego Electric Railway, Point Loma Railroad, San Diego & South Eastern Railway, San Diego & Coronado Ferry Company, Coronado Beach Company, Coronado Water Company, Mission Cliff gardens employees, all power house employees, carhouse and machine shop employees and track men.

Kansas City Viaduct Matter Still Unsettled.—City officials of Kansas City, Mo., and Kansas City, Kan., have been trying to devise a means of securing municipal ownership of the inter-city viaduct, which, besides the roadway, bears electric railway tracks, and was formerly used for electric railway traffic. The Kansas City Railways has refused so far to be a party to the purchase of the viaduct. Recently cognizance has been taken by city officials of the condition of the Kansas City Railways overhead structure through the west bottoms, which is declared to be unsafe. It is supposed that the condemnation of the elevated structures at this time would force the railway to use the inter-city viaduct. The plans of the company for traffic to the west bottoms provide for eliminating the elevated structure eventually, but definite legal arrangements for this course have not been made. The elevated structure connects with the Central Avenue Bridge and viaduct now in course of construction, and on which the railway is paying $260,000. The company also is paying $250,000 for the Twenty-third Street viaduct and bridge, a mile to the south over the Kaw River. The company owns its bridge over the Kaw at James Street, north of the Central Avenue viaduct, and a few hundred feet south of the inter-city viaduct. The inter-city viaduct extends between the two cities over the Kaw River and through the west bottoms. Its owners are asking $2,350,000 for it. The city officials have agreed to make an offer of $1,500,000, though if the street railway can be made to bear a share of the cost the city's offer might be increased.

Program of Association Meeting

Investment Bankers' Association

As a month will be devoted to the Liberty Loan campaign between Oct. 1 and Nov. 1, the governors of the Investment Bankers' Association have considered it advisable to postpone the time for holding their convention until the loan is effectually out of the way. This action will permit the members of the association to devote their energies to the Liberty Loan drive. The sixth annual convention, in Baltimore, will therefore be held around Nov. 12, instead of Oct. 1, as was originally planned.

Financial and Corporate

Annual Report

Montreal Tramways

The statement of income, profit and loss of the Montreal (Que.) Tramways for the year ended June 30, 1917, follows:

Gross earnings	$7,725,498
Operating expenses	4,601,771
Net earnings	$3,123 727
City percentage on earnings	$491,431
Interest on bonds and loans	858,542
Interest on debenture stock	800,000
Taxes	98,400
Total	$2,248,373
Net income	$875,353
Dividends	337,880
Surplus for year	$537,473
Transfer to contingent renewal account	350,000
War tax (estimated)	110,000
Balance to general surplus	$77,473

The gross passenger earnings amounted to $7,374,295 in the year ended June 30, 1917, as compared to $6,443,309 the year before, an increase of $930,986 or 14.45 per cent. The operating expenses, however, increased $894,718 or 24.14 per cent. The operating ratio the last year was 62.40 per cent as compared to 57.53 per cent the year previous.

The sum of $792,848 was expended for maintenance and charged to operating expenses in 1917 as compared to $583,894 in 1916. This amount, together with $567,082 charged to renewal account, made a total expenditure of $1,359,930 in 1917 as compared to $897,470 in 1916. During the last year there was expended on capital account the sum of $1,509,488, the amount in the preceding year having been $320,872. From the sale of $3,000,000 of bonds the company has remaining a balance of $1,063,985 for extensions and improvements.

The revenue passengers carried in 1917 totaled 179,974,549, with transfers numbering 63,451,272. The car earnings per revenue passenger were 4.10 cents and per total passenger 3.03 cents.

New Officers for Lehigh Navigation

Following the sale of the stock of the Lehigh Navigation Electric Company to the newly formed Lehigh Power Securities Corporation, Allentown, Pa., announced some time ago, new officers and directors were elected for the Lehigh Navigation Electric Company, The Harwood Electric Company and for a number of subsidiary companies.

The following changes took place in the Lehigh Navigation Electric Company: S. D. Warriner, president, resigned, his place being taken by G. E. Claflin. Henry H. Pease, secretary and treasurer, was succeeded by C. M. Walter. Bayard Henry, John S. Wentz, Henry P. McKean, R. Dale Benson, Erskine Hewitt, Richard Y. Cook, C. S. W. Packard, George H. Frazier, Rodman Wanamaker and E. W. Clark resigned as directors, their places being taken by G. E. Claflin, P. B. Sawyer, S. Z. Mitchell, C. M. Walter, J. B. Crane, E. K. Hall, E. W. Hill, William Darbee, R. J. McClelland and E. P. Summerson. S. D. Warriner and L. A. Riley remain as members of the new board.

The following changes took place in The Harwood Electric Company: S. D. Warriner, president, was succeeded by P. B. Sawyer; Henry H. Pease, secretary and treasurer, was succeeded by C. M. Walter; R. H. Wilbur, H. F. Baker, William J. Turner, Henry H. Pease, E. M. Reynolds and Frank Silliman, Jr., resigned as directors, their places being taken by P. B. Sawyer, J. B. Crane, G. E. Claflin, E. K. Hall, William Darbee and C. M. Walter. S. D. Warriner, L. A. Riley, Edwin Ludlow, W. W. Hepburn and John S. Wise, Jr., remain as members of the board.

Corresponding changes were also made in the subsidiary companies.

British Columbia Purchase Denied

At the office of the Chicago, Milwaukee & St. Paul Railway in New York denial was made to the ELECTRIC RAILWAY JOURNAL of the newspaper reports from the West to the effect that the Chicago, Milwaukee & Puget Sound Railroad was planning to take over control of the British Columbia Electric Railway's entire system, extending from Sumas, Wash., to New Westminster, B. C., and also to Chilliwack, B. C. For some time there has been a traffic arrangement between the companies. According to the unofficial report the deal was reported to have been made with British holders of the securities of the British Columbia Electric Railway, the Milwaukee company thus gaining control of a system that would give it excellent entrance into Vancouver, B. C., bring it as far south as Sumas, Wash., and thence, by means of the Bellingham & Northern line, into Bellingham. In any such deal the company would gain control of one of the most important water-power and electric generating plants on the Pacific Coast.

State Board Decides Tax Appeal

The New Jersey Board of Taxes & Assessment on Sept. 11 filed a memorandum sustaining the action of the Mercer County Tax Board in fixing the assessment of the Trenton & Mercer County Traction Corporation for 1916 at $2,069,903. The city of Trenton and six other municipalities in which the company operates had fixed the original assessment at $2,189,440, but the company asked that it be reduced to $1,041,972.

The State board stated that its duty under the law was to ascertain the market value of the property as of May, 1916, and that in dealing with the class of property concerned it would consider original cost, reproduction cost, depreciation, etc., as elements in estimating market value. The board said that its chief engineer had appraised the physical property at $1,500,851, and that a reasonable allowance for going value, or "that value which attaches to the property as the result of the unity of its ownership and use and its established system of successful operation," would be $569,052, the difference between the value fixed by the county board and the physical value.

Bristol (Tenn.) Traction Company.—B. L. Dulaney, president of the company, and associates purchased the property of the Bristol Traction Company on Sept. 15 at the sale made to satisfy claims on bonds amounting to $165,000. The price paid by the Dulaney syndicate was $70,000. The property sold included 15 miles of electric railway, equipment, pavilions and franchises.

Catskill (N. Y.) Traction Company.—George W. Holdridge, receiver of the Catskill Traction Company, conferred recently with the Board of Trustees of Catskill with respect to the future of the road. He read a letter from representatives of the bondholders in which the statement was made that they were averse to extending further financial aid to the company. The Hudson *Republican* in reviewing the affairs of the company said: "In view of the fact that already $30,000 of Catskill money has been sunk in the road, Mr. Holdridge ventured the opinion that no more funds could be secured there and that after about Oct. 15 the electric railway at Catskill will be a thing of the past. The sale of the road will take place about that time and if junk people purchase it the sum paid for the property will go toward paying the holders of receivers' certificates and the cost of the sale." The company operates 5.5 miles of road and has eleven cars.

Duluth-Superior Traction Company, Duluth, Minn.—A dividend of 1 per cent has been declared on the $3,500,000 of common stock of the Duluth-Superior Traction Company for the quarter ended Sept. 30, payable on Oct. 1 to holders of record of Sept. 15. This is the first distribution on the common stock since July 1, 1915, when a semi-annual dividend of 1 per cent was paid.

Gary & Interurban Railroad, Gary, Ind.—Five bidders bought the lines, rolling stock, real estate and all other assets of the Gary & Interurban Railroad at receiver's sale on Sept. 18 for $475,000. The Chicago, South Bend & Goshen division was bought by Philip E. Poe, Baltimore, Md., for $60,000; the Gary City division and Hammond Line was bought by Carl M. Owen, New York, for $200,000; the Valparaiso division including the line from Gary to Valparaiso for $40,000; Gary Connecting Railways was bought by H. J. Unger of Philadelphia for $50,000; the East Chicago division, including Gary & Indiana Harbor line, was bought by Edwin Poe, Baltimore, for $125,000. The Gary & Interurban Railroad was incorporated in January, 1913, as a consolidation of the Gary & Interurban Railway, Gary Connecting Railways, Valparaiso & Northern Railway and the Goshen, South Bend & Chicago Railroad. It owns the entire capital stock of the East Chicago Railway and operates the property under lease. In all the system comprises 85 miles of line, of which forty-one are over private right-of-way. In October, 1914, the company defaulted on the bond interest then due. In October, 1915, Charles E. Davison was appointed receiver.

Kansas City (Mo.) Railways.—The stockholders of the Kansas City Railways met in Kansas City, on Sept. 13, and re-elected the board of directors, the board re-electing the officers of the company, including Philip J. Kealy, president; Clyde Taylor, vice-president, and James E. Gibson, general manager. Mr. Kealy was given further leave of absence. He is serving as colonel of the Third Regiment, Missouri National Guard. Two of the five directors representing the city on the board were re-elected, their nomination having been confirmed by the Court of Appeals. These are D. M. Pinkerton and Frank C. Niles. The Court of Appeals recently decided that the franchise provision that the Mayor "may" send to it the name of a retiring director as one of his three nominees was mandatory on him. Mayor Edwards had not included the name of Frank C. Niles among the three which he suggested to the Court of Appeals from whom the successor of Mr. Niles was to be named by the court. Following the court's decision Mayor Edwards submitted a new list, including the name of Mr. Niles, and the nomination was made by the court. Election of the nominee by the court is mandatory on the stockholders.

New York State Railways, Syracuse, N. Y.—The regular quarterly dividend of 1 per cent on the common shares of the New York State Railways has been passed by the directors. This rate had been in effect since last December, when it was reduced from 1¼ per cent. The company paid 4¾ per cent in 1916; 4 per cent in 1915; 5 per cent in 1914; 6 per cent in 1913, 1912 and 1911, and 4½ in 1910. A letter has been sent to the stockholders by Horace E. Andrews, president of the company, stating that the directors consider it wise to defer the dividend at this time on account of higher operating charges, the difficulties of obtaining new capital and the uncertain economic conditions. The company will have earned about 4 per cent on the common for the year ending Dec. 31, 1917, and has already paid 3 per cent on the common for the current year.

Oakland, Antioch & Eastern Railway, Oakland, Cal.—The California Railroad Commission has authorized the Oakland, Antioch & Eastern Railway to renew $435,853 of short-term notes, part of which are secured by bonds pledged.

Pottstown & Phoenixville Railway, Pottstown, Pa.—A block of the first and refunding mortgage 5 per cent gold bonds of the Pottstown & Phoenixville Railway is being offered for subscription at 87½ and interest by Fincke, Bangert & Company, Philadelphia and Boston. The bonds are dated June, 1912, and are due June, 1942, but are subject to redemption at 100 and interest on any interest date on sixty days' notice. The Norristown Trust Company is trustee of the issue. The company has all of an issue of $500,000 of stock outstanding and has $350,000 of an authorized issue of $1,000,000 of the first and refunding mortgage bonds outstanding. The funds from the bonds now offered are to reimburse the company for completing the line from Sanatoga to Spring City, including the bridge over the Schuylkill River. Two hundred thousand dollars of the total issue are reserved to pay off bonds of leased lines at maturity.

Public Utilities Company, Evansville, Ind.—The Indiana Public Service Commission has received a petition from the Public Utilities Company in which the company asked authority to issue $2,000,000 in such amounts as might be needed of short-time obligations in lieu of and secured by thirty-year bonds formerly authorized by the commission. The company's petition said a purchasing company had been unable to sell the bonds formerly authorized at a fair price. The Union Railway, Gas & Electric Company, it was set out, has bought and paid for $1,284,000 of an issue of $3,951,000 of bonds authorized by the commission to be sold by the Public Utilities Company last March, the proceeds to be used in buying other utility companies and extending the properties of the Evansville company. Because of financial conditions it has been impossible for the purchasing company to market the remainder of the bonds at what it regards as a fair price, but the petitioning company believes short-time obligations can be sold at a fair price.

San Antonio (Tex.) Public Service Company.—The San Antonio Public Service Company, the incorporation of which under Texas laws was noted in the ELECTRIC RAILWAY JOURNAL of July 21, page 121, has in accordance with its purpose announced then taken over the San Antonio Gas & Electric Company and the San Antonio Traction Company, both controlled by the American Light & Traction Company. The change is in the interest of intercorporate simplicity. The directors have authorized an issue of $20,000,000 of 5 per cent first and refunding mortgage gold bonds. Of these, the company is about to issue $2,641,000. The company will also issue $4,700,000 of stock.

Southern Cambria Railway, Johnstown, Pa.—The directors of the Southern Cambria Railway are reported to have under consideration the matter of creating a bond issue as a means of providing for the settlement of claims against the company growing out of the accident of Aug. 12, 1916. Claims would be settled on the basis of the claimant accepting bonds for the amount of the claim as allowed.

United Gas & Electric Corporation, New York, N. Y.—The United Gas & Electric Corporation has declared a dividend of 1 per cent on the common stock, the first payment this year, and comparing with 5 per cent paid in 1916 and 4 per cent in 1915.

United Railways & Electric Company, Baltimore, Md.—The stockholders of the United Railways & Electric Company on Sept. 11 ratified the proposed issue of $3,000,000 of five-year 6 per cent convertible gold notes recently offered by a banking syndicate and also approved the increase in the authorized capital stock from 480,000 shares to 700,000 shares, the new stock to provide for the conversion of the notes. As noted in the ELECTRIC RAILWAY JOURNAL for Sept. 1, page 372, the plan of issuing notes was adopted to make provision for the purchase of new cars, for various extensions and improvements to the lines and for betterments and improvements to service during the next four years. The notes are convertible into the common stock of the company at $30 per share for the stock during the first two years, $32 per share during the third year, $34 per share during the fourth year, and $36 per share during the fifth year of the life of the notes issued. The notes will be dated Aug. 15, 1917, and will be due on Aug. 15, 1922.

Electric Railway Monthly Earnings

ATLANTIC SHORE RAILWAY, SANFORD, ME.

Period		Operating Revenue	Operating Expenses	Operating Income	Fixed Charges	Net Income
1m., Aug.,	'17	$24,863	$12,408	$12,455	$430	$12,025
1 " "	'16	53,860	29,350	24,510	650	23,860

AURORA, ELGIN & CHICAGO RAILROAD, WHEATON, ILL.

Period		Operating Revenue	Operating Expenses	Operating Income	Fixed Charges	Net Income
1m., July,	'17	$220,802	*$143,462	$77,340	$35,790	$41,550
1 " "	'16	209,030	*129,436	79,594	36,117	43,477
7 " "	'17	1,218,890	*885,051	333,839	250,385	83,454
7 " "	'16	1,155,862	*771,002	384,860	254,627	130,233

GRAND RAPIDS (MICH.) RAILWAY

Period		Operating Revenue	Operating Expenses	Operating Income	Fixed Charges	Net Income
1m., July,	'17	$113,390	*$75,897	$37,493	$16,348	$21,145
1 " "	'16	113,948	*73,043	40,905	19,173	21,732
12 " "	'17	1,302,532	*868,007	434,525	208,316	226,209
12 " "	'16	1,263,820	*835,117	428,703	171,907	256,796

REPUBLIC RAILWAY & LIGHT COMPANY,
YOUNGSTOWN, OHIO

Period		Operating Revenue	Operating Expenses	Operating Income	Fixed Charges	Net Income
1m., Aug.,	'17	$426,115	*$274,715	$151,400	$85,282	‡$73,167
1 " "	'16	335,578	*183,147	152,431	69,033	‡85,930
12 " "	'17	4,444,721	*2,847,949	1,596,772	939,531	‡701,590
12 " "	'16	3,748,882	*2,190,485	1,558,397	778,986	‡794,180

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*Includes taxes.

‡Includes non-operating income.

Traffic and Transportation

Portland Fare Hearing Under Way

Commissioner Suggests Temporary Six-Cent Fare and Further Operating Economies

The Public Service Commission of Oregon is considering the problem of allowing the Portland Railway, Light & Power Company to increase its electric railway fare from 5 to 6 cents, to care for increasing cost of operation and in a measure cover increases in wages asked by the trainmen. The commission states there is no desire by it to increase fares if any other solution can be found to dispose of the troubles of the company. The commission has considered such possible methods of economy as reduction of service, return to the skip-stop plan, using fewer cars and running faster, etc. None of these, however, has been decided upon.

Franklin T. Griffith, president of the company, testified at a recent session of the commission that it is no longer possible to give up-to-date service for a 5-cent fare. The 5-cent fare was made years ago when cost of material, labor, maintenance, operation and the like were very much cheaper than at present. Mr. Griffith stated that the property of his company could not be reproduced for less than 175 per cent of the physical valuation placed on it by the commission.

COMMISSIONER COREY FAVORS AN INCREASE

H. H. Corey of the commission said that he believed the problem created by the request of the company for a 6-cent fare, in order that it might increase the wages of its employees, could be solved by granting the company a temporary 6-cent fare permitting it to reduce the service wherever practicable and allowing it to issue ticket books to working men, giving twenty rides for $1, and ticket books to children, giving them twenty-five rides for $1. He said:

"I will suggest to the commission a reduction in the service where practicable, and a temporary six months' trial increase of fares to 6 cents, 1-cent transfer charge; workingmen's tickets at twenty rides for $1, the same absorbing the transfer charge and being a straight 5-cent fare, such tickets to be used only from 5 to 7 a.m., and 5 to 7 p.m., and school tickets at twenty-five rides for $1. This will not grant all the company requested, but will aid in the payment of increased wages to the employees.

"We find that the rider of Portland not only fails to pay for the cost of the service to the company, but that a substantial part of his fare goes to the taxpayer for the privilege. As an illustration, bridge rentals and franchise taxes in Portland aggregate $114,000 for the year 1918 and maintenance of improved streets, $120,000. Improvements to the streets have already cost the company $2,000,000. The elimination of the paving renewals, bridge tolls, franchise taxes and other forms of municipal imposts, such as the $16,000 lost annually to the company by reason of transportation to the city employees, would decrease the burden of the car rider. This question presents itself to me: Are not low car fares of more value to large property owners and merchants of Portland than to riders from the outlying districts, and should they not bear part of this burden?"

Among briefs filed with the commission relative to the application of the company to increase its fares is one by the City Council of Portland opposing the increase. This brief argues that the company by reducing its service can make such profit that may be necessary. It is also pointed out that the company's revenues will be increased by the elimination of the jitney under recent legislation.

Attorney General Brown of Oregon on Sept. 13 began probing into the question as to whether or not the Public Service Commission has jurisdiction over the application of the company for permission to increase its fares. Various attorneys have challenged the commission's jurisdiction on the ground that there is now on the statute books a law forbidding a higher fare than 5 cents in cities of a population of 50,000 or more.

Seattle Four-Cent Tickets Go

Public Service Commission Sanctions Their Elimination at Once—$150,000 More Revenue a Year Likely as a Result

By a recent ruling of the Public Service Commission of the State of Washington the further sale of twenty-five car tickets for $1 by the Puget Sound Traction, Light & Power Company in Seattle has been eliminated. In an order signed by all three members of the commission, the company is authorized to put into immediate effect a straight 5-cent fare schedule, except that the rate of 2½ cents for school children, during the school year, will be continued. W. H. McGrath, vice-president of the company, on Sept. 12 announced that the sale of tickets had been stopped by the company, thus making the order of the commission effective at once. All tickets which were then outstanding, however, will be accepted by the company under the terms that applied when they were purchased.

CITY TO APPEAL FINDING

Corporation Counsel Hugh M. Caldwell, who with Assistant Corporation Counsel Walter F. Meier appeared for the city at the hearing held before the commission, announced after the ruling that he would seek a writ of review in the Superior Court of Thurston County on the grounds that the commission had never valued the properties of the company and that the Public Service Act itself does not prohibit the issuance of commutation tickets.

Through its order eliminating 4-cent tickets, the commission takes jurisdiction over rate schedules fixed by municipal regulations. Its statement on this point follows:

"This commission is charged with the responsibility of seeing that all the rules, regulations, practices, equipment, appliances and facilities of service of any common carrier in respect to transportation of persons or property are just, reasonable, safe, proper, adequate and sufficient. We are also charged with the responsibility of determining that rates, fares or charges shall be just, reasonable and sufficient. We do not believe that under existing conditions a 4-cent rate in the form of a commutation ticket or otherwise is sufficient in the city of Seattle, but that a 5-cent rate, except for school children, is a reasonable rate of fare.

$150,000 A YEAR MORE REVENUE FOR COMPANY

"This commission has never determined the value of the company's railway system in Seattle. One of the general officers of the company testified at the hearing that his company was at large expense to determine the actual money which has gone into the system, exclusive of the power plant, and that the net amount which has gone into the system (exclusive of power) as in use is approximately $15,000,000. In Seattle the company for the first six months of 1917 received an average fare per revenue passenger of 4.67 cents, while the average revenue received from all passengers was 3.46 cents. We find the average length of line in Seattle is 5.16 miles. The longest haul for 5 cents is 17.953 miles, the longest haul for 4 cents is 9.837 miles. Late increases in trainmen's wages amount to $130,000 a year. A reduction in the working day from nine to eight hours in the shops and power houses amounts to $2,000 a month, or $24,000 a year. (The eight-hour day is one of the problems which the arbitration board now in session will settle.) A reduction from nine to eight hours in track and paving work amounts to $1,100 a month, or $13,200 a year. The elimination of the 4-cent ticket and the substitution of a straight charge of 5 cents will increase the revenues of the company approximately $150,000 a year."

In his brief protesting against elimination of the 4-cent ticket, Corporation Counsel Hugh M. Caldwell quoted extracts from the company's franchises and pointed out that the issuance or use of commutation tickets was not interfered with in an express provision written into the law. He said that the commission should complete its own valuation of the property before permitting any increases in the rates. Mr. Howe, counsel for the company, had no copies of the memoranda presented by him to the commission that could be consulted by the correspondent of the ELECTRIC RAILWAY JOURNAL.

Six-Cent Fares in Connecticut

Connecticut Company Intends to Charge This Rate After Oct. 1—Alarming Increase in Cost of Performing Service

Official announcement was made on Sept. 19 by the Connecticut Company, New Haven, that, dating from Oct. 1, the rate of fare on all its lines throughout the State will be increased from 5 cents to 6 cents. The increase of 1 cent, or 20 per cent, it was estimated, would net the company an annual additional revenue of $1,730,000, based on its revenue from passenger fares during the last year. The company's statement follows:

"Effective Oct. 1, 1917, the rate of fare will be increased to 6 cents. To relieve passengers of the necessity of carrying the coins necessitated by this change in fare, seventeen tickets will be sold for $1 at the local office.

"This increase is necessary because of the alarming increase in the cost of performing transportation service as well as the need for increased revenue to enable the company to finance the increasing demands for improvements of all kinds.

"The cost of electric railway transportation has been increasing for a long time, and with the tremendous increases in the cost of all fuel, materials and supplies used in the operation and upkeep of the property at this time, the income is not sufficient to meet the needs and obligaitons of the company and supply sufficient funds to enable the officers to finance the growing requirements for improvements of all classes, the heaviest of which is the requirement of the State and various municipalities for new pavements.

"The conditions at present confronting the company show that the present rate of fare is no longer reasonable, and it is clearly the duty of those charged with the conduct of the business to establish a reasonable rate of fare, which, after careful consideration, has been decided to be 6 cents.

"It is not only the Connecticut Company that is confronted with this lack of sufficient revenue. It has been found necessary to establish the 6-cent fare on many other electric railways, the most important of which is the Bay State Street Railway, operating in the cities and towns north and south of Boston."

Some time ago the Connecticut Company announced that it intended to cancel the practice of giving six tickets for 25 cents in Waterbury, and following a protest by the city, which held that the cancellation of the tickets was actually an increase in the rate of fare, the case was taken to the Superior Court. The court ruled that the company had a right to cancel the practice of selling the reduced-rate tickets. Its decision was reviewed briefly in the ELECTRIC RAILWAY JOURNAL for Aug. 11, page 227.

All Day Express on New York "L"

Problem Being Studied by Commission's Experts—Hearing on Sept. 24

J. P. H. DeWindt, chief of the transit bureau of the Public Service Commission for the First District of New York, has for several months been working on a plan which, if its adoption is found to be feasible, would provide for express service on the Third Avenue elevated line of the Interborough Rapid Transit Company continuously downtown until about 1 o'clock or shortly thereafter in the afternoon, when the express trains would be reversed and run northbound until the close of the evening rush hour. or perhaps a little later.

The question of improving service on the Second and Third Avenue elevated lines in New York will come before the commission at a hearing on Sept. 24. It is probable that at this hearing a suggestion will be made that one express train in every three be turned back at Canal Street and the Bowery, instead of continuing through to the City Hall, there being considerable congestion at the City Hall terminal on the Third Avenue line.

The transit bureau also is considering the possibility of operating express trains downtown during all hours of the day on the Third Avenue line and northbound on the Second Avenue line. This would make possible a continuous express service all through the day, while, if the all-day express service was confined to one line—these two lines being only third tracked—it would necessitate a stopping of the express service at the starting point uptown for at least a period of an hour and a half in the middle of the day.

The operation of express trains downtown via the Third Avenue line and northbound via the Second Avenue line would make it necessary to rebuild the elevated structure in the vicinity of Chatham Square. Whether the transportation benefits to be gained by such service would outweigh the expenditure necessary is being studied by the commission's experts.

Recommendations to Shore Line

John F. Trumbull, chief engineer of the Public Utilities Commission of Connecticut, has completed his examination into the causes and circumstances connected with the collision which occurred on Aug. 13 on the Shore Line Electric Railway near North Branford, and in his report to the commission suggests the following for the company's consideration: (1) Installation of a modern system of automatic block signals on all portions of the line where high speed is maintained; (2) improvements in the present system of dispatching cars, issuing train orders and recording car movements; (3) printed working time tables for the information of employees; (4) adoption of a rule requiring conductors and motormen to exchange signals when approaching a meeting point; (5) enforcement of the company's existing rule prohibiting the fastening down of automatic release controller handles.

As a result of the collision nineteen persons were killed and thirty-five injured. The findings in connection with the inquiry into the causes of the accident were reviewed in the ELECTRIC RAILWAY JOURNAL for Sept. 1, page 372.

Safety Film for Public Service

A very comprehensive motion picture made for safety educational purposes has just been completed for the Public Service Corporation of New Jersey, Newark. It was shown for the first time on Sept. 17 and will be released soon for use in connection with the safety work of the corporation. It comprises about 3000 ft. of film, the scenes of which are laid in various parts of the Public Service property. Many trainmen appear in the pictures as well as other employees and the actors and actresses who take the leading parts.

The story is entitled "The High Cost of Hurry" and deals with the misfortunes of the "Hurryup Family." It embodies a romance in which the comparison between the principles of safety and those of carelessness are clearly portrayed. The film will be used by A. J. Van Brunt, director of safety education, to illustrate his next semiannual lectures to Public Service employees in the several cities of the State. Later it will be placed in general circulation.

Georgia Jitneys Lose Again

The jitneys in the State of Georgia lost for the third time when the Supreme Court held recently that the Atlanta ordinance regulating jitneys and requiring them to have bonds is valid. The ordinance was passed in April, 1915. The jitneys at one time appealed to the court against the Railroad Commission taking jurisdiction, but the court held that since the commission had enacted no regulations there was nothing to decide. It is said that this may prove to be the final defeat of the jitney bus in that State.

The jitney men have expressed their determination to carry the fight against the ordinance to the Supreme Court of the United States. Fifty members of the Atlanta Jitney Bus Association have pledged their support to a scheme by which 150 jitneys could supply transportation for soldiers at the Camp Gordon cantonment. The traffic committee of the association has proposed the organization of the People's Transportation Company to operate trains of motor trucks from the camp to a terminus in the city, each truck to carry eighteen people and to draw four trailers carrying twelve people each.

More Complaints Against Scranton Increase. — The borough of Taylor has added a complaint to those of the city of Scranton and several organizations against the proposal of the Scranton (Pa.) Railway to increase its fare to 6 cents. The Public Service Commission has suspended indefinitely the effective date of the increase.

Long Island Increases Suspended.—The Public Service Commission for the First District of New York will soon decide upon the request by the Long Island Railroad for an increase in its passenger tariff rates. Pending this decision, the commission has further suspended from Sept. 15 to Sept. 25 the revised tariff filed by the company several months ago.

Ohio Fare Increase Suspended.—The new fare schedule of the Cleveland, Southwestern & Columbus Railway, Cleveland, Ohio, which was to have gone into effect on Sept. 14, has been suspended for thirty days by the Public Utilities Commission of that State. The company proposed to place its fares on a basis of 2½ cents a mile, instead of 2 cents as in the past, and to charge a minimum fare of 10 cents.

Bridgeton Fare Hearing.—The New Jersey Public Utility Commission, after a hearing on the petition of the Bridgeton & Millville Traction Company, Bridgeton, for the right to discontinue selling tickets in strips of six for 25 cents, has decided to take the case under advisement. As noted previously in this paper, the commission has suspended the effective date of the increase until Nov. 6, unless it makes a decision earlier in favor of the company.

Test Case for Louisville Traffic Ordinance.—That a headlight is a "glaring headlight," when it is strong enough to "dazzle the eyes," and therefore unlawful, is the statement made by Judge Samuel Boldrick to the police of Louisville, Ky. This was the ruling in a test case in which the vice-president of the Automobile Club offered himself as the defendant. He was assessed a fine of $50 and will take the case to the Court of Appeals so that the police officials will have an interpretation of the law to stop the use of such headlights.

Many Unused Transfers in Providence.—Interesting figures as to the use of transfers on the lines of the Rhode Island Company, Providence, R. I., have been compiled by M. C. A. Babcock, comptroller of the company. During the month of July more than 2,253,000 slips were distributed, while only 1,557,000 were taken up by conductors, leaving 696,000 unaccounted for. The company has sixty-seven varieties of transfers, divided into five classes, for use in Providence, Pawtucket, Woonsocket, East Providence and on the suburban lines.

Jitneys Lose in Vancouver.—Jitney interests in Vancouver, B. C., have lost their case in an attempt through the courts to compel the city to reissue to driver McKay a license which the Council had canceled upon his refusal to run his car on a specific route. McKay had been assigned the route from Twenty-fifth Avenue to English Bay, but he had shortened it by running between the Bay and the post office, and challenged the right of the Council to compel him to keep to a certain run. His application for a mandamus requiring the city to give back his license was refused in a judgment handed down by Justice Murphy, who held that the city has full power to route jitneys.

Big Demand for Electric Express.—The electric express service recently inaugurated by the Reading Transit & Light Company, Reading, Pa., is proving a great convenience to shippers, especially in view of congested conditions on the railroads, and there is a growing demand for the shipping facilities which it offers. The company has been giving particular attention to the development of the electric express branch of its service and now it has a well-established business from Reading to Lancaster, Allentown, Pottstown, Norristown, Philadelphia and intermediate points. Freight stations have been established at terminal points. Electric express is being largely depended upon to market the fruit crops.

Accident Statistics for New York City.—During the month of July, 731 cases of personal injury were recorded which resulted from accidents in and around the surface cars of New York. Three hundred and seventy-four people were hurt in getting on or off cars before they had come to a full stop, or by carelessness in alighting. Five were struck by passing vehicles. Twenty were injured in putting their arms or head out of car windows. Ninety-one pedestrians were struck by cars. Thirty-five people were hurt when they tried to enter cars after the conductors had started to close the doors. In collisions between cars and vehicles seventy-two passengers of vehicles and thirty-five car passengers were injured.

Springfield Jitneys Test New Ordinance.—Jitney drivers of Springfield, Mass., who have made a test case on the constitutionality of the new jitney ordinance requiring them to file a bond of $1,000 and accept passengers for only the seating capacity of the cars, were defeated recently in police court. They opposed the bond requirement and demanded permission to carry running-board passengers during rush hours. The new ordinance was intended to eliminate objectionable features of an ordinance passed last year. Judge Hendy in his decision declared the present ordinance to be constitutional and that none of its features was unreasonable or prohibitive. When the amended ordinance went into effect more than 200 drivers retired from business for the time being because of their inability to procure the required bond. They were operating along the line of the Springfield Street Railway.

Harrisburg Jitneys Defy Commission.—The Harrisburg Jitney Association has announced that it will contest the ruling of the Public Service Commission of Pennsylvania requiring the jitneys to observe fixed routes or cease operating. In accordance with the commission's order directing the jitney men to file with it amended petitions for certificates of public convenience, setting forth the routes over which they propose to operate, George W. Shoffstall has asked for the approval of a route through the heart of the city. Shoffstall was the only one to comply with the order within the time specified. Seventy of the 178 jitney men in the city have ceased operating because of the order. All of them were reimbursed by the city for the money they had paid into the jitney accident fund after having given a bond in twice the sum received. The commission has imposed a fine of $100 on each of two drivers for operating without certificates. This is the second time the commission has taken such action.

Commission Bans Excess-Fare Rule.—The Public Service Commission of Pennsylvania has decided that the rule requiring a passenger without a ticket to pay an excess fare is "unjust and unreasonable" and has ordered the Buffalo & Lake Erie Traction Company, Buffalo, N. Y., operating in Erie County, Pa., to amend its tariff relating to the additional fare charged passengers who pay a cash fare in excess of 10 cents so that it shall not apply to those passengers who board cars at non-agency stations. The complaint against the company was filed by Representative H. P. Shunk of Erie County. The company contended that the additional fare was not demanded in order to increase revenue, but to insure all cash fares being properly accounted for. The commission held that the rule places on such a passenger the burden of presenting his receipt for the excess fare at an agency station in order to have it redeemed because, through no fault of his own, he had not provided himself with a ticket.

Jitney Regulation in Winnipeg.—The general public, recognizing the unfairness of the unregulated jitney competition in Winnipeg, has brought pressure to bear upon the City Council with the result that a by-law amendment relating to cabs and vehicles for hire has been passed. According to the terms of the amendment, an applicant for a license to drive an automobile or motor bus for hire and all those having licenses for the current year shall take out an insurance policy or furnish a bond "in the sum of $1,000 against personal damage to any one person, in the sum of $200 against property damage, and in the sum of $5,000 against personal damage in any one accident." It was predicted that a large number of the jitneys would cease operating when the new law went into effect, Sept. 20. The Winnipeg Electric Railway has felt severely the effect of the unfair jitney competition in Winnipeg and was considering the matter of bringing suit against the city to recover damages to the extent of the injury to its earnings suffered from the jitney.

Personal Mention

C. S. Jenner, vice-president and assistant general manager of the Porto Rico Railway, Light & Power Company, San Juan, P. R., has resigned to engage in private business.

C. W. Witherow has resigned as master mechanic of the Cleveland & Erie Railway, Girard, Pa., to become foreman of the P Street shop of the Washington Railway & Electric Company, Washington, D. C.

Inghram D. Hook, secretary of the Kansas City, Clay County & St. Joseph Railway, Kansas City, Mo., now at Camp Funston, has resigned his office. W. S. Tuley, treasurer and assistant secretary, is acting in his stead.

Andrew S. Macreadie, electric railway superintendent of the Cape division of the Cumberland County Power & Light Company, Portland, Me., has recently been commissioned captain in the Quartermaster's Reserve Corps and assigned to Camp Dix, New Jersey.

Robert B. Chalmers, superintendent of the Salem division of the Bay State Street Railway, Boston, Mass., has resigned. George H. Gray, general superintendent at Lynn, will have charge of the Salem division until a successor to Mr. Chalmers is appointed.

C. S. Colburn, who resigned recently as general superintendent of the Norfolk and Berkley divisions of the Virginia Railway & Power Company, has accepted a position as Southern representative of the Railway Audit & Inspection Company at Birmingham, Ala.

Thomas J. Dawson, of the purchasing department of the Boston (Mass.) Elevated Railway, has been appointed superintendent of supplies for the city of Boston. Mr. Dawson is a native of Cambridge, Mass., and has been in the employ of the Boston Elevated for thirteen years, having spent the entire period in the bureau of purchase.

A. J. Earling has retired from the presidency of the Chicago, Milwaukee & St. Paul Railway. Mr. Earling has held many other important positions with the St. Paul system. He started with the company as a telegraph operator at the age of seventeen. He has been president since 1899, during which time the road was extended to the Pacific Coast. He will become chairman of the board.

H. E. Byram, vice-president of the Chicago, Burlington & Quincy Railroad, has been appointed president of the Chicago, Milwaukee & St. Paul Railway to succeed A. J. Earling. Mr. Byram has held important positions with the Great Northern, the Rock Island and the Montana Central railroads. He began his career with the Burlington system and returned to its employ in 1904. He has been in charge of operation since January, 1910.

Edward J. Cooney, who was recently appointed executive assistant to the president of the Rhode Island Company, Providence, R. I., and is to conduct a weekly newspaper for the company and its employees in addition to handling general publicity work, has had wide experience in advertising and publicity matters. Mr. Cooney is forty years old. From 1902 to 1906 he was manager of the *Chronicle*, North Attleboro, Mass., in which place he has always lived. For the next six years he was editor of the Providence *Visitor*, the official Catholic paper of the State. In 1916 he became advertising manager for Dimond's department store, Providence. Later he conducted an advertising agency in Worcester, doing special work for the Worcester *Telegram* at the same time. He gave up that work to become assistant sales manager of the Screw Machine Products Company, and was occupying that position when offered the place of executive assistant just created by the Rhode Island Company. Mr. Cooney was press agent for a large amusement park for four years, handled publicity work for candidates for Governor of Rhode Island and Mayor of Providence, assisted in the organization of the Catholic Press Association of the United States and was for two years president of that association. He is one of the leading spirits in the Town Criers, a State organization of advertisers and publicity men.

WILLIAM CLAPPER

William Clapper, traffic manager of the Inter Urban Railway, Des Moines, Iowa, as noted recently in the ELECTRIC RAILWAY JOURNAL, has been appointed general manager of the company. Mr. Clapper became head of the traffic department on March 1, 1915, succeeding C. T. Chapman, who resigned to accept a similar position with the Dan Patch Air Line, Minneapolis and St. Paul. He has been engaged in railroad service since June, 1899, when he became clerk to the commercial agent of the Minneapolis & St. Paul Railroad at Minneapolis, Minn. In January, 1900, he returned to Des Moines, his native city, to accept a similar position with the Wabash Railroad. In 1904 Mr. Clapper was appointed contracting freight agent of that company, with headquarters at Des Moines. Three years later, upon the resignation of the division freight and passenger agent, Mr. Clapper was promoted to succeed him. In that capacity he had charge of all of the company's freight and passenger business in the State. As general manager he will retain charge of the traffic department.

Amos R. Baxter, chief accountant of the Indianapolis & Cincinnati Traction Company at Rushville, Ind., has been appointed acting auditor as the successor to F. T. Loftus. Mr. Baxter has been with the company since 1908, serving in the positions of agent, cashier, bookkeeper and chief accountant and has been considered very capable in each of the several capacities. He is a member of the Central Electric Railway Accountants' Association.

J. L. LIVERS

John L. Livers, vice-president and general manager of the Charlottesville & Albemarle Railway, Charlottesville, Va., has been elected president of the Charlottesville Chamber of Commerce. Mr. Livers was born in Gettysburg, Pa., in 1878, and started his electrical career as lineman at the age of eighteen. After an experience of several years in various lines of construction work, he entered the operating and contracting field, and during a period of twelve years constructed more than 100 electric light and power plants. In 1912 Mr. Livers took charge of the Charlottesville electrical property, which he quickly transformed from an obsolete plant to one of the most economical and best equipped small railway and lighting plants in the country. An account appears on another page of some of the operating methods of Mr. Livers and of his public service relations with the community which his company serves. As this article shows, Mr. Livers has the happy faculty of proving to all sorts and conditions of men the goodness of his intentions and his ability to fulfill them.

F. T. Loftus, who has been auditor of the Indianapolis & Cincinnati Traction Company at Rushville, Ind., since 1911, has resigned from electric railway service to take a position with the Remy Electric Company, Anderson, Ind. Mr. Loftus has been prominent in electric railway affairs in that district, he having served on various committees of the Central Electric Railway Accountants' Association, as secretary for 1913 and 1914, as first vice-president during 1915 and as president during last year. He was born in Anderson, Ind., in 1881. In 1898 his family moved to Chicago, where he found it necessary to secure employment. There he attended night school, took up a general business course and specialized in accounting. He held several positions in this field until 1907, when he accepted the position of passenger and freight agent of the Indianapolis & Cincinnati Traction Company at Shelbyville, Ind. The following year he was promoted to cashier and a year later was made general bookkeeper. In August, 1910, he was appointed acting auditor of the company to succeed W. B. Wright, and soon afterward was made auditor, the position he has held until the present time. Mr. Loftus will be succeeded by Amos R. Baxter, who was his assistant in all the capacities in which he has served the company.

Obituary

William H. Ayers, assistant chief clerk in the office of J. M. Waldron, signal engineer of the Interborough Rapid Transit Company, New York City, died recently. Mr. Ayers had been in the service of the Interborough for thirteen years, the first six of which he was in the operating department.

David R. Morrison, one of the promoters of the Stark Electric Railway, Alliance, Ohio, died at his home in Cleveland on Sept. 12, at the age of sixty-nine years. He was a prominent real estate man and had served as city director of charities. He was also active in the establishment of the city's park system.

Robert K. Young, recently appointed a member of the Public Service Commission of Pennsylvania, but never able to assume the duties of the office, died at the Blossburg Hospital, Harrisburg, where he had been confined since last June on account of a fractured thigh. Mr. Young served two terms in the State Legislature and had held successively the offices of auditor general and State treasurer. Mr. Young was formerly president of the Wellsboro (Pa.) Electric Company.

Francis B. H. Paine, a member of the firm of Paine, McClellan & Campion, electrical and consulting engineers, New York and Philadelphia, died on Sept. 13. Mr. Paine was a son of the late Charles Paine, a noted civil engineer and railroad executive. He acquired his early engineering education with the Westinghouse Electric & Manufacturing Company, and later was engineer of construction for the Ontario Power Company. Mr. Paine spent two years in Japan and other Far Eastern countries, following the year 1899, to study foreign trade conditions, and in 1911 he went to Europe to make studies of public utilities. He was a member of the National Electric Light Association and a fellow of the American Institute of Electrical Engineers. He had served on committees of the American Electric Railway Association and on other important engineering committees.

Osce Goodwin, vice-president of the Texas Electric Railway (Consolidated Strickland Lines), Dallas, Tex., died recently at the Presbyterian Hospital in Chicago, where he had been about two weeks. His death was caused by heart failure, superinduced by asthma. Mr. Goodwin was fifty-six years of age. He had been in ill health for about four years. He was one of the organizers of the Texas Traction Company, which built the interurban line from Dallas to Denison and Sherman, and later was one of the organizers of the Southern Traction Company, which built the lines from Dallas to Waco and Corsicana. He was born in Louisiana in 1861 and received his education at the University of Texas. Soon after his graduation he became cashier of the First National Bank of Waxahachie. Later he went to Dallas and, associated with J. F. Strickland and M. B. Templeton, organized the Texas Traction Company, which began operation in 1907, and in 1914 they organized the Southern Traction Company. These two companies were consolidated last January into the Texas Electric Railway with Mr. Strickland as president and Mr. Goodwin vice-president. Mr. Goodwin was equally prominent in the organization of the Texas Power & Light Company, Dallas, which operates plants throughout the north and central parts of the State, and of which he was vice-president at the time of his death. He was also president of the Dallas Securities Company. Mr. Goodwin was identified with the Dallas Chamber of Commerce and was prominent in many public enterprises which had for their purpose the upbuilding of the city.

Construction News

Construction News Notes are classified under each heading alphabetically by States.

An asterisk (*) indicates a project not previously reported.

RECENT INCORPORATIONS

Stroudsburg (Pa.) Traction Company.—Incorporated to maintain and operate the Stroudsburg Passenger Railway and the Stroudsburg, Water Gap & Portland Railway. Capital stock, $200,000. Harry E. Sweeney, treasurer.

FRANCHISES

Santa Ana, Cal.—The Pacific Electric Railway has accepted the terms imposed by the Board of Supervisors in regard to the granting of the fifty years' franchise for the construction of an extension from Tustin to Irvine.

New Albany, Ind.—The City Council of New Albany has adopted resolutions rejecting the offer of the Louisville & Northern Railway & Lighting Company and the Louisville & Southern Indiana Traction Company, subsidiaries of the Middle West Utilities Company, to surrender their franchises and operate under the State Public Service law.

Cedar Rapids, Iowa.—The Iowa Railway & Light Company has received permission from the Board of Railroad Commissioners to erect and maintain electric transmission lines on certain roads and highways in Greene County.

Niagara Falls, N. Y.—The City Council of Niagara Falls has granted the petition of the International Railway for permission to lay tracks across a public alley between Riverway and Prospect Street so as to increase its switching facilities at the Riverway carhouse. The company will acquire additional property adjoining the carhouse and will increase its storage track facilities. Formal application has been made to the City Council of Buffalo by the company for permission to lay a single track loop around the Soldiers' Monument in Lafayette Square so as to connect with the Broadway car line. The company would remove the Broadway line from Washington Street in the congested retail shopping district and loop it around the monument. This recommendation was made in the recent report of Inspector Barnes of the Public Service Commission. The Council will probably grant the application and the franchise will have to be approved at a general election.

Akron, Ohio.—The Northern Ohio Traction & Light Company has received a franchise from the City Council to construct extensions to its lines in Akron.

Petersburg, Va.—At the request of the Petersburg & Appomattox Railway, the City Council of Petersburg will receive bids until Oct. 1 for the company's franchise over certain streets in the eastern section of the city. The company has received a franchise from the City Council for the use of Bollingbrook Street from Second Street east to the corporate limits.

TRACK AND ROADWAY

Pacific Electric Railway, Los Angeles, Cal.—An extension will be built by the Pacific Electric Railway from Redlands to Yucaipa, about 13 miles.

Municipal Railways of San Francisco, San Francisco, Cal.—A contract has been awarded to the United States Steel Products Company, San Francisco, for furnishing and delivering track special work for the Market Street line at a cost of $61,525.

***Grand Junction, Col.**—It is reported that plans are being contemplated for the construction of an electric railway from Grand Junction up into the Uintah Basin via Mack, Col., Ouray, Duchesne and Myton to Helper or Colton, via Indian Canyon or the Strawberry Valley, to connect the lines of the Colorado Midland Railroad and the Utah Coal Route, which will take over the line of the Denver & Rio Grande Railroad between Helper and Provo. C. M. McNeill, vice-president Colorado Midland Railroad, Colorado Springs, may give further information.

Capital Traction Company, Washington, D. C.—According to an announcement by the Public Utilities Commission, work of installing the big cross-over switch at the intersection of Fifteenth Street and New York and Pennsylvania Avenues, to carry Fourteenth Street cars over Pennsylvania Avenue west of Fifteenth Street, will be begun in a few weeks. Under plans approved by the commission, a signal tower will be erected at the northwest corner of Fifteenth Street and Pennsylvania Avenue. As soon as the crossover is installed the company will begin the work of its Potomac Park extensions. The first extension will be south from Pennsylvania Avenue over Nineteenth Street to connect with existing tracks on F and G Streets. This will make possible the operation of a loop in this section and will afford better transportation facilities for those in the government buildings in the vicinity. The next extension will continue the tracks down Nineteenth Street to Virginia Avenue, whence they will turn into Eighteenth Street and proceed northward to F Street, to connect with existing facilities.

Jacksonville (Fla.) Traction Company.—This company will construct an extension to the proposed State Fair grounds in the Brentwood section.

St. Petersburg-Tampa Railway, St. Petersburg, Fla.—George S. Gandy, president of the St. Petersburg-Tampa Railway, has filed a bond for $25,000 with the State of Florida to guarantee the construction of the proposed line from St. Petersburg to Tampa, 18 miles, including a bridge over Old Tampa Bay to cost $1,000,000. It is expected that contracts will soon be let. Address care Wayne Trust Company, Philadelphia, Pa. [Nov. 18, '16.]

Alton & Jacksonville Railway, Alton, Ill.—A petition has been filed by the Alton & Jacksonville Railway with the State Utility Board for permission to discontinue its service between Alton and Jerseyville and also to dispose of the road.

Wichita-Walnut Valley Interurban Railway, Wichita, Kan.—The Public Utilities Commission of Kansas has issued a permit to the Wichita-Walnut Valley Interurban Railway for the construction of its proposed line from Wichita to Eldorado, Augusta, Douglas and Winfield, and construction work will be begun on Oct. 1. Charles Payne, secretary. [Sept. 15, '17.]

South Covington & Cincinnati Street Railway, Covington, Ky.—This company is considering the construction of a loop line to connect its Fort Thomas and Southgate lines.

Shreveport (La.) Railways. — This company is double-tracking its line in Marshall Street, and repaving same, at an estimated cost of $40,000. The improvement will complete a double track from the Fair Grounds to Gladstone Park.

United Railways & Electric Company, Baltimore, Md.—An extension will be built by the United Railways & Electric Company from Stone House Cove probably to Masonville, Fairfield and Wagner's Point, about 1 mile.

Detroit (Mich.) United Railway.—Work is progressing rapidly on the new Linwood Avenue line of the Detroit United Railway and it is expected that the line will be completed before next winter. Grading work is now under way on the Epworth Boulevard line and this is also being rushed forward as speedily as conditions permit.

St. Louis, Mo.—Two applications were considered by the Municipal Bridge Commission on Sept. 17 for the operation of cars over the Free Bridge at St. Louis. The two companies making application were the St. Louis & East St. Louis Interurban Railway, operating a line between St. Louis and East St. Louis, and the St. Louis & Illinois Railway, represented by John D. Downman, St. Louis, and Eugene Sweeny, East St. Louis, which has a franchise to operate a line in East St. Louis.

Interborough Rapid Transit Company, New York, N. Y.—U. J. Slander & Company, New York, were low bidders for constructing Shaft No. 2 of Route 26 of the Queensboro subway, to be located on the northerly side of East Forty-second Street between First Avenue and East River.

New York (N. Y.) Railways.—The Public Service Commission for the First District of New York has taken preliminary steps under the act of the Legislature passed last year looking to the removal of the surface car tracks on Central Park West from the east side to the middle of that thoroughfare. Complaint has been made to the commission by Mayor Mitchel, as required by the legislative act mentioned. The commission will now determine whether the tracks as present located constitute a menace and danger as preliminary to action by the Board of Estimate and Apportionment. The Mayor's complaint will be considered by the commission at a hearing on Sept. 27.

New York State Railways, Utica, N. Y.—This company will construct new tracks in Lafayette Street, west from Genesee Street.

***Toledo, Ohio.**—It is reported that Henry L. Doherty & Company, New York, have under consideration the construction of an electric railway from Toledo, Ohio, to Fort Wayne, Ind., via Waterville, Grand Rapids, Napoleon, Defiance and other cities.

Ardmore (Okla.) Street Railway.—As the result of a disagreement with the City Council of Ardmore, the Ardmore Railway has sold its trackage on C Street northwest, and will abandon its franchise there. The disagreement arose over paving on this street. The company contended that asphalt should be used in laying paving, while the City Council demanded that vitrified brick be used. The company has asked for a franchise granting the right to lay its tracks on another street, extending northwest toward Electric Park.

Portland & Oregon City Railway, Portland, Ore.—Stephen Carver, president of the Portland & Oregon City Railway, has notified the Public Service Commission at Salem that the company contemplates extending its lines from Baker Bridge to Viola in Clackamas County. The company asks that the commission pass on the number of crossings necessary in the extension of the road.

Harrisburg (Pa.) Railways.—Plans are being made by the Harrisburg Railways for the construction of a line direct to Steelton, via South Second Street.

Philadelphia, Pa.—Two additional contracts have been signed by the Keystone State Construction Company for a section of the Broad Street subway from South Street to South Penn Square, amounting to $3,336,400, and a section from Filbert to Buttonwood Streets, amounting to $2,815,490. The awards accepted by the Keystone State Construction Company now total $10,200,000. The company has announced that work upon the subway loops on Arch and Locust Streets will begin before Oct. 1. Orders have been placed for 3,000,000 ft. of timber. The Philadelphia Subway Construction Company, Philadelphia, has refused the Broad Street tube contract, aggregating $2,000,000, and Smith, Houser & MacIsaac, New York, have refused the loop contract for $2,250,000, awarded last month by the transit department.

Pennsylvania Railroad, Philadelphia, Pa.—Officials of the Pennsylvania Railroad have announced that work on the electrification of the Germantown and Chestnut Hill branch of the road will not be completed before the first of the year, owing to labor conditions and lack of necessary material. It is expected by that time the line will be in full operation.

South Carolina Light, Power & Railway Company, Spartanburg, S. C.—This company contemplates the construction of an extension to Camp Wadsworth.

Petersburg & Appomattox Railway, Petersburg, Va.—This company, which is constructing a line to Camp Lee, will extend the line on through the camp to Prince George Court House.

Virginia Railway & Power Company, Richmond, Va.—If the necessary permit is received from the City Council the Virginia Railway & Power Company will operate its cars over the Bay Shore viaduct and over such of the Bay Shore and Atlantic Terminal tracks as are necessary and will construct tracks on Omohundro Avenue and Twenty-fifth Street in order to facilitate traffic between Norfolk and the naval base at Pine Beach.

Norfolk & Western Railway, Bluefield, W. Va.—A contract has been awarded by the Norfolk & Western Railway to the Union Switch & Signal Company, Swissvale, Pa., to furnish the necessary material for the extension of the signaling on its electrified division near Welch, Va.

SHOPS AND BUILDINGS

Kansas City, Mo.—The interurban freight station at Fourth and Wyandotte Streets, Kansas City, will probably be put into operation early in October, by which time the permanent board will be named, and contracts made with the interurban railways which will use the station. The Kansas City, Clay County & St. Joseph Railway plans to abandon its present freight station in Kansas City and will use the new one.

New York Municipal Railway, Brooklyn, N. Y.—The Public Service Commission for the First District of New York is readvertising for bids for the construction of station finish for Sections 1 and 2 of the Gravesend Avenue or Culver Rapid Transit Line in Brooklyn and will open bids on Oct. 26. Bids were recently received upon this contract, at which time the Mortenson Wood Working Company, Inc., Brooklyn, was the low bidder at $666,188.50. An award was made of the contract to that company, but investigation subsequently showed that the company would experience great difficulty in carrying out the contract. Thereupon at a recent meeting of the commission the award was rescinded and the decision reached to call for new bids as above stated at the new date named. Provision will be made in the new contract that the work must be speeded to completion so that the delay caused by readvertising will not retard the completion of the line.

Piedmont & Northern Railway, Charlotte, N. C.—This company will erect a new station at the army site at Camp Wadsworth.

Mahoning & Shenango Railway & Light Company, Youngstown, Ohio.—Several acres of land have been leased by the Mahoning & Shenango Railway & Light Company at Covers Corners, East Youngstown, and the company is laying switches and tracks to take care of cars that have been stored at the old power house of the company in West Federal Street.

POWER HOUSES AND SUBSTATIONS

McComb & Magnolia Light & Railway Company, McComb, Miss.—Work is progressing rapidly on the construction of the power plant of the McComb & Magnolia Light & Railway Company in Fernwood. This plant will supply energy to operate the car line from McComb City to Magnolia, a distance of 7 miles, as well as for lighting both cities. The electric generating plants at Magnolia and McComb City will both be closed down upon completion of the local plant.

Interborough Rapid Transit Company, New York, N. Y.—Plans are being made by the Interborough Rapid Transit Company for a power supply connection between its power houses at East Seventy-fourth Street and West Fifty-ninth Street to permit an interchange at any time. Property at Nos. 150 to 154 West Sixteenth Street, adjoining Seventh Avenue, has been acquired by the company, on which, it is said, it will erect a transformer station to supply electricity to operate the Seventh Avenue subway. The company will build similar stations 2 miles above and below that point.

Youngstown & Suburban Railway, Youngstown, Ohio.—This company has recently purchased a light plant in Salem and is refitting it to furnish power for its line. The equipment is now being installed in the plant and substations. As soon as this is completed it is reported that half-hour service will be established between the cities of Youngstown and Leetonia.

Harrisburg (Pa.) Railways.—Work has been begun by the Central Construction Corporation, Harrisburg, on the construction of a substation at Reily and Marion Streets for the Harrisburg Railways. The structure will be 32 ft. x 43 ft., one-story high and will be used as a small power plant to increase the power on all city lines. The structure will cost about $5,000.

West Virginia Traction & Electric Company, Morgantown, W. Va.—This company is considering the erection of a new 13,000-volt transmission line, 11 miles long, to furnish energy in the Morgantown coal districts.

Eastern Wisconsin Electric Company, Sheboygan, Wis.—A contract has been awarded by the Eastern Wisconsin Electric Company for the construction of an addition to its power plant to cost $25,000.

Manufactures and Markets

Discussions of Market and Trade Conditions for the Manufacturer, Salesman and Purchasing Agent

Rolling Stock Purchases Market Quotations Business Announcements

Manufacturing the Quick-Service Car

The Effect of Standardization on Economy of Production and on Deliveries—Cost May Be Amortized

Much has been said elsewhere in this issue on the effect of the one-man car on transportation. But what will be the effect on the car manufacturer of the standardization of car construction, which has been a characteristic of the development of the one-man car up to this time, and how far will the purchasing department of an electric railway company be warranted in purchasing equipment, even of proved great efficiency, in these days of inflated prices?

The opinion of one car builder on the first of these questions is given in the article by Mr. Heulings of The J. G. Brill Company on page 489 of this issue. Another manufacturer of cars interviewed by a representative of this paper expressed himself along similar lines. He said, in part:

"There is no doubt that if the railway companies will order cars which in all essential details are precisely alike, the cost of construction would be materially reduced and the speed at which these cars could be turned out would be considerably increased. I should say, in general, that we could save at least 10 per cent in purchasing our raw materials for the construction of these cars, and that the saving to be obtained from an increase in shop capacity would amount to double this figure, or 20 per cent. All in all I should think that the saving in cost of construction to the car builder would reach as high as 25 per cent, a saving which would, of course, be reflected in the price which he would have to charge to the railway company for the completed product. I estimate also that under the new conditions there would be a saving of 30 per cent in the time required to make deliveries. These figures are based on the present prices of the materials used in car construction, although the percentages would still practically hold with normal prices. Owing to these high prices the cost of car construction at present is about 50 per cent higher than it would be in ordinary times."

CAN A RAILWAY AFFORD TO BUY THESE CARS?

The second part of the query raised at the beginning of this article was whether a railway company can afford to purchase new one-man cars at the prices now prevailing. This seems to be answered in part by the fact that it is estimated that a total of about 600 cars of this type have been ordered since the first of this year. This number includes 246 cars now under order by Stone & Webster for railway companies under their management.

In commenting on this situation a railway man said recently to a representative of this paper:

"There is undoubtedly a large saving, even at present prices, in favor of the light-weight one-man car as compared with the two-man double-truck car on properties where the former car is suitable. The extent of this saving has not been definitely determined. Its principal item is labor, but there is also the reduced energy costs, reduced wear on the track, possibility of using lighter track construction, etc. Car for car, this saving ought to represent at least $2,000 a year. If we assume the cost of a safety car under the present market conditions to be, roughly, $6,000, as compared with $3,500 two years ago, the cost above normal is $2,500. If the conditions on the property are such that the installation of these cars at their normal price would be warranted the excess price now should not act as a bar because it would be amortised during the fifteen or eighteen months of use. This does not include the increase in traffic which comes from the use of a more frequent service, but as the comparison is on a car basis, I have not included that."

Looking Ahead in Fare Collection

W. P. Butler Sees a Transfer Issuing Fare Box in Use on the Light-Weight Safety Car in the Near Future

Knowing that the manufacturers of fare boxes are working toward a considerable further development and refinement of the whole subject of fare collection methods, a representative of the ELECTRIC RAILWAY JOURNAL called on W. P. Butler, president and general manager of the Johnson Fare Box Company, to learn if possible what the future held in store as the ultimate one-man car fare collection system. Study and test work are being pushed on the fare-box development for all classes of cars, but the more general adoption of the light-weight safety car is emphasizing the need for a system which will reduce to the very minimum the attention which the single operator must pay to fares.

In the general aspect of the problem, Mr. Butler says that no matter how complete the fare collection system may become, it will always involve the human element. There is no prospect ahead of a scheme which will ever completely eradicate the need to check up on the conductors by the usual means in order to weed out the dishonest ones, who will also always be with us. The sooner, then, that the American associations provide a bureau or committee made up of the most capable men the industry affords to take up this important subject and devise a systematic country-wide handling of this problem, just that much sooner will the present generally conceded large leaks in revenue be stopped.

Obviously, what is felt to be the most immediate need in the fare collection system for the one-man car is a fare box which will combine the functions of cash, ticket and transfer handling in a single machine. At present, fare boxes are available which will handle both tickets of the metal variety and coins of several denominations, counting both and returning them to the conductor for reuse so that he does not need to start out on his run loaded down with sufficient change and tickets to last all day. The development of the metal ticket came after a long experimentation with the paper ticket canceling and counting boxes which could not be freed entirely of trouble, due to certain inherent weaknesses of the ticket itself. The metal ticket may be counted and registered in the fare box and used again and again. In a sense, it is, therefore, simply another coin added to the legal tender. With these two functions already included in the present fare box, there remains only the transfer problem to be solved to fulfill the immediate needs. And this is very evidently a vital need for the one-man operated car and the whole electric railway industry as well. Mr. Butler feels confident that a solution of this problem is nearing readiness to be placed at the disposal of the railways. A single box which will combine a transfer issuing function with the present box seems now to be a practicability.

One of the principal features of such a machine, in Mr. Butler's opinion, should be its universal character. In all his fare-box development he has insisted on a box the adoption of which could be universal. The advantages of this feature stand out more prominently than ever in connection with the transfer device, for here, if any attempt were made to fit it to the local transfer conditions on each property, the number of disks and tools and multiplicity of parts required of the manufacturer, would increase so rapidly that the cost would be prohibitive. The advantage of this type of construction to the railways, permitting as it does the manufacture of large quantities of boxes to standard drawings and patterns, jigs, dies and tools, is obviously one of markedly less cost for the device.

These developments may be anticipated as practical products of the near future, according to Mr. Butler, and then beyond that, still other schemes for further reducing the work of the light-weight safety car operator may be looked for. Indeed, the dream of a fare box which will also automatically make out the trip report has taken definite form and will probably be a part of the transfer issuing fare box.

Obviously the development of a transfer-issuing box involves large expenditures of time, pains and money and is necessarily slow. But if it will eliminate the abuse of transfers by passengers, the expense and waste of transfer printing and, on one-man cars, valuable time in their issuance, this expenditure, in the opinion of the manufacturer quoted, will be worth while.

Copper Price Announced

The President has approved the price of 23½ cents per pound for copper, f.o.b. New York, which was fixed by agreement between the War Industries Board and the leading copper producers. This price is subject to revision after four months, if evidence is presented to show that it should either go up or down.

Three important conditions were imposed by the board. First, that the producers would not reduce the wages now being paid; second, that the operators would sell to the Allies and to the public copper at the same price paid by the government, and take the necessary measures, under the direction of the War Industries Board, for the distribution of the copper, to prevent it from falling into the hands of speculators, who would increase the price to the public, and third, that the operators pledge themselves to exert every effort necessary to keep up the production of copper to the maximum so long as the war lasts.

A formal statement was issued saying that the proper departments would be asked to take over mines and plants of recalcitrant producers.

Copper Wire the Market Barometer

General Conditions Underlying Present Demand for Wire, with Certain Indications of Tendencies Now Prevalent

Copper wire is one of the electrical commodities which in normal times are probably the best barometer of business in the electrical industry. Wire shows which way the wind blows. If business is good, the demand for wire is proportionate, and vice versa. Besides, if the complexion of the market changes, the sale of wire clearly indicates it.

To-day the market for electrical supplies is at its height; never has it been greater. However, the demand is not created by the regular buyers of normal times, but rather by those trades the business of which has been greatly stimulated by war conditions, the industrials. Building operations in most sections have fallen to a minimum. Government operations have been on a large scale.

This is the character of the market for electrical goods and in like manner for wire. Wire is one of the first of the commodities to feel the effect of local conditions. In Chicago, for instance, at the present time the wire market is very uncertain because of the wiremen's strike. Demand is quiet. There is, however, a ray of hope because certain of the contractors have obtained some large contracts and are anxious to begin operations, and it is believed in some quarters that they may effect a compromise.

In neighboring cities in the Middle West, however, where local conditions are better, the wire market is responsive and business is reported as fairly good. In New York, on the other hand, where realty interests find it difficult to obtain money at a satisfactory price, the market is quiet.

Another indication of the sensitiveness of the wire market is the present condition brought about by the government's hesitation in fixing a price for copper. The wire market is very uneasy, and orders are more of the hand-to-mouth nature. Many contractors are holding off with the belief that copper may be placed at a lower figure and therefore the wire base fall. In this connection it has been hinted that even if wire base does drop a couple of cents the net price of wire will not vary because the discount may be pared sufficiently to make up the difference.

The drop in the cotton market had no apparent effect on insulated wire. For some time it has been pretty generally understood that the big controlling factor in the price of insulated wire was no longer copper. Cotton has had a very important part. However, manufacturers have laid in large stocks of cotton or have contracted for futures at high prices, so that any break in the cotton market makes no impression on insulated wire prices.

Coal Production During August

According to averages taken of weekly ratios of tonnage produced to full-time capacity, the figures prepared by the United States Geological Survey show that for the period in the month of June for which figures were available, the ratio amounted to 72.1 per cent. During July the ratio increased to 76.5 per cent, but decreased during August to 69.5 per cent. There has been a steady decline reported weekly since July 14, when the production percentage reached 78.1. Car shortage and labor troubles are chiefly responsible for the decreased production during August, which occurred principally in Illinois, eastern Kentucky and Tennessee.

Production for the week ending Aug. 18 was the lowest that has been recorded to date, namely 62.5 per cent. Since that time it has increased gradually, gaining 6 per cent for the week ending Aug. 25 and 3.5 per cent for the week ending Sept. 1. Improvement was most marked in Illinois, where the return of striking miners to work brought up the index for that State to 76 per cent, the highest point attained since July 28. Indiana and western Pennsylvania also recorded increases.

The United States Steel Corporation's orders on hand on Aug. 31 amounted to 10,407,049 tons, which is a decrease of 437,115 tons as compared with orders on July 31. Unfilled orders have been shrinking gradually since the announcement was made that steel prices would be fixed by the government, although the labor shortage, conscription and repairs to plants have been additional causes of reduced production.

NEW YORK METAL MARKET PRICES

	Sept. 13	Sept. 20
Prime Lake, cents per lb	25½	26¼
Electrolytic, cents per lb	25½	26¼
Copper wire base, cents per lb	36	36
Lead, cents per lb	9¾	8
Nickel, cents per lb	50	50
Spelter, cents per lb	8¼	8⅜
Tin, Straits, cents per lb	61⅜	61¾
Aluminum, 98 to 99 per cent, cents per lb	43½	42

OLD METAL PRICES

	Sept. 13	Sept. 20
Heavy copper, cents per lb	24	24¼
Light copper, cents per lb	20½	20½
Red brass, cents per lb	18½	19
Yellow brass, cents per lb	15¾	16¼
Lead, heavy, cents per lb	8½	8
Zinc, cents per lb	6	6
Steel car axles, Chicago, per net ton	$42 00	$42.00
Old car wheels, Chicago, per gross ton	$33.50	$33.50
Steel rails (scrap), Chicago, per gross ton	$41.00	$41.00
Steel rails (relaying), Chicago, per gross ton	$55.00	$55.00
Machine shop turnings, Chicago, per net ton	$18.00	$17.50

RAILWAY MATERIALS

	Sept. 13	Sept. 20
Rubber-covered wire base, New York, cents per lb.	36	36
No. 0000 feeder cable (bare), New York, cents per lb.	36½	36½
No. 0000 feeder cable (stranded), New York, cents per lb.	33¾	33¾
No. 6 copper wire (insulated), New York, cents per lb.	33½	33½
No. 6 copper wire (bare), New York, cents per lb.	36	36
Rails, heavy, Bessemer, Pittsburgh	$38.00	$38.00
Rails, heavy, O. H. Pittsburgh, per gross ton	$40.00	$40.00
Wire nails, Pittsburgh, per 100 lb	$4.00	$4.00
Railroad spikes, 9/16 in., Pittsburgh, per 100 lb	$7.00	$7.00
Steel bars, Pittsburgh, per 100 lb	$4.00	$4.00
Sheet iron, black (24 gage), Pittsburgh, per 100 lb.	$8.85	$8.85
Sheet iron, galvanized (24 gage), Pittsburgh, per 100 lb.	$10.05	$9.55
Galvanized barbed wire, Pittsburgh, cents per lb.	4.85	4.85
Galvanized wire, ordinary, Pittsburgh, cents per lb.	4.65	4.65
Cement (carload lots), New York, per bbl	$2.22	$2.22
Cement (carload lots), Chicago, per bbl	$2.31	$2.31
Cement (carload lots), Seattle, per bbl	$2.65	$2.65
Linseed oil (raw, 5 bbl. lots), New York, per gal.	$1.23	$1.22
Linseed oil (boiled, 5 bbl. lots), New York, per gal.	$1.24	$1.23
White lead (110 lb. keg), New York, cents per lb.	12¾	13
Turpentine (bbl. lots), New York, cents per gal.	44	44

Gear Manufacturers Meet at Chicago

The American Gear Manufacturers' Association held its semi-annual session in Chicago on Sept. 13, 14 and 15 at the Edgewater Beach Hotel. The association numbers among its members practically all of the prominent gear manufacturers in the country. The Chicago session was the largest of any yet convened. Pittsburgh was the scene of the last meeting—held in May.

Special importance was attached to the present meeting because of the members' desire to effect as much standardization in gear products as possible—this in common with the government's desires for all industry, now that the war is making special demands upon all manufacturers and users of materials.

F. W. Sinram of the Van Dorn & Dutton Company, Cleveland, president of the organization, opened the sessions on Friday morning at 10 o'clock. A paper on "Advertising Don'ts" was then read by J. C. McQuiston, advertising manager Westinghouse Electric & Manufacturing Company, East Pittsburgh, Pa. This was followed by a talk on the "Heat Treating and Hardening of Gears," by W. H. Phillips of the R. D. Nuttall Company, Pittsburgh.

In the afternoon the convention men were the guests of Chicago members. An automobile trip of about 75 miles through Chicago's park system was a feature much appreciated. In the evening a dinner, music, monologs, lantern-slide caricatures and the like provided entertainment for the visitors.

On Saturday a paper by B. S. Waterman of the Brown & Sharpe Manufacturing Company on "Inspection of Gearing" was read. This was followed by a paper by H. E. Eberhardt, of the Newark Gear Cutting Machine Company, on "Spur Gearing by the Rotary or Disk Cutting Process," and one by F. Schneider of Van Dorn & Dutton Company, Cleveland, on "Spur Gears by the Shaper Method." These completed the program.

Electric Railway Equipment Needed at Turin, Italy

Manufacturers exporting material will be interested to learn that the interurban electric railway connecting the cities of Turin and Trofarello is to be extended to the town of Poirino, where it will subdivide, one section running to the town of Canale and the other to Villanova d'Asti. Both of these towns are about 20 miles from Turin. Correspondence from those interested should be in Italian or French and addressed to the tramway company as follows: Societa Belga Tounese, 114 Corso Regina Margherita, Turin, Italy.

ROLLING STOCK

St. Joseph Railway, Light, Heat & Power Company, St. Joseph, Mo., has ordered eight one-man cars from the American Car Company.

TRADE NOTES

Underwriters' Laboratories, Chicago, Ill., announces the election to the board of directors of Charles L. Case of New York and Sheldon Catlin of Philadelphia.

J. K. Hoffman, formerly with the Chicago office of the Hale & Kilburn Company, has been transferred to the Detroit office in the Garfield Building.

H. E Hilts, formerly district engineer at San Francisco for the Portland Cement Association, has been elected by the board of directors of that body to succeed the late J. P. Beck as general manager.

Woodmansee & Davidson, Inc., Chicago, Ill., announce a change in name to Woodmansee-Davidson Engineering Company. The Milwaukee office has moved from the Wells Building to the First National Bank Building.

Sloan, Huddle, Feustel & Freeman, consulting engineers of Chicago and Boston, announce the removal of their general offices in Madison, Wis., and their local Chicago office in the Peoples Gas Building, to the Conway Building, Chicago, Sept. 15. William F. Sloan has assumed personal charge of the Eastern office at 14 Kilby Street, Boston, as resident partner.

Standard Steel Works Company, Philadelphia, Pa., a subsidiary of the Baldwin Locomotive Works, announces that Alba B. Johnson has been elected president to succeed William Burnham, who has been made chairman of the board. Mr. Burnham succeeds William L. Austin. Samuel Vauclain has been made senior vice-president, Robert Radford has been made vice-president and treasurer, and W. H. Pugh has been made secretary.

Baldwin Locomotive Works, Philadelphia, Pa., has made the following changes in its organization: Samuel M. Vauclain, vice-president and manager, has been made senior vice-president; James McNaughton, formerly with the American Locomotive Company, has been made consulting vice-president; Grafton Greenough, sales manager, has been made vice-president in charge of sales, and John P. Sykes, general superintendent, has been made vice-president in charge of manufacturing.

Elbert F. Norton, sales engineer with the Standard Underground Cable Company's Chicago office, has received a commission as major in the Engineers' Reserve Corps, U. S. Army, and has left for three months' training at Fort Leavenworth, Kan. Mr. Norton is a graduate of Purdue University in electrical engineering, and is well known in the electrical field. He has been with this company about five years, and previous to this employment was an erecting engineer of electric and steam power plants.

Norman R. McLure, for the last three years chief engineer of the Phoenix Iron Company, Phoenixville, Pa., has resigned to take a position with the Taylor-Wharton Iron & Steel Company, High Bridge, N. J. For the time being Mr. McLure will assist in the construction and operation of the extension to the plant of the Tioga Steel & Iron Company, a subsidiary in Philadelphia in which will be executed the ordnance contracts recently taken by the company for the United States Navy Department.

Berger Manufacturing Company, Canton, Ohio, announces the appointment of H. J. Richardson as works engineer. His new work includes supervision of the power plant, new construction, maintenance and repair of manufacturing equipment and buildings. Mr. Richardson recently was connected with the New England Westinghouse Company, where he was manager of the gage department. Previous to this he was acting chief engineer of the ordnance department of the Crucible Steel Company, Harrison, N. J. and prior to that for a long time he was with the Commonwealth Edison Company of Chicago, the last seven years of this service having been in the engineering department.

NEW ADVERTISING LITERATURE

B. F. Sturtevant Company, Boston, Mass.: Catalog No. 236 of its steel-plate, multivane and turbovane fans.

A. F. Daum, Pittsburgh, Pa.: Illustrated pamphlet describing various types of Daum refillable cartridge fuses.

Titanium Bronze Company, Inc., Niagara Falls, N. Y.: Illustrated booklet on Titanium aluminum bronze die castings.

General Electric Company, Schenectady, N. Y.: Loose-leaf binder containing five of its latest bulletins on wires and cables, as follows: Bulletin 49,300—Armored Cables; 49,301—Varnished Cambric and Paper-Insulated Cables; 49,302—Wires and Cables, General; 49,303—Splicing Materials and Junction Boxes; 49,304—Conductors Insulated with Vulcanized Rubber Compound.

Bridgeport (Conn.) Brass Company: Thirty-six pages, Bulletin No. 10, printed in colors. Pages 3 to 6 give a short review of the methods of choosing trolley wire during the early days of electric railroading, and then give the reasons for the present wide adoption of "Phono-Electric" trolley wire on congested city routes, on curves, for general city use, for suburban and interurban railways and on heavy electrifications. Page 7 contains illustrations and descriptions depicting the actual results obtained in the use of copper and Phono-Electric trolley wire. The rest of the pages are filled with a large number of illustrations showing installations in various classes of service in every section of the United States. Installations in Canada, England, Scotland and Ireland are also shown. A short description accompanies each illustration to give a "nutshell" idea of the conditions which led to the use of Phono-Electric wire.

Electric Railway Journal

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Perhaps the Electric Railways Have a Secret Gold Mine

MAYOR GEORGE R. LUNN of Schenectady has been a listener at the hearings before the up-State New York Public Service Commission on applications to increase electric railway fares to 6 cents. He has heard or read the testimony. In spite of the Public Service Commission records which show that not one-half of the up-State companies are earning even their fixed charges (many of them not even their operating expenses), that not one of them has for years paid as much dividend (and most of them none at all) as in the eye of the law is "a fair average return on the capital used in the public service," the Mayor evidently thinks the railways have a secret gold mine. For he blithely says in a recent article in *Service*:

> "There can be no natural right for private capital to monopolize public utilities. The important question of how to finance our municipalities will bring us face to face with municipal ownership. The cost of city government will inevitably increase. This is due to the fact that our cities are engaging in much work that was formerly done by the individual.
>
> "No one in his senses would advocate the discontinuance of this important work by the city. The city must, therefore, look for new sources of revenue. Municipal ownership of public utilities offers the legitimate means whereby the city may gain either new revenue by conducting these utilities at the present prices or save money for the taxpayer by reducing the price charged for the various public necessities."

It must certainly be great to be a public ownership optimist.

New York Railways Wants City as Partner

THE statement that the New York Railways Company "is in an extremely receptive mood toward any proposition contemplating a partnership between the company and the city," made by President Shonts last May, is repeated in the company's annual report issued this week. Mr. Shonts was prompted to make this statement last spring in reply to a remark by Mayor Mitchel that the company ought not to ask for higher fares because in the past it had not shared its profits with the city. Nevertheless, we believe there are very few electric railway companies which would not be glad to substitute a partnership with the city for their taxes, or in default of that to sell their property to the city for the amount which it had cost to build and develop. This would mean municipal ownership, but the stockholders could well afford to let the taxpayers worry for a while about increasing costs for labor and materials. As a matter of fact, the city partnership plan is one which could well be used more extensively than it is. It recognizes the vital concern of the city in good service, a liberal policy as regards extensions and low fares. When all of these three cannot be had under efficient management, the city might prefer to forego part of its return from the enterprise to secure such of these desiderata as the company otherwise would not be able to supply. At present, a city often considers it necessary to oppose an increase in railway fares when actually its real interest lies in such an increase so that the railway company may provide the other two desiderata. In reality, where a commission has power to reduce a rate which is excessive there is no real difference in aims between a city and a railway company, because both are interested in having a transportation system which pays a reasonable profit from operation. But a partnership plan would remove to a large extent the semblance of the difference in aims which exists at the present time.

The Safety Movement Needs Stronger Executive Backing

IN another column in this issue is a brief abstract of the proceedings of the electric railway section sessions of the Sixth Annual Safety Congress, including the substance of the papers of the two principal speakers, H. A. Nicholl, general manager Union Traction Company of Indiana, and H. V. Drown, general claim agent Public Service Railway. Without any desire to be critical, excepting in a constructive way, we are forced to admit that these speakers did not have as large and representative a hearing as the importance of their topics justified. It is true, of course, that the problems pressing upon the busy executive for solution at this moment are so numerous and so distracting that he has no time for anything but the essentials. Another fact is that considering the inherent risks of the business the electric railways are making an excellent record for keeping down accidents. Nevertheless, accidents of some classes are increasing very rapidly and something vigorous has got to be done, even where the fault does not lie with the electric railways. It will not do to leave this work entirely to subordinates especially charged with the duty of keeping up the interest in the safety work. These men alone have not the authority and influence necessary to get big results. They need the support of the executives in having their ideas carried out. The public also needs to be impressed in a large way with the fact that collisions with vehicles are not all or always the fault of the railways. There is then a duty as well as an opportunity for the executive—to stiffen the wholesome discipline within his organization and to lead a campaign of education outside. Of course much of this must be done by proxy, but the man at the head must believe in his own safety propaganda so that it may have real vigor. Appointing safety committees, joining the National Safety Council, even designating a competent man as director of safety, are good in their way—but they are not enough. We were rather disappointed, therefore, in seeing so few executives at the Safety Congress. The presence of a fair number would have indicated at least that they believe in the merits of the safety movement. The advice which they could have given at the Congress would certainly have been greatly appreciated.

Government Bulletin on Electric Railway Labor

THE appearance of Bulletin No. 204 of the United States Bureau of Labor, entitled "Street Railway Employment in the United States," is a noteworthy event in the current history of electric railways. It is the first exhaustive official study of labor conditions in the industry and as such furnishes a fund of authoritative information which will be of direct assistance to operating officials, financiers, economists and students of labor conditions.

As a first attempt to investigate conditions of employment in the electric railway industry, this volume might have been made more complete. At the present time, when the questions of wages and hours of labor are so insistently before the public, it would have been helpful to have some comparative data given, indicating the recent trend of these matters, so vital both to the electric railway companies and their employees. In view of the fact that no arbitrary selection of cities can adequately indicate the solution of the labor problem in another city of approximately the same population or containing an electric railway company of similar capitalization, it is not feasible to draw general conclusions from the tables given in the book. Many of the statistics are indefinite in that they do not clearly state whether the figures are for the selected group of cities which were carefully investigated or for the group of cities from which data were obtained through correspondence. It must be remembered that the data were collected as of May, 1914. This, of course, was prior to the outbreak of the European war, and the statistics do not include the large increases in the cost of labor which beyond all doubt have resulted therefrom.

A review of the Bulletin leaves one with the distinct impression that conditions of employment are startlingly dissimilar throughout the country. Examples may be found of almost every type of employment agreement. Apparently the industry is trying a large number of experiments, out of which will come eventually some degree of uniformity of method. Perhaps this situation is fortunate. The industry is so young and the conditions surrounding it are so unlike anything which had gone before that recourse must be had to the slow process of experimentation and evolution in order to work out the most satisfactory plan governing the relations between the companies and their employees.

Savings Incidental to the Light-Weight Safety Car

WHEN considering the advantages to be realized from the use of the light-weight, single-operator car, it is not sufficient to include only the savings embodied within the car itself. In fact, the ultimate savings are so far-reaching that it is almost impossible to estimate what the operating costs will be finally when an opportunity has been had to see the full results of complete installations in various cities. The most evident possibility for saving beyond the cars themselves is, perhaps, in track maintenance. The moving load which the track must support is from 12,000 lb. to 16,000 lb. instead of the 30,000 lb. or more imposed by large cars. This maintenance saving has been variously estimated to be from 20 per cent to 60 per cent of present maintenance costs. Beyond maintenance, there is the prospect of large saving in fixed charges through the construction, where extension or rebuilding work is necessary, of a very much lighter and cheaper type of track. Certainly it will not be necessary to use 129-lb. rail with heavy welded joint construction and 6 in. to 12 in. of concrete underneath the ties where the rolling stock weighs no more than 16,000 lb. There would also be a marked saving in the cost of maintenance of special work, and in the investment required for new work.

In connection with the overhead trolley and the feeder system, the light-weight car makes possible a very important saving. It reduces the energy consumption and therefore the line losses, or investment necessary in copper, or both. A good energy consumption record for a double-truck car is one which shows 2.6 kw.-hr. per car-mile for a car weighing 35,000 lb., operating under congested traffic conditions where the number of stops per mile is fourteen and the schedule speed is 5.5 m.p.h. In non-congested districts where the stops average 7.7 per mile and the schedule speed is 11 m.p.h., the energy consumption for this same car is 2.43 kw.-hr., hence, the average consumption would be approximately 2.5 kw.-hr. per car-mile. Contrast this with the average actual energy consumption in Wichita, as noted in the issue of this paper for Sept. 22, for the earliest type safety car, of 1.27 kw.-hr. per car-mile, and with the records of the later type safety cars of 1 kw.-hr. per car-mile and less. This means, then, a saving in energy for the new type car of at least 50 per cent of the present consumption, and allowing for a 25 per cent increase in the number of cars. If the line losses amount to 25 per cent of the power generated, and the consumption is reduced 50 per cent, this means that 75 per cent of the line losses, or more than 18 per cent of the total power bill, will be saved in line losses alone.

Carrying this matter of incidental savings to the power house, another far-reaching effect of the light-weight car is seen. In the first place the saving of 50 per cent of the energy consumption will lighten the load on the plant 50 per cent, assuming a complete installation, and will therefore extend the adequacy of the present capacity for several years, or until a time, perhaps, when the prices and deliveries on electrical machinery will be more reasonable. In addition to this kilowatt-hour load reduction, there will also be a reduction in the maximum kilowatt demand, and hence a better load factor. This follows because the starting current of each car will be smaller and the peaks of starting current will be more uniformly distributed. Better load factor, of course, means cheaper power generation, and the reduction in load means longer life for the present power house and substations, and hence a less amortization charge. If power is purchased, it means a lower primary demand charge, and a lower kilowatt-hour bill.

Taking all items into consideration, then, would seem to offer an ultimate incidental saving possibly as important as the direct saving effected at the cars. Hence, if an installation of the safety cars can be justified on the saving represented by the cars alone, then the railway manager need have no fear but that he can show much greater reduction in annual operating costs than he promised would result. These incidental savings might be held in reserve as a sort of surprise bonus to be included in the operating report at the end of the year.

Labor and Capital Must Both Help in This War Period

AMERICAN business is patriotic—there can be little doubt of that. American labor is patriotic—that likewise is little subject to challenge. Yet these two forces in industrial life are not working entirely in conjunction at the present time. Faced with unprecedented demands for war production, the nation is nevertheless being confronted with serious interruptions and delays on account of strikes and threats of strikes in every part of the country. Lest these should grow to constitute a national interruption in essential services, it behooves both capital and labor to reach a better and more detailed understanding of their mutual responsibilties.

It is true that representatives of the largest national labor unions, through the committee on labor of the Council of National Defense, some time ago declared for an industrial armistice during which neither employers nor employees should endeavor to take advantage of the country's necessities to change existing standards. In spite of this and later supporting declarations, however, strikes have continued and even increased, and it has become apparent that the understanding previously reached with labor leaders needs to be further detailed.

We are glad to say that the National Industrial Conference Board of representative manufacturers and the Chamber of Commerce of the United States have recently been trying to effect this very end. The first-named body, in a report this month to the Council of National Defense, endeavored to work out an unambiguous interpretation of the herein-stated general principle so as to insure its practical application. Its plan embodies points which may be summarized as follows:

(1) Safety and health rules not to be modified or suspended except upon recommendation by the council; (2) wage demands to be tested by the standard in effect at the beginning of the war, with modification to meet any demonstrated advance in the cost of living; (3) hour standards to be changed only when deemed necessary for government needs by the council; (4) no effort to be made by either employer or employees to change open or closed shop conditions, and (5) a federal board to be created to adjust labor disputes involving war production. Similar points were made at the Chamber of Commerce meetings last week, and one was added to the effect that there should be no profiteering in business to give rise to labor unrest.

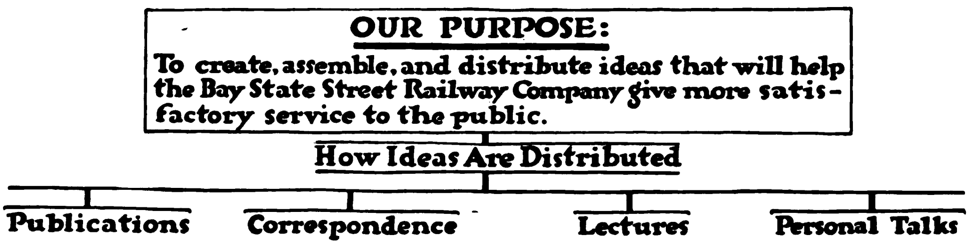
This last point is worthy of separate treatment, for it is by no means inconceivable that a considerable part of the strike difficulty is caused by the stories that certain corporations have been making vast war profits. This does not explain all the strikes, however, for the desire of labor to get part of the "swag," as Secretary Wilson expresses it, would hardly account for the plague of strikes in the electric railway field, or in other industries where the need of price-fixing has not even been imagined. Hence, in the last few months, there has been a certain element of the censurable in the activities of labor, and this condition should be changed without delay.

A survey of the points made by the business men will show that they have taken a very broad-minded attitude toward the needs of labor. This is particularly evident in the matter of wages. There is no assertion that wages must remain unchanged until the war ends, for the justice of an advance to meet a proved rise in the cost of living is realized. Some industries, like the electric railway, would need financial relief before they could counteract much of an increase in the cost of living for employees, but that hardly detracts from the economic justice of the employees' side of the question. But, to resume, if the business men are broad-minded, why should not labor be so also? Why should not such an attempt as was recently made on the Kansas City Railways to force a closed shop be universally condemned as an infraction of the pledge made last spring?

The point of the whole matter is that capital and labor must both help the nation in its present struggle, and they should work together as efficiently and as harmoniously as possible. There should be no selfishness, no taking advantage of the other side. To avoid these things the business men of the nation have substituted particularities for generality, and labor has no excuse for withholding its full concurrence in this reasonable procedure.

Putting the Human Touch in Public Relations Work

How a Man Who Understands the Joy of Living Has Brought Inspiration, Breadth of Vision and Humanness to the Publicity and Allied Work of the Bay State Street Railway—How a Fourfold Plan Is Being Worked Out



OUR PURPOSE:

To create, assemble, and distribute ideas that will help the Bay State Street Railway Company give more satisfactory service to the public.

How Ideas Are Distributed

Publications — Correspondence — Lectures — Personal Talks

A PRACTICAL idealist—young in years but rich in experience—that is the type of man who heads the public relations department of the Bay State Street Railway, Boston, Mass. When this company late last year began to seek such an official, there came literally hundreds of applicants. But they were all passed over, for in the end the work sought the man, Thomas Dreier.

And a wise choice it was, for to the stern realities of the electric railway situation "Tom" Dreier has brought a quick understanding, a sympathetic heart and a virile code of business ethics. In his publicity work he has shown the same keenness of eye, the same brilliance of style and the same optimism of spirit that have featured and are still featuring his mass of other work along advertising and house-organ lines.

Mr. Dreier is profoundly interested in the great work of putting more neighborliness and good will into business, it being thoroughly understood that no work of this sort can be successful unless the management has as its ideal satisfactory service to its patrons. Upon this basis he has started out upon his work of inspiring Bay State Street Railway employees to better efforts, of helping the company and the public to see each other's good points, and of fostering a more neighborly feeling and kindlier co-operation between them.

The public-relations work of the company is rather unusual on account of the well-rounded conception of the channels one should use. As shown by the accompanying plan, it does not look alone to newspaper publicity to secure results but utilizes four basic means, as follows: Publications and allied publicity devices; personal talks with individuals; correspondence, and speeches before assemblages. Through such means the company endeavors to tell the exact truth about itself and its problems, to the end that it will be enabled to render service satisfactory to the public and at a fair return to its stockholders.

USING THE PRINTED WORD

There is no secrecy at all about the management or the operation of the Bay State Street Railway. P. F. Sullivan, president of the company, believes that the electric railway business is the public's business, and any citizen who desires to understand the business better and wants any information in the power of the company to give can have that information. But the company does more than thus hold itself in readiness to furnish facts. It carries its work to the public, for it clearly realizes that men need information rather than reformation and that the responsibility lies with it of seeing that the information is furnished.

In bringing out facts about itself the company uses the printed word in the form of a weekly bulletin to employees, service to the newspapers, advertising and other publicity devices. These will be taken up in turn.

1. *Employees' Bulletin*

The company began its publicity work with its own employees in *Triangle Talks*. Some pages of this bulletin, which is an 8-in. x 11-in. four-page publication, are reproduced opposite. It was stated at the beginning that there are three partners in the electric railway business—the public, employees and investors—and that all the partners must know the facts to have efficient co-operation. Hence the company purposed to give the employees some facts, and it counted on them to pass these on to the public.

In form, however, *Triangle Talks* is a "we" publication, in which the employees can read of their own affairs as well as of the share they have in the operation of the property. The bulletin is not a didactic treatise —it is a humanized discussion of various points that touch the material welfare and personal interests of the men. Inspirational notes, written in Mr. Dreier's inimitable style, are liberally used, for he is greatly interested in the self-improvement of the employees. He is willing to put in all the time that is necessary to convince the men of the company's sincerity and eagerness to help them grow.

Along the line of electric railway problems, the various issues of *Triangle Talks* have discussed with the men the question of how, on the one hand, to decrease expenses through economies and, on the other, to increase income through courteous and efficient transportation salesmanship. Every issue of the bulletin aims to impress some particular point upon each group of employees—as, for example, what the motormen can do to save money, what the conductors can do to increase receipts or what the road department can do to avoid maintenance waste. In talking with employees on such matters, it is remembered that the frequent casual reminder rather than the once-for-all preachment brings results.

The bulletin also contains pictures and biographies of employees and departmental news. Cartoons are freely used, for it is believed that they count for more than type to the class of readers reached, and that the money spent for an artist is well invested. Sometimes the cartoons are added to emphasize the point in some article, but often they tell the whole story themselves. Several sketches selected at random from various issues are shown throughout this article.

Triangle Talks is expected to be eventually a monthly publication, with intermediate bulletins to employees as needed. Up to the present, however, it has been issued weekly. Each week 6000 copies are mailed to the homes of the employees. At first the company considered distributing them at the carhouses, but it almost immediately decided in favor of mailing them. It was felt that this plan would give the women of the employees' families a better chance to wield their big influence along the lines desired, and also that any man who might be hostile to the publication would be less able to lead others not to read it.

Bay State TRIANGLE TALKS
Hey! that's money you're throwin' away!!!
Sure! and that's just what you're doing!
material
BAY STATE TRIANGLE TALKS
Two Young Men and What Happened to Them
SPECIAL HOME NUMBER
Bay State TRIANGLE TALKS
An Open Letter to the Women Who Are Helping Run the Bay State

BAY STATE—SPECIMEN PAGES OF WEEKLY BULLETIN FOR EMPLOYEES

2. *Service to the Newspapers*

Frankness, accuracy, dispatch and friendship—these are the aims of Mr. Dreier in dealing with the newspapers in the Bay State territory. He is trying to get reporters and editors so that he can say "Hello, Bill," to them; so that they will consider themselves free to come to him for any information they desire and feel certain that what they obtain is every bit available, and so that they will welcome without distrust his co-operation in the matter of furnishing "leads" and even stories to them.

The public-relations office receives operating and general information from company officials, but if the desired information is not in hand when a reporter calls, Mr. Dreier secures it. If the reporter, however, wishes to see any official, the interview is gladly arranged. The public-relations office does not believe at all in standing in front of the officials. When special statements are desired for the newspapers, they are usually given out in the name of President Sullivan or the local superintendent in the one of the ninety communities concerned. For example, a statement on the general question of higher electric railway fares would bear President Sullivan's name, while an explanation regarding service interruption because of a torn-up street would be on the authority of the local superintendent. This is done in order to play up the names of the operating officials with whom the public should be acquainted.

There are 129 newspapers in the company's territory, about thirty of them being dailies. All of these each week receive *The Bay State Neighbor*. The opening page of this, reproduced on page 567, contains at the top the following statement of policy:

> "This letter is being sent to you from the office of the president of the Bay State Street Railway for the purpose of telling you more about the road, the ideals of its managers, their plans providing for the giving of better service, and many other things which you would learn if you were to talk to the officials personally. The more light thrown on the Bay State and its problems the better it will be for both the company and its patrons."

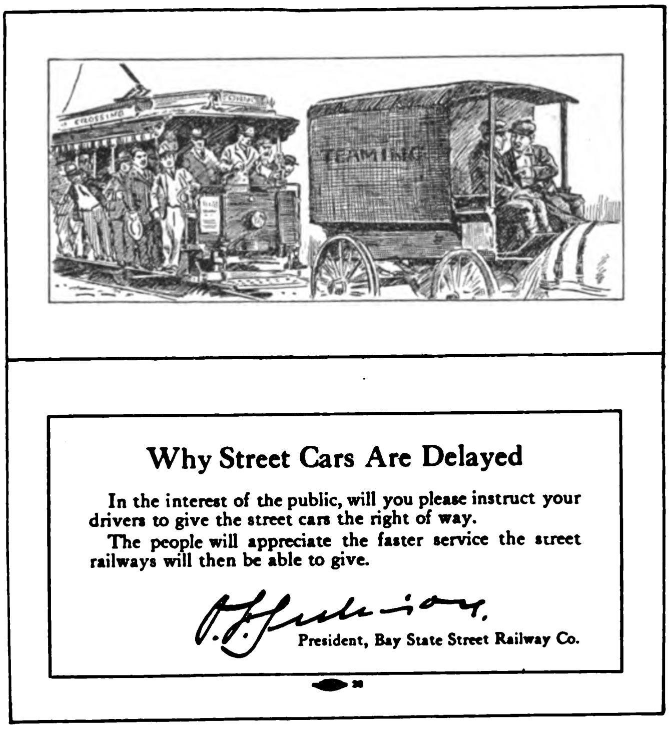
This first sheet is used in whole or in part for a summary letter to the editors from President Sullivan, and then follow as many sheets as are necessary to convey the news. Sometimes the appended articles are news items, sometimes speeches by company officials, sometimes editorials from the technical press and the like. The aim is to send the editors facts which will interest them and, when told to the public, will interest it too.

Besides this weekly news bulletin there are sent out each day or so stories on live news matters from the various departments of the company. It is understood that the public-relations office must be notified of all intended changes long enough in advance to secure full publicity. In the case of an important news story from the Boston office that will be of interest to some town out on the company's lines, Mr. Dreier takes the initiative and telephones to the local superintendent, in order that the latter may establish a personal connection with the local newspapers in giving out the news. In a rush case, however, the message is telephoned directly to the editorial offices. If a news story of general interest is to be released, mimeographed sheets are sent out.

3. *Advertising, Posters and Folders*

Except for printing time-tables, newspaper advertisements have not been much used. The company is handicapped by the fact that it operates in so many communities having such a large number of newspapers. Furthermore, car cards have not been used, because the advertising spaces are all let out. Car posters have generally been utilized only for the announcement of operating changes, the posters being placed in the bulkheads.

A notable exception to the foregoing, in the case of newspaper advertisements and posters, was the practice in connection with the recent granting of a 6-cent fare on city lines. The company then ran a large advertisement in each daily and weekly newspaper, no matter in what language printed. This advertisement told why the additional revenue was needed, promised that the best service possible would be given and asked public co-operation. Posters were also placed on the ends of the cars, to direct patrons' attention to a booklet of information regarding the fare change. A total of 150,000 of these was printed for free distribution. A good-will message from President Sullivan was also placed on the back of tickets. The result was that the new rates went into effect with the minimum of trouble.



Why Street Cars Are Delayed

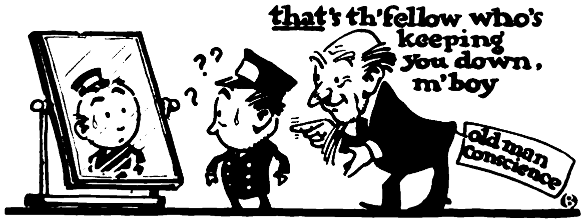
In the interest of the public, will you please instruct your drivers to give the street cars the right of way.

The people will appreciate the faster service the street railways will then be able to give.

P. F. Sullivan,
President, Bay State Street Railway Co.

BAY STATE—SAMPLE OF FOLDER PLACED IN COMPANY'S CORRESPONDENCE

The company has made very efficient use of folders in its correspondence. It sends about 5000 2-cent letters a week to outside people in the normal course of its business. No more postage is required for the insertion of a small folder, and an excellent mailing list is thus obtained. Illustrated folders on jitneys* and blocking the car tracks, like that shown in the accompanying illustration, have thus been used. In response to the latter, the president of a coal company wrote that he would dismiss any of his drivers that clogged the tracks, and the head of another company asked for fifty additional copies to be distributed to employees. It was inexpensive publicity, but it hit the spot.

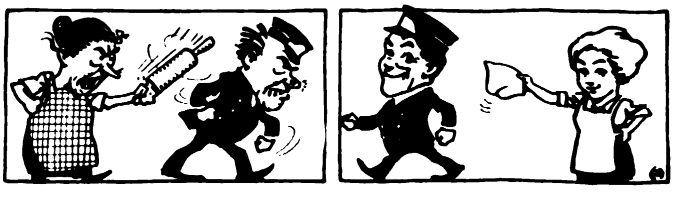

that's th'fellow who's keeping you down, m'boy
??
?
old man conscience

TALKING WITH INDIVIDUALS

This division of the work has to do with more than the simple talking with individual complainants, reporters and others that may often form a part of the daily round. It refers rather to heart-to-heart conversations with newspaper editors and other representative citizens in order to get at the public's point of view in regard to the company.

Mr. Dreier believes that it is highly important for a publicity man to get away from his desk. Hence he goes on frequent trips through the company's territory. When in any of the towns served, he drops in to see the local editors. He does so not with the purpose of getting anything into the newspapers, but of making friends with the editors and leading them to tell what they think of the company. The newspapermen are the ones best acquainted in general with local service, and Mr. Dreier tries to see the company through their eyes. He does not argue with them; he does not damn them for their sometimes mistaken and wrong criticisms; he simply listens. It is the voice of the public speaking, and his first task is to understand the ideas presented. Any necesary correction can later be sought in a gradual and tactful manner.

Sometimes, of course, the first approach meets with coldness, even with suspicion. Then Mr. Dreier simply increases his efforts to promote friendliness with the editor. The opening wedge is generally not difficult to find. Perhaps a recent book on the editor's desk gives the cue to a swapping of literary predilections; perhaps they both own the same make of automobile; perhaps the editor has some office "kink," the notice of which would bring joy to his heart. A subject of mutual interest is usually quickly found, or a way in which the editor can be served.



The almost certain friendliness, once established, is not allowed to lapse. When Mr. Dreier returns to his office he writes a sincere letter thanking the editor for the courtesy and the co-operation shown. The letter is something tangible and its impression will be much greater than that of the memory of the interview. Moreover, the local editor is borne in mind; clippings in which he will probably be personally interested are sent to him, and the calls are repeated occasionally in a casual manner. And with it all the friendliness is never presumed upon even for a hint as to how the editor's work should be done. Any act that would cause distrust to enter the mind of the newspaper man is assiduously avoided.

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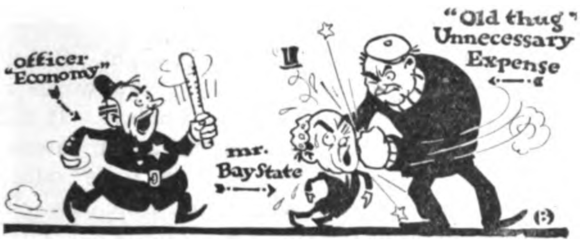
*See ELECTRIC RAILWAY JOURNAL of July 21, 1917, page 103.

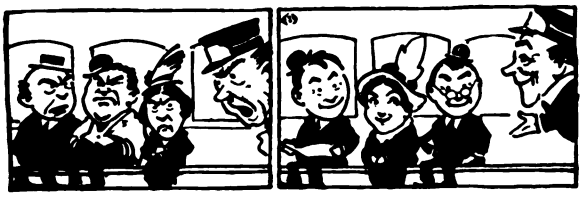


The local editors have been found to be a great source of constructive ideas. In one case, the editor said that he would not ask for more cars, for the company had no money to buy them; or for better service, for this could not be given with the equipment possessed. He did feel, however, that there might well be more signs on the part of local officials of a *desire to please* the public. For instance, in having seven or eight cars to handle an after-theater crowd, why could there not be some pleasant-mannered employee, separate from the carmen, to direct the loading and make the people feel that the company was much interested in getting them home as quickly and as pleasantly as possible? That was a constructive suggestion, and it was received with quick appreciation. In cases like this, when the company takes action, a letter of credit is sent out again thanking the man for the suggestion.

CHANGING COMPLAINTS FROM LIABILITIES INTO ASSETS

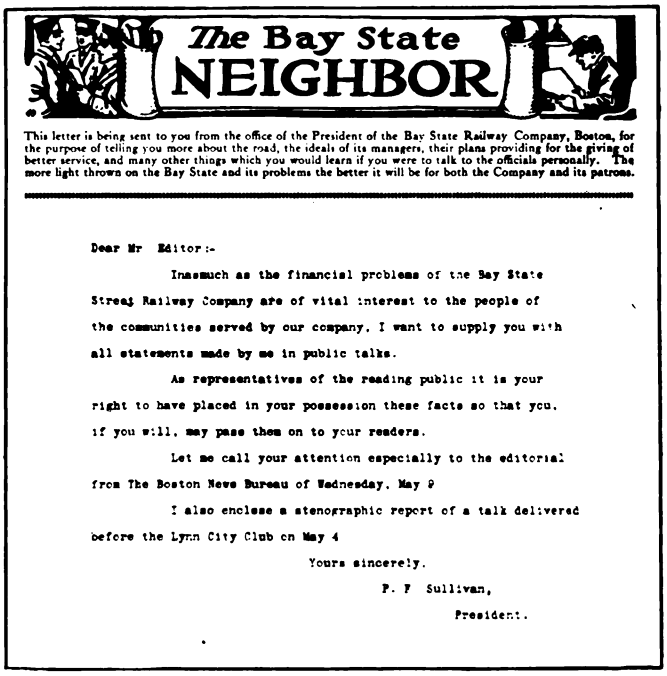
The correspondence of the public-relations office is closely related in many respects to the other portions of the work. The relationship can readily be seen, for example, in the usefulness of letters to follow up talks with editors and other persons of influence. The major class of correspondence, however, deals with "kicks." The general policy of the company in welcoming complaints and its work in changing complainants into friends are described below.

The company no longer wears a frowning face when complaints come into the office. As a matter of fact, it welcomes them eagerly. The officials are just about as happy when the morning mail contains a number of letters telling of things that are wrong as an advertiser is when he receives coupons clipped from his advertisements. They feel that they have won a victory when a person who is not satisfied with the service comes straight to them with his story.



It is believed that the electric railway which never receives complaints from patrons is in a bad way. Or it is so good that it really belongs in some heavenly realm, far away from this earth with its opportunities to do things just a little bit better. Patrons who make complaints are the unofficial inspection staff of the Bay State company. They do for nothing what it pays inspectors to do—and sometimes do the work better. Of course, the company aims at the impossible and tries to give perfectly satisfactory service. But it knows that perfect service is only a goal toward which it is working. Until it reaches this goal, it will have many shortcomings. Complainants point these out and thus give the company an opportunity to overcome them. To widen this opportunity the company has even gone so far as to send to the newspapers special articles asking for constructive criticisms.

The routine of answering complaints on the Bay State Street Railway may be briefly described thus: All complaint letters reach the public-relations office, where they are acknowledged and sent to the assistant general manager's office. This official takes the matters up with the local superintendents, who prepare full reports. These come to the public-relations office for use in making the detailed answers to the complaints. But this by no means tells the story, for it does not show the thoughtfulness, courtesy and friendliness which, according to President Sullivan, characterize the whole process.



The Bay State
NEIGHBOR

This letter is being sent to you from the office of the President of the Bay State Railway Company, Boston, for the purpose of telling you more about the road, the ideals of its managers, their plans providing for the giving of better service, and many other things which you would learn if you were to talk to the officials personally. The more light thrown on the Bay State and its problems the better it will be for both the Company and its patrons.

Dear Mr Editor:-

Inasmuch as the financial problems of the Bay State Street Railway Company are of vital interest to the people of the communities served by our company, I want to supply you with all statements made by me in public talks.

As representatives of the reading public it is your right to have placed in your possession these facts so that you, if you will, may pass them on to your readers.

Let me call your attention especially to the editorial from The Boston News Bureau of Wednesday, May 9

I also enclose a stenographic report of a talk delivered before the Lynn City Club on May 4

Yours sincerely,
P. F. Sullivan,
President.

BAY STATE—EXAMPLE OF FIRST SHEET OF WEEKLY NEWS LETTER TO LOCAL EDITORS

The company's attitude toward the person who makes a complaint is very important. It looks upon him as a friend—no matter what the spirit of his letter may be. Of course, there are many persons who feel that it is necessary for them to "wax indignant" and indulge in language that comes close to being profanity. Yet even they have not the power to ruffle the company's serenity. They receive the same friendly, courteous attention that is given to the people who write in a friendly spirit. The company just says to itself: "This man may be a bit angry now, or he may have been angry when he wrote his letter, but by the time he receives our reply the chances are he will be in a receptive mood. His anger will have disappeared, and he will be a decent sort of fellow. Therefore, we'll just disregard these angry sentences."

If an unfriendly letter does stir the company up a bit, it simply delays answering until the next day, when its philosophic spirit has had a chance to regain control. Ordinarily, however, all complaint letters are answered the same day they are received. For many reasons the company may not be able to give faster car service, but it knows that there is no excuse for not replying to a letter without delay.

Even in making the mere acknowledgments to complaints, the company never writes perfunctory replies like this famous classic: "Yours of the 14 inst. received and contents noted. Same shall have our attention." It would cost as much to mail that as it does a real letter. The company looks at a complaint in this light: "Here is a patron who has asked us to talk to him about our business. He expects to hear from us. He wants to know that we have his complaint and that it has received or is going to receive attention, and he also wants to know what our attitude toward him really is."

Unnecessary
Expense
z-z-z
employees
economy

Hence the acknowledgment is a letter of prompt and courteous welcome to the complainant. It does not attempt to answer finally the specific assertions made in the complaint, for the reply to these must await the report of the operating department. The letter does, however, show the friendly spirit of the company and often affords an opportunity for an introductory selling talk about some of the conditions of the company's business.

The Bay State Street Railway always assumes that the patron is right—until he is proved wrong. Of course, the customer is not always right. But, it asks, what is the use of arguing? It is more profitable to find something upon which to agree than to point out where the patron is wrong. If the complainant says that Conductor 546797 was discourteous and therefore should be cast into the fiery pit, the company assumes that this conductor was guilty of something or other, or at least contributed his mite to the general fund of the passenger's dissatisfaction.

In such a case, therefore, the company writes something like this:

> "If anyone treated us the way you say our conductor treated you at Nantasket Beach last Sunday, we would be stirred up too. We are sorry that the end of your pleasant day on the beach should have been marred by one of our men. Our desire is to give every rider satisfactory service, and as part of that service you should have received courteous treatment.
>
> "Of course, Sunday is a hard day on electric railway conductors. Instead of being able to enjoy life with their families, they have to work harder than on any other day in the week. More cars are run and more people crowd into the cars. Hence, as you can see yourself, the conductor's life on Sunday is not an enviable one. A few of the men, after a hard day, may not always speak to passengers as we would have them.
>
> "But that does not excuse Conductor 546797 for speaking to you as he did. You can be sure that an investigation will be made. Enclosed are a couple of copies of our weekly publication in which you will find many facts about the electric railway business that may interest you, including some talks on the value of courtesy. We are thankful to you for writing so frankly."

Thus the patron was assumed to be right. But notice how the company managed to say a few words about the hard time a conductor has on Sundays. It did not offer this as an excuse, but simply as an interesting collateral statement of fact—just a little sales talk about the troubles of the other man in the case. There is nothing wonderful about the company's letters. It does not try to be clever. All it tries to be is human. It uses no form letters and no stereotyped paragraphs. These things might save time and a few cents, but they would be less effective. They would be less likely to sell to the complainant the idea that the company, no matter what its shortcomings may be, is a decent sort of corporation after all and really wants to do the right thing.

And it is by no means impossible to sell such an idea to a complainant. The following reply from a patron is sufficient to prove the point, and it incidentally shows the situation that confronted the public-relations department when it began work last February:

> "While your reply of ——, receipt of which I gratefully acknowledge, calls for no answer, I cannot refrain from expressing my appreciation of the courteous tone in which it was written. I must extend my assurance that this, in itself, has been sufficient to convert me from a kicker to an assistant, and that from now on I will boost instead of knock, whenever and wherever the opportunity presents itself, for the company you so conscientiously represent.
>
> "In this connection allow me to say that, upon coming to your city early in January, I heard nothing but expressions of disgust at certain conditions and noticed the apparently widespread belief that the company was making no effort whatever to correct existing evils. But I now know that such is not true, and a careful perusal of your 'Triangle Talks' (copy of which has been duly received and carefully read) indicates, to my mind, that you are at least making a desperate effort to bring your road up to a high standard of efficiency. I sincerely hope your efforts may meet with success."

After the letters are sent to complainants, their names are carded. Each of these is valuable. It represents a prospect who has invited the company to send him sales literature from time to time. Because he drew attention to the fact that he lives in a certain community, he is from time to time called upon to pay the penalty of receiving from the company any news about its business that it cares to send him. This is nothing but ordinary business practice. The man who buys a razor from Jones the Druggist and has it delivered must expect to receive circulars from time to time advertising shaving soap and other articles carried in stock.

In short, Mr. and Mrs. Complaint Maker are prospective centers of good-will. If they can be changed, through correspondence, from people who never gave electric railway problems a thought into people who think a great deal about the company and its affairs, much has been accomplished. Even if the company's letters do no more than silence them as kickers, the money invested has not been lost. Electric railway men have learned not to be disappointed if all their investments fail to return 100 per cent profit. The Bay State

Street Railway believes, however, that in time—in the course of a few years—in response to its urging the people served will take a personal interest in helping to manage the property and will co-operate to the extent of offering their criticisms, whether they are constructive or merely ordinary criticisms, in a helpful spirit. There is something thrilling in the idea of selling the idea of mutual helpfulness, neighborliness and co-operation to the people served, but the company knows that it can be done provided it creates and keeps alive that same spirit inside its own organization.

SPEAKING BEFORE ASSEMBLAGES

At the present time President Sullivan is the man who does the speech-making for the company. Eventually this portion of the public-relations work will be handled by an organized staff of speakers. These men will be sent to public meetings of various kinds for the purpose of contributing ideas that will help the public better to understand the problems and the needs of the electric railway industry.

The best example of past work along this line was in connection with the recent movement for a 6-cent fare on the city lines of the Bay State system. At a luncheon in Boston President Sullivan called together about eighty representatives of the cities and towns having a 5-cent fare. Mayors, city solicitors, delegates from chambers of commerce and newspaper editors—all were there. Before these men President Sullivan, with manifest frankness and utter simplicity, described the situation confronting the company. He neither harangued nor complained; he just gave facts and then stated the alternative—either the company would go to the Legislature and ask the State to take over the system or the cities would go with the company to the Public Service Commission and secure a 6-cent fare.

Was there an outburst of criticism against the company? No! The facts were evident, and the city representatives understood them. The general gathering recommended that the Mayors and the official bodies in the various communities hold meetings and that President Sullivan go out and present the same story to each locality. Why? Simply that the responsible citizens in each city and town might have at first hand the facts of the case and see the need of the company and the justice of its economic plea.

The recommendation was carried out. Through many a long hour in the evenings of the next few weeks President Sullivan told his tale. Advance copies of his speeches were sent to the newspapers in each city. The industry knows the result. That the various communities co-operated with the company and presented to the commission a compromise plan for the trial operation of a 6-cent fare is adequate indication of the efficacy of such public-relations work.

THE PUBLIC IS FAIR, IF IT HAS THE FACTS

Such is the story of the four-fold public-relations plan now being followed by the Bay State Street Railway. The company believes in the work and expects a fair reception by the public. It states its creed thus: "The public is fair when it knows the facts—the trouble has been that corporations have not seen the necessity for presenting facts. The public is eager for the truth. Such being the case, corporations must tell its story. Moreover, a utility should be to the public what a good neighbor is to a community. No other platform than the Sermon on the Mount can last in business, or in any true human relationship."

In Mr. Dreier's opinion the future happiness of the nation hinges on the proper interpretation of Big Business to the Public and the Public to Big Business. For years it has been his ideal to share in such work. The Bay State company has given him the opportunity, and from all appearances he is successfully making use of it.

Resolutions Passed by Business Men

Business Ready to Co-operate with Government in All Ways—Maintenance of Labor Standards Recommended

THE great war convention of the Chamber of Commerce of the United States, held in Atlantic City on Sept. 18-21, came to an end with some of the most remarkable resolutions ever passed by business men.

One resolution in most comprehensive and sweeping terms pledged the support of business to the war. It declared that business is ready for heavy taxes, the dissipation of its savings, the turning over of its plants and any other thing necessary to prove that it is behind the war until the last gun is fired. Another resolution declared that at the earliest moment all government purchasing for the war should be concentrated in one body. It stated in an unequivocable manner for the first time that it is proper and necessary that the government should have the power to fix prices on all materials needed by it for the conduct of the war as well as all materials affecting the interest of the public at large. The Chamber of Commerce went on record for a revision of prices based on production-cost.

On the subject of labor it was resolved that employers and employees should not attempt to change existing standards of work during the period of the war. The convention indorsed another labor resolution of great importance, urging the appointment of a federal board to adjust disputes. During the process of adjustment, American business declared, there should be no lockouts, strikes or other cessation of industry. Business pledged itself to accept decisions made by such a board and invited the co-operation of labor, instead of suggesting compulsory arbitration.

Other resolutions that were passed referred to the usefulness of a federal employment bureau, the desirability of a commission to study foreign business problems now and after the war, the payment of taxes in four quarterly installments and the support of Liberty Loans. The daylight-saving plan, it was declared, would conserve the nation's supply of coal, and action by Congress and the President to make the plan effective as a war measure was urged.

The committee on resolutions suggested that a number of recommendations be referred by the chamber to the board of directors with power to act. Among these was a recommendation that the national chamber make a prompt and careful study of labor conditions after the war. The committee on resolutions also requested that a number of recommendations be referred to the board of directors without advice. Among these was a recommendation that Congress should without delay enact legislation for the development of water power at sites now under federal control.

Street Railway Employment in the United States

A Review Is Given of the More Important Sections of Bulletin 204, Just Published by the United States Bureau of Labor Statistics

By THOMAS CONWAY, Jr., Ph.D.

Professor of Finance, University of Pennsylvania, Philadelphia, Pa.

THIS report represents the initial attempt of the United States Bureau of Labor to collect and classify statistics concerning the wages, hours of labor and working conditions of the street railway employees in the United States. Unlike many of the other studies made by the Bureau of Labor, this work does not deal with conditions in the street railway industry over an extended period of time, and consequently it offers no basis for comparison with conditions existing prior to the date of its publication. The statistics presented were gathered in the latter half of the year 1914 and the early part of 1915. The greater part of the information collected was as of the month of May, 1914.

Special agents of the Bureau of Labor made a rather comprehensive study in eighty-three selected cities in the United States, while information from 321 companies operating in cities of reasonable size was obtained by means of correspondence. The cities chosen for investigation by the special agents of the Bureau of Labor do not include necessarily all of the larger cities in the United States, for the list was made primarily to show representative conditions in cities of varying size throughout the country. Elevated and subway lines as well as surface lines were covered in the cities selected, but interurban lines were not included.

The major portion of the bulletin, comprising 1131 pages, consists of elaborate tables setting forth the wages of car crews and their hours of labor. For each city covered in the investigation there are tables in which practically complete information is given concerning these two factors. The statistics also cover the rates of pay for specified classes in the personnel of the companies during a year, accidents, sick and death benefits and miscellaneous data relative to car employees.

A discussion of the contents of the bulletin will be made clearer by analyzing the chapters in consecutive order, as they are listed in the bulletin. Wherever possible, important information has been summarized. Although this summary is based upon the figures set forth, it is to be remembered that the figures in themselves, because of the method by which they were collected, are typical only of the conditions as they existed at the time the investigation was made. No definite conclusions can be drawn with reference to the statistics.

WAGES OF CAR CREWS

Practically all the companies pay a wage scale which increases automatically from time to time according to the length of service. Only a few companies pay a flat rate. In some cities, instead of an increased scale depending upon the length of service, there is a merit and demerit system of wage payments, as in Brooklyn. In Washington, D. C., the flat rate is supplemented by a bonus of different amounts based on satisfactory service. The varying wage scale applies to extra men as well as to regular men. Although motormen and conductors ordinarily receive the same wages for the same length of service, the figures show that the average wage of motormen generally is greater than that of conductors, due to a greater length of service.

The wage statistics are divided into two groups. Group 1 relates to eighty-three cities in which the special agents worked, and Group 2 includes those cities from which information was obtained through correspondence. The median or middle rate of wages for motormen and conductors of Groups 1 and 2 follow—the median rate being the rate of the man having as many men of lower rates below him as of higher rates above him. It is the rate at which 50 per cent of the men are shown in the cumulative percentages.

Group I

Motormen, regular, surface, 28 and under 29 cents per hour.

Motormen, extra, surface, 25 and under 26 cents per hour.

Motormen, regular, elevated and subway, 35 and under 36 cents per hour.

Motormen, extra, elevated and subway, 30 and under 31 cents per hour.

Conductors, regular, surface, 27 and under 28 cents per hour.

Conductors, extra, surface, 24 and under 25 cents per hour.

Conductors, regular, elevated and subway, 26 and under 27 cents per hour.

Conductors, extra, elevated and subway, 25 and under 26 cents per hour.

Gripmen, regular, surface, 31 and under 32 cents per hour.

Gripmen, extra, surface, 25 and under 26 cents per hour.

Guards, regular, elevated and subway, 23 and under 24 cents per hour.

Guards, extra, elevated and subway, 21 and under 22 cents per hour.

Group II

Motormen, regular and extra, surface, 25 and under 26 cents per hour.

Conductors, regular and extra, surface, 25 and under 26 cents per hour.

When the figures compiled for the eighty-three selected cities—Group 1—are analyzed, some interesting data appear concerning the percentage of the total number of men employed earning a specified wage. For instance, out of the total number of regular motormen employed on the surface lines, in cities of Group 1, 61 per cent were earning less than 30 cents per hour, while the remaining 39 per cent were earning between 30 cents and 46 cents per hour. Out of the total number of regular motormen employed on the elevated and subway lines 54 per cent were earning less than 36 cents per hour, and the remaining 46 per cent received between 36 cents and 38 cents per hour.

Sixty-seven per cent of the regular conductors on surface lines earn less than 30 cents per hour, with the highest wage of the remainder reaching 41 cents per hour, while 70 per cent of those who serve on the elevated and subway lines were paid less than 27 cents per hour, with the highest wage of the remainder reaching 34 cents per hour.

The variations in wage rates as disclosed by the mass of statistical data contained in the report has been summarized for the purposes of this review in Table I:

TABLE I—SUMMARY OF VARIATIONS IN WAGES SHOWN BY REPORT

Rate of Wages (Cents) per Hour	Motormen (Regular)				Conductors (Regular)				Motormen (Regular)		Conductors Regular)		Rate of Wages (Cents) per Hour
	Total Surface Lines	Per Cent Cumulative	Total Elevated and Subway Lines	Per Cent Cumulative	Total Surface Lines	Per Cent Cumulative	Total Elevated and Subway Lines	Per Cent Cumulative	Total	Per Cent Cumulative	Total	Per Cent Cumulative	
15 and under 16	4	..	..	..	4	..	..	...	...		9	...	10 and under 11
16 and under 17	2	..	..	..	6	..	..	...	2	...	8	..	13 and under 14
17 and under 18	53	..	..	..	80	..	..	...	28	...	28	..	14 and under 15
18 and under 19	120	1	..	..	168	1	..	...	141	1	114	1	15 and under 16
19 and under 20	193	1	..	..	295	2	..	..	136	2	102	2	16 and under 17
20 and under 21	374	2	..	..	455	3	..	..	253	4	179	3	17 and under 18
21 and under 22	471	4	..	..	583	5	..	...	511	8	387	6	18 and under 19
22 and under 23	779	7	..	..	1092	9	..	...	424	11	474	10	19 and under 20
23 and under 24	1047	10	..	..	1350	13	95	8	732	16	661	15	20 and under 21
24 and under 25	2214	17	..	..	3521	25	57	13	662	21	669	20	21 and under 22
25 and under 26	2012	24	..	..	2287	33	271	36	899	28	923	27	22 and under 23
26 and under 27	1752	30	..	..	2074	40	386	70	1038	35	1168	36	23 and under 24
27 and under 28	3905	43	..	..	3392	51	286	94	1065	43	1162	45	24 and under 25
28 and under 29	3944	56	..	..	3102	61	31	97	1358	53	1335	56	25 and under 26
29 and under 30	1546	61	..	..	1871	67	..	..	1427	63	1516	67	26 and under 27
30 and under 31	5520	79	19	2	4720	83	..	...	1163	72	1010	75	27 and under 28
31 and under 32	1875	85	..	..	1373	88	..	...	2531	90	2189	92	28 and under 29
32 and under 33	3715	97	17	3	3103	98	6	97	293	92	218	94	29 and under 30
33 and under 34	374	98	77	9	327	99	31	100	664	97	498	97	30 and under 31
34 and under 35	40	99	346	37	34	99	..	...	243	99	249	99	31 and under 32
35 and under 36	57	99	204	54	47	99	..	...	54	99	42	100	32 and under 33
36 and under 37	26	99	..	..	27	99	..	...	33	99	37	100	33 and under 34
37 and under 38	149	99	568	100	133	100	..	...	1	99	..	...	34 and under 35
38 and under 39	17	99	..	..	13	100	..	...	8	99	..	...	35 and under 36
39 and under 40	9	99	..	..	7	100	..	...	3	100	..	...	36 and under 37
40 and under 41	65	100	..	..	41	100	..	...	3	100	..	...	37 and under 38
42 and under 43	36	100	..	..	..	..	..	...	24	100	.	...	38 and under 39
45 and under 46	64	100	..	..	..	..	..	...	23	100	..	...	40 and under 41
....	..	..	..	..	..	..	..	...	12	100	..	...	43 and under 44
		Group One							Group Two				

The basis for payment of the car crews in about 50 per cent of the eighty-three cities was the actual time worked each day calculated to the minute. Where this system was not in vogue, various aliquot parts of an hour were used to determine the wage, and under the latter system two methods were employed; first, payment to the nearest aliquot part; second, payment to the next aliquot part. Approximately forty-two companies used the first aliquot part method, which, as can be readily seen, is practically equalizing in its effects as between the company and the men. On the other hand, five companies, among which were those operating in Cleveland and Boston, made payment on the next aliquot part basis. This system of payment always inures to the benefit of the employee.

The liberality of some companies is illustrated by the fact that in many instances time not on duty was allowed and paid for in addition to the time actually worked. Such an arrangement, of course, applied especially to the triple runs and split or swing runs, in order to provide a reasonable compensation therefor. Twenty-four cities, or 29 per cent of the total of eighty-three, had some definite scale fixed according to which the men were paid under certain circumstances when they were not on duty. Among the more important cities in which this arrangement is in effect are Boston, Buffalo, Chicago, Cleveland, Milwaukee, New York, New Orleans, Philadelphia, Pittsburgh, Rochester, San Francisco, Seattle and Washington, D. C.

A number of street railway companies (in nine cities out of the total of eighty-three) pay the car crews for reporting time. In twenty-one cities allowance is made for time consumed in filling out daily work and accident reports. In twenty-two cities, meals or cash allowances are given to the men when they are held for orders after finishing their regular day's work.

In order to assure the "extra" motorman or conductor that he will earn a certain minimum wage, the practice in sixteen cities is to guarantee to these extra men a certain minimum wage. The guarantee assumes either one of two forms—guarantee in time, or guarantee in amount of earnings. Table II gives a list showing the different guarantees and the companies paying them:

TABLE II—CITIES IN WHICH A GUARANTEED WAGE IS GIVEN TO "EXTRAS"

Cities	Guaranteed Hours or Rate
San Antonio	5 hours per day
Boston	6.3 hours per day
Superior	7 hours, first 3 months; 8 hours, second 3 months; 9 hours after 6 months
Birmingham	9 hours per day
Portland, Me.	10 hours per day
Pittsburgh	$1.40 per day for any time on duty less than 5 hours
New York (Brooklyn, surface lines), Charleston, S. C., Grand Rapids	$1.50 per day
Minneapolis and St. Paul	$2 per day
Philadelphia ("last-run" men)	$2.25 per day
Springfield, Mass.	Full day's pay
Milwaukee, Newark and Philadelphia	$12 per week
Detroit	$19 semi-monthly
Seattle (S. R. & S. Ry. Co.)	$20 per half month
Cincinnati, Indianapolis, Kansas City	$45 per month
Des Moines	$50 per month
Seattle (P. S. T. L. & P. Co.)	$55 per month

Thirty-four other companies paid the extra men for reporting, even though they did not receive the runs that had been originally assigned to them. Time allowances for which payment is made varied according to the following data:

Seven companies paid for one hour.
One company paid for one to two hours.
Two companies paid for two hours.
One company paid for two hours to half day.
One company paid for five hours.
Thirteen companies paid for time held.
One company paid for one-half time held.
One company paid for five minutes only as reporting time.
Three companies paid for time of run or trip assigned.
One company paid $1, or for actual time held if it would amount to over $1.
One company paid $1.25.
One company paid 15 cents per hour for time held.
One company paid for one hour for second report and two hours for the third.

The customary practice for remunerating the men for overtime work is to pay them only at the regular rate. However, the companies in eleven cities paid extra for overtime. There were only eighteen cities out of the eighty-three, or 22 per cent, in which the excess of time on duty caused by obstructions to traffic or breakdowns on the line were not paid for at the regular rate, and even where these exceptions were in force, the allowances were extremely reasonable as far as the employees were concerned.

A very commendable practice on the part of twelve street railway companies has been to give premiums to car crews for the prevention of accidents. This premium takes the form either of additional pay or a bonus, or the granting of an extra day off in a certain period of time.

Table III shows the rewards granted the car men for care in the operation of cars and the prevention of accidents.

TABLE III—CITIES IN WHICH PREMIUMS ARE GIVEN TO CAREFUL EMPLOYEES

Name of City	Premiums Given to Careful Employees
Jacksonville	One day off with pay each month after the third month in which no accident occurred.
Louisville	Balance in the accident fund not expended for damages was distributed among employees as a bonus.
Memphis	Bonus of 1 cent per hour for each hour on duty in which employees had no accident, 100 hours being deducted for each accident that occurred and payments being made every six months.
Nashville	Bonus based on hours as in Memphis, with a deduction of 200 hours for each accident.
Norfolk and Richmond	Each carman given uniform for each six months of service in which he had no accident costing the company more than $10.
San Francisco	The decrease in damage claims paid in one year over the preceding year was distributed among employees.
Washington, D. C.	Schedule of bonuses under the merit and profit sharing plans.
Witchita	A month without accidents entitled men to their wages for two days off that month.
Wilmington, Del.	Bonus of 1 cent an hour for each month in which employee had no accident.

Wherever companies have an increasing wage rate for the year or a part thereof, the advance for each year of service averages ordinarily about 1 cent per hour. The custom has been to make the initial advances at more frequent intervals of time than the latter ones. After the first or second year the rate advances year by year up to a maximum flat rate. The length of time in which the annual advance in rate continues, depends largely upon the individual company. In some cases it continues up to the fifth year of service, while other companies provide for an annual advance over a period of ten years or longer. Out of the eighty-three cities in Group 1, the companies in twenty-eight cities or 34 per cent provide for an increase in wages in the first or second six months of employment. For the cities from which data were obtained by correspondence—Group 2—110 companies or 34 per cent provided for an increase of wages in the first year. The number of companies in Group 1 whose annual rate of advance continued longer than the fifth year was fifty-eight, while in Group 2 the number reached 114.

In Table IV are listed the figures showing the average rate of wages per hour for the regular and extra motormen and conductors in the cities investigated by the special agents of the bureau.

The cities in Group 1 have had a range from a minimum average for regular motormen from 18.7 cents per hour to 44.1 cents per hour, while conductors in the same eighty-three cities had an average wage per hour ranging from 17.6 cents to 44.1 cents. An analysis of the same figures for the cities of Group 2 for the regular motormen, shows a minimum rate per hour of 14.8 cents and a maximum of 38.3 cents, while conductors had a minimum of 14.0 cents and 38.3 cents respectively.

HOURS OF LABOR AND DAY WORK BY CAR CREWS

The statistics concerning the hours of labor served by the car crews on their daily runs are divided into three groups: (1) the number of regular runs, with each specified number of hours on duty from Monday to Friday; (2) the same for Saturday; (3) the same for Sunday. In the first group, with the total number of motormen, conductors and guards on the elevated and subway lines included, there were:

442 runs from 7½ to 8 hours, or 7.8 per cent of the total
701 runs from 8 to 8½ hours, or 12.4 per cent of the total
1,228 runs from 8½ to 9 hours, or 21.8 per cent of the total
1,385 runs from 9 to 9½ hours, or 24.6 per cent of the total
868 runs from 9½ to 10 hours, or 15.4 per cent of the total
150 runs from 10 to 10½ hours, or 2.7 per cent of the total

While out of the total runs on the surface lines for the same group:

368 or 1.3 per cent were from 7½ to 8 hours
1,518 or 5.0 per cent were from 8 to 8½ hours
3,287 or 10.8 per cent were from 8½ to 9 hours
5,893 or 19.4 per cent were from 9 to 9½ hours
6,992 or 22.9 per cent were from 9½ to 10 hours
6,763 or 22.2 per cent were from 10 to 10½ hours

In almost every city in which information was given, the regular runs were chosen by the men in the order of seniority of service. This was not true, however, for the lines in Memphis, Nashville, New York (Third Avenue Railway), Norfolk, Richmond, St. Louis, San Antonio, Springfield, Ohio, and Wilmington, Del., where they are assigned by company officials. Generally the selections of runs were made from two to four times a year. Moreover, in all the cities the men are excused from duty upon request to a reasonable extent and their runs given to extra men. Thirteen cities have an established rule as to the number of days off duty that may be taken.

CHANGE IN THE PERSONNEL DURING ONE YEAR

The electric railway industry is, so far as its employees are concerned, comparatively free from industrial depression, bad weather or seasonal variations in the labor demand, but it has long been a problem of the electric railway manager to reduce the percentage of turn-over of his labor force. Some interesting figures are uncovered as the result of the Bureau of Labor's investigation. In computing the percentage of turn-over it was necessary first to get the mean of the number employed at the beginning and at the end of the year and then to use this mean as the basis of computation, in the absence of the more exact figure showing the average employed during the year. "If the force was increased, the net increase was subtracted from the number hired, leaving the net number hired to maintain the force as distinguished from the increase in the force. This number was then divided by the mean force for the year, giving the percentage of the turn-over. If there was a decrease in the force during the year, the number hired was divided by the mean force for the year to ascertain the turn-over."

There is a much greater turn-over of conductors than of motormen, as is illustrated by Table V.

TABLE V—CLASSIFIED PER CENT OF TURNOVER FOR MOTORMEN AND CONDUCTORS

Classified Per Cent of Turnover	Number of Companies with Each Classified Per Cent of Turnover for	
	Motormen	Conductors
Under 10 per cent	[1]13	8
10 and under 20 per cent	[1]19	10
20 and under 30 per cent	[1]15	11
30 and under 40 per cent	13	16
40 and under 50 per cent	14	9
50 and under 60 per cent	[1]8	9
60 and under 70 per cent	3	8
70 and under 80 per cent	1	5
80 and under 90 per cent	[1]3	2
90 and under 100 per cent	2	1
100 per cent and over	5	12
Total companies	[2]96	[3]91

[1] Including 1 company for which data for motormen and conductors were not reported separately.

[2] Including 5 companies for which data for motormen and conductors were not reported separately.

[3] Not including 5 companies for which data for motormen and conductors were not reported separately.

TABLE IV—AVERAGE RATE OF WAGES OF MOTORMEN AND CONDUCTORS IN CITIES FROM WHICH DATA WERE OBTAINED BY SPECIAL AGENTS

City	Average Rate of Wages per Hour of			
	Motormen		Conductors	
	Regular	Extra	Regular	Extra
Altoona, Pa.	$0.243	$0.213	$0.239	$0.202
Atlanta, Ga.	.233	.200	.230	.196
Augusta, Ga.	.208	.173	.197	.173
Binghamton, N. Y.	.215	.200	.208	.200
Birmingham, Ala.	.221	.187	.215	.182
Boston, Mass.:				
Boston Elevated Ry. Co.—				
Surface lines	.308	.276	.300	.272
Elevated lines	.325	.304	[1].273	[1].257
Brockton, Mass.	.275	250	.270	.247
Buffalo, N. Y.	.273	.233	.258	.231
Butte, Mont.	[2].441	[2].402	[2].441	[2].402
Charleston, S. C.	.204	.174	.198	.172
Charlotte, N. C.	.189	.166	.183	.165
Chattanooga, Tenn.	.225	.197	.228	.188
Chicago, Ill.:				
Chicago Elevated Railways	.340	.327	.268	.240
Chicago Surface Lines	.315	.266	.310	.259
Cincinnati, Ohio	.258	.217	.248	.206
Cleveland, Ohio	.300	.278	.299	.276
Dallas, Tex.:				
Dallas Electric Corporation	.231	.202	.223	.200
Northern Texas Traction Co., Oak Cliff division of Fort Worth lines	.236	.207	.231	.206
Davenport, Iowa	.277	.241	.270	.234
Denver, Colo.	.296	.262	.293	.254
Des Moines, Iowa	.290	.275	.286	.241
Detroit, Mich.	.317	.276	.314	.273
Evansville, Ind.	.225	.195	.216	.192
Grand Rapids, Mich.	.264	.232	.258	.231
Houston, Tex.	.236	.213	.228	.208
Indianapolis, Ind.	.256	.212	.245	.210
Jacksonville, Fla.	.200	.190	.199	.190
Kansas City, Mo.	.259	.224	.249	.222
Lincoln, Nebr.	.248	.202	.241	.200
Little Rock, Ark.	.222	.191	.212	.185
Los Angeles Cal.	.282	.251	.276	.251
Louisville, Ky.	.237	.221	.236	.221
Lowell, Mass.	.276	.250	.274	.248
Manchester, N. H.	.268	.234	.268	.238
Memphis, Tenn.	.213	173	.206	.173
Milwaukee, Wis.	.268	233	.265	.233
Minneapolis and St. Paul, Minn.	.280	.239	.275	.236
Mobile, Ala.	.216	.193	.208	.190
Nashville, Tenn.	.204	.185	.202	.184
Newark, N. J.	.276	.241	.262	.239
New Bedford, Mass.	.290	.255	.287	.255
New Britain, Conn.	.260	.231	.257	.225
New Haven, Conn.	.264	.231	.260	.227
New Orleans, La.	.240	.240	.240	.240
New York, N. Y.:				
Brooklyn Rapid Transit Co.	.263	.244	.259	.243
New York & Queens County Ry.	.231	.221	.228	.221
New York Rys. Co.—				
Horse-car lines	[3].221	[3].214	[4].217	[4].213
Storage-battery car lines	[4].250	[4].250	[4].225	[4].225
All lines except horse and storage-battery car lines	[4].274	[4].252	[4].252	[4].241
Third Avenue Ry. Co.—				
The Bronx	.268	.247	.256	.243
Manhattan	.270	.252	.248	.238
Interborough Rapid Transit Co.—				
Elevated lines	[5].368	[5].318	[5].256	...
Subway lines	[5].365	[5].313	[5].254	...
Brooklyn Rapid Transit Co. (elevated lines)	.370	.319	.246	.242
Norfolk, Va.	$0.208	$0.182	$0.208	$0.180
Oakland, Cal.	.351	.320	.341	.309
Oklahoma City, Okla.	.252	.209	.235	.202
Omaha, Nebr.	.275	.241	.265	.241
Peoria, Ill.	.279	[1].238	.275	[1].238
Philadelphia, Pa.:				
Philadelphia Rapid Transit Co.—				
Elevated lines	.329	.306	.298	...
Surface lines	.298	.272	.295	.265
Pittsburgh, Pa.	.298	.267	.296	.258
Portland, Me.	.223	.225	.222	.218
Portland, Ore.	.291	.261	.286	.255
Providence, R. I.	.279	.258	.277	.256
Pueblo, Colo.	.285	.253	.275	.248
Reading, Pa.	[2].230	[2].230	[2].230	[2].230
Richmond, Va.	.205	.181	.199	.182
Rochester, N. Y.	.280	.272	.280	.265
Sacramento, Cal.	.316	.290	.315	.290
Saginaw, Mich.	.221	.206	.219	.204
St. Louis, Mo.	.263	.232	.254	.231
Salt Lake City, Utah	.328	.280	.326	.283
San Antonio, Tex.	.235	.213	.232	.206
San Francisco, Cal.:				
California Street Cable Ry. Co.	[3].311	[3].257	.308	.250
Municipal Rys. of San Francisco	[2].375	[2].375	[2].375	[2].375
United Railroads of San Francisco	.308	.259	.288	.259
Savannah, Ga.	.187	.173	.176	.174
Scranton, Pa.	.264	.231	.264	.230
Seattle, Wash.:				
Puget Sound Traction, Light & Power Co.	[4].297 [5].285	(6)...	[5].278	(6)...
Seattle Municipal Street Ry.	[2].375	[2].375	[2].375	[2].375
Seattle, Renton & Southern Ry. Co.	.296	.266	.280	.238
Sioux City, Iowa	.234	.200	.222	.200
South Bend, Ind.	.212	.193	.211	.190
Spokane, Wash.:				
Spokane & Inland Empire R. R. Co.	.294	.271	.287	.269
The Washington Water Power Co.	.299	.263	.297	.263
Springfield, Ill.	.224	.190	.213	.190
Springfield, Mass.	[7].308	[7].305	[7].307	[7].297
Springfield, Ohio	.214	.227	.240	.221
Superior, Wis.	.250	.225	.239	.225
Syracuse, N. Y.	.280	.270	.280	.266
Tacoma, Wash.	[3].256 .260	[3].240 .237	.252	.232
Toledo, Ohio	.262	.232	.257	.231
Topeka, Kans.	.219	.205	.212	.200
Washington, D. C.:				
Capital Traction Co.	[8].240	[8].227	[8].234	[8].227
Washington Ry. & Electric Co.	[9].235	[9].216	[9].230	[9].216
Wheeling, W. Va.	.267	.220	.243	.220
Wichita, Kans.	.234	.209	.218	.201
Wilmington, Del.:				
People's Railway Co.	.200	.187	.198	.185
Wilmington & Philadelphia Traction Co.	.240	.216	.238	.216

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[1] Conductors are called guards in Boston.

[2] Motormen and conductors worked interchangeably.

[3] Rate for drivers. Computed from daily rate on 10-hour-day basis. Runs of under 8 hours on duty were paid for as 8; over 8 to 9, paid for as 9; over 9 to 10, paid for as 10; over 10, excess over 10 paid for at regular rate.

[4] Computed from daily rate on 10-hour-day basis. Runs of less than 8 hours on duty were paid for as 8, over 8 to 9, paid for as 9; over 9 to 10, paid for as 10; over 10, excess over 10 paid for at regular rate.

[5] Computed from daily rate on 10-hour-day basis.

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[1] Motormen and conductors; worked interchangeably.

[2] Flat rate.

[3] Rate for gripmen.

[4] Rate for gripmen, including extra men; not reported separately.

[5] Rate for regular and extra men; not reported separately.

[6] Extra men are included with regular men; not reported separately.

[7] Computed from daily rate on a 9-hour-day basis.

[8] Includes bonus.

[9] In addition employees received in the calendar year 1914 from a profit-sharing fund an allowance equivalent to approximately three-fourths of 1 cent per hour.

EXAMINATIONS OF NEW EMPLOYEES

In order to improve the standards of service and the character of men engaged in giving that service, the majority of the companies at the present time are putting their men through rigid physical and mental examinations. In forty-two cities there are physical examinations given to prospective employees similar to that given to applicants for life insurance, while in sixteen other cities there is a general medical examination but of a less rigid character.

In all but four cities applicants are required to be within a certain age limit as a condition of employment. The prevailing age required for entrance is twenty-one years, although Springfield, Mass., employs men eighteen years of age, and Reading and Altoona, Pa., employ those who are but twenty. A number of cities have also established a maximum age limit beyond which the individual will not be employed. The lowest maximum age limit is found in Minneapolis, being twenty-eight years, and the highest maximum limit is found in four cities where men fifty years old will be employed.

It is an invariable rule that newly employed motormen and conductors must take a course of instruction to learn the duties of their positions. The length of time that the "learner's period" continues in most cases depends upon the individual. In ten cities, the new employee is paid while learning. Many of the companies require bonds or a cash deposit to be furnished by the employee to insure faithful service or to cover shortages.

ACCIDENT, SICK AND DEATH BENEFITS

The last decade has seen a tremendous increase in the co-operation between employer and employee, and nowhere is this more noticeable in the electric railway industry than in the accident, sick and death benefits bestowed by the companies on their men. Out of the ninety-five companies tabulated by the Bureau of Labor, forty-one companies provide relief, exclusive of the state compensation acts, not only for the employees injured while on duty, but sometimes also for dependents of an employee in case of his death caused by accident while on duty. This represents 43.2 per cent of the total ninety-five companies. State compensation acts are operative in forty-two other cities in which these ninety-five companies operate.

EMPLOYEES OTHER THAN CAR CREWS

Chap. V of the report gives in tabular form, covering fourteen pages, the number of laborers and linemen (line and track) and car repairmen (carhouse and shop) with the rate of wages, classified according to cities.

ASSOCIATIONS OF EMPLOYERS AND EMPLOYEES

In Chap. VI the early history of the American Electric Railway Association, organized Dec. 13, 1882, is briefly sketched. The solution of the problems at the time the industry was changing from horse to electricity as a motive power is developed.

The first organization of the street railway employees was a chapter of the Knights of Labor in New York. Eventually various chapters of the assembly of the Knights of Labor were consolidated with the American Federation of Labor in 1893. Considerable space is devoted to the legislative activities of, and the legislation which it is stated has been secured by, the Amalgamated Association of Street & Electric Railway Employees. Since 1893 twenty-nine states have adopted legislation providing for inclosed vestibule cars, while ten states have specific provisions in their statutes, limiting the number of hours which constitute a day's work for the electric railway men. Moreover, as a result of the activities of this association, a number of cities have written into their franchises with the electric railway company, a clause providing for the arbitration of any dispute as to wages or hours between the company and the men. Such a provision now exists in the franchises of Detroit (Mich.), Wheeling, (W. Va.), Monroe, (La.), and East Liverpool, (Ohio).

TABLE VI—AMOUNT OF DEATH, DISABILITY, AND OLD-AGE BENEFITS PAID EACH YEAR BY THE AMALGAMATED ASSOCIATION, 1896 TO 1914

Year	Death Claims	Disability Claims	Old-age Benefit Claims	Total
1896..........	$200	....	....	$200
1897..........	375	....	....	375
1898..........	400	....	....	400
1899..........	550	....	....	550
1900..........	675	....	....	675
1901..........	1,000	$150	....	1 150
1902..........	1,375	150	....	1,525
1903..........	6,275	925	....	7,200
1904..........	15,175	675	....	15,850
1905..........	12,900	400	....	13,300
1906..........	12,300	1,600	....	13 900
1907..........	16,900	1,200	....	18,100
1908..........	16,700	1,300	....	18,000
1909..........	17,500	800	....	18,300
1910..........	22 100	600	....	22,700
1911..........	24 900	500	....	25,400
1912..........	109,750	5,200	....	114,950
1913..........	134,000	4,200	....	138,200
1914..........	189,793	8,700	$1,600	200 003
Total	$582,868	$26,400	$1,600	$610,868

Probably one of the fundamental features of the employees association is the death, disability and old age benefits, paid by the local chapters to the members thereof. Table VI sets forth the amount of such claims paid yearly by the association, as given in the report.

A feature of no little importance in this portion of the bulletin is a brief narrative statement of the principal facts of the large street railway strikes in the United States.

AGREEMENTS BETWEEN EMPLOYERS AND EMPLOYEES

Under this head a rather complete digest has been made of eighty-four agreements in effect in 1914, between the companies and the Amalgamated Association. This digest applies strictly to employees on city lines or city and interurban lines combined; those sections of the agreements referring solely to interurban employees are omitted. The eighty-four agreements cover 108 local divisions of the Amalgamated Association in 119 cities, and approximately 14,000 miles of track are operated by the companies which are parties thereto.

Generally, the agreements cover all of the employees who are members of the local chapter of the association, irrespective of the nature of their employment. The time for which the agreement is to be enforced varies from one to ten years, and in some cases is an indefinite period. The following table gives an idea of the time that these agreements are to be effective:

23 agreements for a period of 1 year
12 agreements for a period of 2 years
35 agreements for a period of 3 years
4 agreements for a period of 4 years
3 agreements for a period of 5 years
1 agreement for a period of 6 years
1 agreement for a period of 10 years
5 agreements for no definite period

There is a provision in seventy-seven, or 92 per cent of the total number of agreements, to the effect that the company, through its properly accredited officers, will treat with the officers of the local association upon all differences or grievances that may arise. As to the matter of employees becoming members in the local association, thirty agreements make membership compulsory while the other thirty-seven are optional.

Eighty-one out of the eighty-four agreements deal with the question of suspending and discharging employees. The majority of the sections relating to this topic provide that a member of the association suspended or discharged, if after the investigation is found not guilty of the charges, is to be reinstated to his former position and paid for the time lost by reason of such action at the regular rate of wages.

Sixty-nine of the agreements make provisions for the arbitration of differences between the association and the street railway company. The clause generally used is to the effect that all differences or grievances not amicably adjusted between the officials of the company and the association are to be submitted to arbitration upon the request of either party, although in a few agreements the question must arise under the agreement before they may be arbitrated. Twenty out of the eighty-four agreements contain provisions concerning strikes and lockouts as follows:

10 agreements provide for no sympathetic strike.
1 agreement provides for no sympathetic lockout.
4 agreements provide for no strike during life of agreement.
3 agreements provide for no lockout during life of agreement.
15 agreements provide for no strike pending arbitration.
7 agreements provide for no lockout pending arbitration.
2 agreements provide for no strike unless company refuses to arbitrate.
1 agreement provides for no strike except for violation of agreement.

Of the seventy-five agreements which refer to the assignment of runs, in seventy-four there is a provision that seniority of service shall prevail in such assignment, while the other one permits the company to assign runs according to the schedule of rotation.

Although seventy-four agreements contain some references to the hours of labor of the employees, the sections referring to this topic cannot be combined to any extent on account of the many variations.

The National Safety Code from the Electric Railway Standpoint—II

In This Issue the Authors Complete the Synopsis Begun in the Issue for Sept. 15, Summarizing Parts 3 and 4 of the Code

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[NOTE—*In the first section of this syllabus of the National Electrical Safety Code the authors analyzed the contents of the sections relating to the installation and maintenance of stations, and the installation and maintenance of signal lines. In the following article they analyze those on the installation and maintenance of utilization equipment, and the rules to be observed in the operation of electrical equipment in lines. Electric railway managers and engineers now have in their hands a wonderfully accurate and complete guide to the code which will enable them to study even more effectively the results of its application during the trial year now rapidly approaching a close.*—EDS.]

Summary of Part III

Installation and Maintenance of Utilization Equipment

THE rules of Part 3 include a number of subjects specially applicable to the electric railway industry. It is not attempted to summarize them completely. Those items having no direct general bearing on electric railway operation are omitted. A publication in the form of an index supplementing the code is now under preparation. This will become available at an early date, and with its aid one may readily learn in more complete detail the various subjects treated, thus permitting the present syllabus to be briefer.

Scope—The rules apply to the installation of motors, fixtures and other electrical utilization equipment and of the wiring in connection therewith, where such equipment or wiring is accessible to other than qualified electrical operators, and where the operating voltage is between 25 and 750 volts. The conditions are outlined under which any given rule may be modified or waived (300).

Arrangement—For convenient use the rules are divided into ten sections, 30 to 39, covering the subjects noted below.

Section 30. *Protective Arrangements*—Electrical utilization equipment is required to be so installed as to minimize the attendant life hazard and in addition to complying with the rules of this code compliance with the National Electrical Code and other non-conflicting accepted standards is recommended (302). The installation must thereafter be properly maintained with repairs and changes made only by properly qualified persons (303). Non-current-carrying parts which persons can touch are required generally to be permanently grounded as per methods in Section 9, with the infrequent permissible exceptions noted (304).

Current-carrying parts are required generally to be either guarded (306), isolated by elevation (306) or provided with adequate working spaces, and the voltage and other determining conditions are outlined (305 and 306). Equipment, if in hazardous locations, must have sparking or arcing parts specially inclosed (307). Storage batteries, transformers and lightning arresters, where used in connection with utilization equipment, must be installed generally as station equipment (308). All electrical equipment is to be suitably identified when necessary for safety (309).

Section 31. *Conductors*—Automatic cutouts are required to protect conductors against excessive current, excepting neutral conductors in three-wire systems and certain other conductors (310). Mechanical guards or flameproof covering are called for under certain given conditions and bare conductors are restricted to certain locations (311). Even where mechanical disturbance is unlikely, effective isolation, guards, mats and other protection is specified, under given determining conditions of voltage and other factors, to safeguard persons in the vicinity of the conductors (312, 313).

Conduit in gaseous surroundings must be sealed to prevent entrance of gases (314). A number of special rules cover the running of conductors to avoid excessive inductance, care in the use of pendants and portables, and requirements for taping of joints and for certain restrictions or safeguarding of temporary wiring. Certain methods for guarding, grounding or isolating service conductors in conduits are also outlined (315).

Section 32. *Fuses and Other Cutouts, Switches and Controllers*—Detailed requirements are given for the arrangement and design of these protective and control devices, which must be accessible, must identify the equipment controlled, must not be subject to accidental operation (320), and must be suitably inclosed if in gaseous locations (321). Some of the places and conditions are specified where the use of switches or disconnectors is required (322-23). Arrangement for locking or blocking of switches is required under given conditions with certain exceptions noted (320).

Provision must be made for the safe disconnection of fuses from the circuit before the fuses are handled, this disconnection to be automatic where any but qualified operators have access (324). The suitable isolation or shielding of fuses or circuit breakers is required to avoid the burning or striking of persons in their vicinity (325). Grounding of exposed non-current-carrying metal parts of switches or cutouts is required under certain given conditions (326), and the special requirements for suitably guarding live parts of these devices are detailed (327), including use of sufficient working space, and in general inclosure of such parts as are above 150 volts to ground (327).

Section 37. *Portable Devices, Cables and Connectors (Not Including Those for Signal Systems)*—The grounding of exterior metal of portable devices is strongly recommended where practicable for devices operating above 150 volts to ground or at even lower voltages wherever located in bathrooms, laundries, etc., where the good contacts possible make extra precaution necessary (371). Cable connectors are required to be so arranged that live parts are not exposed (372). The use of portable cords and connectors having identified parts is required where portable devices are grounded. Detailed requirements are given on the character (373) and arrangement of portable and pendant cords under given conditions of voltage and surroundings (374).

Section 38. *Electrically Operated Cars, Cranes and Elevators*—Special requirements are given for the guarding of live and moving parts, according to the special conditions existing (380). Grounding is required for non-current-carrying metal parts of electrical equipment over 150 volts to ground, and for similar parts of portable cranes, derricks, etc., in the vicinity (381). The energy supply to cars, elevators and cranes is required to be controllable at readily accessible points, and the movement of such vehicles is required to be controllable only by an authorized operator (382) and conveniently located for him (383). In subways auxiliary systems of emergency lighting are required (384).

Section 39. *Telephone and Other Signal Apparatus on Circuits Exposed by Supply Lines*—It is required that non-current-carrying parts be made harmless by the use of suitable protectors, by grounding or by installation of the apparatus concerned in insulating booths according to various given conditions (390). The guarding of current-carrying parts in specified manner is also required under certain defined conditions (391). Certain specified protection against induced voltages is required for signaling equipment where under normal operating conditions more than 150 volts to ground would otherwise exist on the signal lines and connected devices (392).

Means for grounding of arresters on signaling systems are specified in some detail, these applying in lieu of the grounding methods of Appendix A, which are elsewhere generally applicable throughout the rules (393).

Summary of Part IV

Rules to be Observed in the Operation of Electrical Equipment and Lines

The rules of Part 4 are summarized in a slightly different manner from the balance of the code, giving rather a review than a summary such as is given for the other parts. However, it is believed that the form in which this is presented will indicate clearly the nature and scope of these operating safety rules.

Necessity for Operating as Well as Construction Rules—Even with all the safeguarding of construction that is feasible, the requirements for continuity of service and maintenance of its efficiency demand the attendance of employees on or about live electrical equipment. Sometimes the complete guarding of live parts, especially at the lower voltages even where acceptable to operators, would not be practicable; hence dependence on liberal spaces, insulating platforms and portable insulating guards or appliances for working on live parts may be necessary. The operating safety rules are intended to supplement the physical safeguarding where this cannot be complete or where it must be occasionally removed or rendered inoperative.

Scope—The rules are divided into two principal parts, one for electrical operations in general and one covering commercial signal operation. The rules are preceded by a statement on their scope calling attention to the fact that while most of the rules find application in larger industrial or private plants, and even in moderate-sized utilities, some do not apply or apply less fully in the smaller. Attempt was not made to restrict their scope to rules applicable to all installations, large and small, because such a restriction would have required omission of many rules necessary in many instances as a guide, and tending to no confusion in cases where they do not apply.

Rules for Employers—In the rules for electrical operation in general two sections on organization and protective methods and devices are addressed to the employer, the first section calling for the issuance of rules, the proper choice and instruction to employees to assure their qualifications for the duties assigned and the arrangement of the organization to avoid dangerous misunderstandings. The protective methods specified in the second section cover the supervision of uninstructed persons, the use of diagrams to assist persons in direction of operation, the use of clear instructions to employees and the provision of adequate protective appliances and signs.

Rules for Employees—The rules addressed to the employees comprise five sections addressed to electrical employees in general, and eight sections covering different special kinds of electrical operations, including work around supply stations and switchboards, work on underground and overhead lines, work about series lamps, work about meters, testing operations about the electrical equipment of tunnels and subways, and work about signal lines used in conjunction with supply lines.

The sections addressed to electrical employees in general begin with one covering general precautions requiring familiarity with the rules, fitness for the work in hand, proper supervision of assistants, simple precautions about live parts, and the use of proper safety appliances, safety belts, etc., the use of proper types of extinguishers only about live parts and the repetition of messages to avoid dangerous misunderstandings.

A second section deals with the relations and procedures in general necessary for workmen in order to avoid the hazards through misunderstandings, including the duties of chief operator, the duties of foremen, the necessity for special authorizations for hazardous work, the precautions in restoring service afterward and the tagging of circuits being worked on, and measures to protect traffic where work is being done. The next section covers the specific precautions to be observed in handling live equipment or lines of varying voltages, including the stringing and tapping of wires.

The next two sections include a detailed procedure for assuring that the killing of lines to protect workmen is carried out in a reliable manner to avoid subjecting men to danger through misunderstandings.

Rules for Commercial Signal Systems—The rules for commercial telephone and telegraph systems are to a large extent substantially repetitions of rules already given for electrical employers and employees in general, but with such of the former rules omitted as have no particular bearing on the commercial signal operation. This has permitted a briefer set of rules, which is regarded by both employers and employees in commercial signal work as more suitable for placing in the hands of employees who usually have no occasion to acquaint themselves with the hazards of other than signal operation.

Copper-Zone System Approved for Boston & Worcester Street Railway

Massachusetts Commission Authorizes Rate of Two Cents a Mile for Six Months' Trial—Tickets at Rate of 100 Miles for $1.70

THE Public Service Commission of Massachusetts on Sept. 22 authorized the installation of a copper-zone system on the Boston & Worcester Street Railway, Boston, Mass., the most representative interurban system of the State. The commission approved the schedule of the company with the exception of certain minor fare limits and with the addition of the sale of twenty-trip ticket books.

The company has had irregular, over-lapping zones, in each of which the cash fare was 6 cents. Including transfer privileges, these zones varied from 9.85 to 3.16 miles in length and averaged about 5.1 miles. Fifty-ride tickets were sold for $2.75, with round-trip tickets at a substantial reduction from the regular fare between important points. The average fare per revenue passenger on all lines in 1916 was 5.51 cents.

The new schedule is based on a uniform charge of 2 cents a mile, with a minimum fare of 6 cents for a three-section ride. Books of 100 miles are to be sold for $1.70, with a minimum charge of three mileage coupons for any single ride. Round-trip tickets with a similar discount of 15 per cent are to be sold between the principal points and the easterly terminus of the road at Chestnut Hill. As at present, workingmen's tickets in the city of Marlborough will be sold at the rate of thirty for $1, each coupon good for a ride covering not more than three fare sections within the city limits during specified hours. In general, the new schedule effects an upward revision of fares, the company estimating that the average fare per revenue passenger will be 6.43 cents, an increase of 16.7 per cent. In view of a reduction in traffic, however, it is estimated that the total increase in revenue, based on the 1916 figures, will be but $74,000 or about 10 per cent.

DEMONSTRATED NEED OF MORE REVENUE

The railway, which began operation in 1903, now operates 83.13 miles of track, of which 31.22 miles are second main track. About 25 miles are on private right of way. The average speed of operation is 16.8 m.p.h., as compared with a general Massachusetts average of 9.9 m.p.h. Nearly all the service is of the interurban type. The population of the territory served, exclusive of Brookline, Worcester and Boston, increased from 95,585 in 1905 to 110,953 in 1915 (16.08 per cent); and including the above, from 842,536 in 1905 to 1,032,579 in 1915 (24.93 per cent).

The passenger revenue increased from $385,060 to $689,338 from 1904 to 1917; the revenue from freight and express increased from $200 to $116,674; the total operating revenue rose from $390,998 to $805,545, and operating expenses increased from $210,962 to $553,905. The operating expenses per car-mile increased from 12.01 cents to 25.11 cents, due chiefly to the growth of maintenance expense caused by the advancing age of the property and the increases, especially rapid in the last two years, in the prices of materials, supplies and labor. The company has never paid dividends in excess of 6 per cent, and since 1911 the rate has ranged from 2.5 to 3.75 per cent. The commission finds that the company has been well managed; that its securities have been issued without overcapitalization and that its need of additional revenue is plain. The capitalization is $61,000 per mile of track, due largely to roadway construction expenses.

The company frequently increased its charges in the past. Originally the one-way fare from Chestnut Hill to Lincoln Park, Worcester, was 30 cents. This was gradually increased to 50 cents in 1909, and now 62 cents is authorized. In general, these increases were introduced through the creation of additional zones, and coincident with such changes various reduced rate tickets were provided. The unit of cash fare remained 5 cents until 1909, when the present 6-cent unit was adopted. The last increase, in 1913, was a slight raising of the prices of certain round-trip tickets. No other company in Massachusetts has so large a percentage of its income derived from freight and express service.

SIX PER CENT RETURN APPROVED

The commission holds that the company is justly entitled to earn 6 per cent upon the full amount of capital honestly and prudently invested in the property. This conclusion is reached in full recognition of the fact that 6 per cent upon the entire investment would mean, in a case where a substantial portion of the investment was represented by funded debt bearing lower rates of interest, a return in excess of 6 per cent upon the stock. "In the present instance," says the board, "taking into account the character and risk of the enterprise and the meager returns hitherto received, we think the fair return should not be computed upon any lower basis." The total investment exclusive of floating debt is $5,041,920, and 6 per cent upon this is $302,515. In the year ended June 30, 1917, the income available for interest and dividends, after deducting operating expenses and taxes, was $201,480. Adding to this $90,000 as a rough figure for the maximum results of the installation of the copper-zone system and $16,000 for increased freight rates, the total becomes $307,480.

NO LIKELIHOOD OF EXCESSIVE RETURN

In considering the probable earnings under the new schedule, the commission states that the following factors must be considered:

1. The company is in direct competition, as far as the main line is concerned, with the Boston & Albany line between Boston and Worcester. While the single ticket rates

between common points and Boston, over the Boston & Albany, are higher than the rates proposed for the Boston & Worcester, the rates available by the use of monthly season tickets are lower, and the running time is quicker over the steam road. In view of this, it is unlikely that the company's estimate of the gain from the new schedule is too low, and it is quite possible that it is too high.

2. In the computation of necessary net earnings, no allowance has been included for further provision for depreciation. The present amount set aside for this purpose, $12,000 per year, appears as "obviously inadequate" to the commission, being less than 2 per cent of the book value of the equipment alone.

3. Prevailing wages are now under arbitration between the company and its employees, and, in view of the present cost of living, it is reasonable to assume that increases will be granted, and any increase allowed will be retroactive to November, 1916.

4. Until recent months the company has not felt the full effect of the prevailing high prices of fuel, and of materials and supplies in general. Thus, in the case of coal, the average price paid per gross ton in 1916 was $4.66. For the year ended June 30, 1917, it was $5.36, and the prices now being paid are even higher. Materials and supplies up to the first of this year were largely taken from a stock accumulated when prices were lower, but this is no longer the case.

Taking all factors into consideration, the commission finds that there is no reason to believe that the company will be able to earn under the new schedule of passenger rates more than a fair return upon its investment. Unless conditions change, it will be fortunate if it is able to earn 6 per cent upon its common stock.

COMMISSION MEETS POPULAR OBJECTIONS TO THE COPPER-ZONE SYSTEM

In this case some of the remonstrants strongly urged that even if the company's need for additional revenue should be conceded, the proposed method of obtaining it is illogical and unjust in many respects. It was urged that the new schedule would fall with unequal weight upon various sections; that it would operate with injustice to many people who have established their homes upon the basis of the general system of rates now in force; that the minimum fare of 6 cents for any ride, however short, is inconsistent with a mileage system of rates; and that the sections of approximately 1 mile in length, upon which the new system of fares is based, are in certain cases made to end at points unnecessarily inconvenient to the public.

The decision, however, points out that if rates are to be raised, the choice is between the present structure with a 7-cent unit and some entirely new system such as is proposed. The board says:

"A minimum of 7 cents for any ride however short is open to objection. If the increase should be made in this way, the irregularities and inconsistencies would remain, with the prospect that the commission would some day be asked the perplexing question why 7 cents should carry a passenger but 3.16 miles on one part of the road and 9.85 miles on another with no greater density of traffic. On the other hand, the adoption of a mileage system would make possible a general advance in rates without increasing the minimum for short hauls, and it would place fares upon a reasonably uniform and consistent basis. It is the system followed in the case of practically all steam railroads and is quite as logical in its application to many electric interurban lines.

"The Boston & Worcester Street Railway was built primarily for fast through service rather than for local service. If it were just beginning operation, the reasonableness and the propriety of a mileage system of charging would hardly be questioned. It seems to the commission that the mileage system is on the whole more equitable, is likely to prove more generally satisfactory, and holds forth greater promise for the future, both to the company and to the public.

"It is the regular rider, however, rather than the occasional rider, who is particularly entitled to consideration. The company has partially recognized this principle by proposing to sell mileage and round-trip tickets at a discount of 15 per cent, but this does not wholly meet the situation. Even with the use of such tickets, the fare between Chestnut Hill and Overbrook (in Wellesley) would still be increased from 7.5 cents to 13.6 cents, or 81.3 per cent, whereas 50 per cent ought reasonably to be the maximum. The mileage and round-trip tickets, moreover, can be used by the occasional as well as the regular rider. Both these objections can be met by selling twenty-trip ticket books, limited to the person named thereon and good for a period of one month, which will enable the purchaser to ride between any two designated points at a rate of 50 per cent in excess of the existing cash rate or the trip ticket rate where such tickets are now sold. The purpose of these twenty-trip tickets would be to provide a link between the old and the new tariffs and to prevent throwing too severe a burden upon regular riders."

The commission overruled the plea that the minimum fare be made 5 cents instead of 6 cents. On this point it said:

"Once a mileage system is established, it is true that there is, in theory at least, no necessary reason why 6 cents should be the minimum, and 5 cents would have certain obvious advantages. Where sections 1 mile in length are used, and the rate is 2 cents per mile, however, it is difficult to apply a 5-cent minimum. It can be done, but complexities result which make the collection of fares difficult. The company is reluctant to introduce these complexities and asserts that it has, in effect, established a minimum of approximately 5 cents through the mileage tickets, whereby a passenger will be able to ride any distance up to three miles for 5.1 cents."

Railway Signal Association Meeting

The annual meeting of the Railway Signal Association was held at Atlantic City, N. J., on Sept. 18 and 19. President Charles A. Dunham in his opening address made a plea for the adherence to the present high standards of railway signal work in spite of the fact that many signal engineers had joined the army or navy.

The committee on electric railway and a.c. signaling presented a long report, the first part of which was taken up with the description of a.c. signal installations on fifteen different railways, most of them being electrically operated lines. The second part of the report covered specifications on the following subjects: Impedance bonds, electric alternators, reactors, resistors, single-phase line transformers, and general clauses to be used in unit specifications. Additions and changes in these specifications were made.

The following officers were unanimously elected for the ensuing year: President, William H. Elliott; vice-president, C. J. Kelloway; secretary and treasurer, C. C. Rosenberg.

Electric Railways and Safety

Speakers at the New York Meeting of the National Safety Council Urged Greater Interest on the Part of Executives and a Heartier Spirit of Co-operation Among Departments

A HIGHLY successful meeting of the National Safety Council was held in New York City during the week of Sept. 10, with an exhibition of safety appliances and practices conducted by the American Museum of Safety. The electric railway section held two sessions on Thursday, Sept. 12, with E. C. Spring, chairman of the section, in the chair. A brief report of these was printed in the issue of the ELECTRIC RAILWAY JOURNAL for Sept. 15, page 445. Following is a more extended abstract of the proceedings at these sessions:

DISCUSSION ON THE RAILWAY EXECUTIVE AND SAFETY WORK

H. W. Clapp was to have presented a paper on "What Does the Safety Worker Want the President of His Company to Know?" He was kept away by ill health. but Mr. Spring announced that the subject would be discussed extemporaneously. He opened with the statement that safety work absolutely requires the co-operation of the heads of departments, and it is the duty of the president to insure such co-operation. The president will not do this unless personally interested in the work.

C. B. Scott, manager Bureau of Safety, Chicago, Ill., emphasized the need of "executive force" backed by real interest. A comparatively small number of railways have organized safety work, and presidents in general do not appreciate this work. A casual inspection of the attitude of platform men toward patrons will show whether or not the man at the head of the company is interested in the safety movement. Even as an element in fostering good public relations the movement is a good thing. Executives are apt to think that safety work is being overdone, and as far as paraphernalia go this may be true. But essentially safety is a matter of discipline and this phase is not overemphasized. There may be too much of rewards, prizes, pouring of safety talk into the ears of employees, but there is not enough discipline. Foreman will obey rules backed by the executive, hence the work must appeal to the latter as important, and then he must get behind it.

Mr. Scott's points were reinforced by several other speakers who gave illustrations to show what can be accomplished through personal interest and sympathy between employer and employee. They all agreed that there is a deplorable lack of discipline throughout the country generally and this is reflected in the electric railway industry. In contrast to this is the discipline in the army where success in battle is the aim, and the purpose of the discipline is to show the men how to attain it. The root of successful discipline in the army and elsewhere is obedience through inclination. In the utility field there are difficulties in the way of enforcing discipline that do not exist in the army, but personal interest by the executive in the men will go a long way to overcome these.

To sum up the whole discussion on this topic it may be said that the president must, if necessary, be convinced that safety work is profitable and practicable, and he must use his authority to reinforce the efforts of those from whom the initiative in the work is expected.

REPORT AND DISCUSSION ON AUTOMOBILE HAZARDS

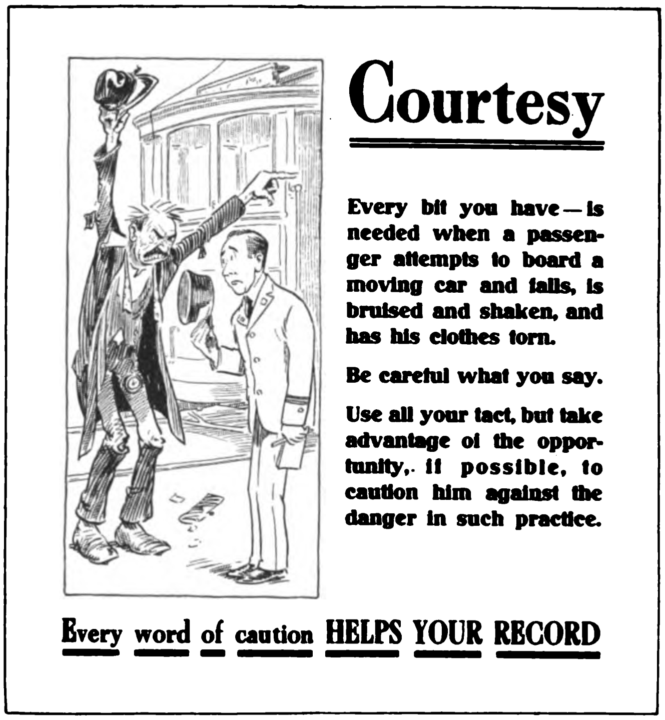
Following the discussion on railway presidents and safety work Mr. Scott gave an abstract of a report covering investigations of collisions between automobiles and electric railway cars. The investigation had been begun by Capt. H. A. Bullock, secretary New York Municipal Railway Corporation, and the data had been turned over to Mr. Scott when the former went into federal service. For the purposes of the investigation reports on more than 19,000 accidents had been collected from nearly fifty electric railway companies. The data were studied to determine the proportion of these due to the negligence of the automobile driver, and that chargeable to the motormen. Another purpose of the study was to bring out the circumstances characterizing the accidents together with the preventable causes involved.

As a general classification the accidents were segregated under the following headings: Urban, suburban, interurban or country, and grade crossing. Along with the accident data themselves went statements as to the efforts being made by organizations to reduce accidents, and suggestions as to co-operation. Mr. Scott stated that the report was to be considered as informational only, the field being a very large one which will require years to cover. Some of the information compiled from the monthly reports sent in by the cooperating companies is summarized below.

Arranging the accidents by geographical groups, and weighting the numbers by multiplying by factors to take account of the population served by the several companies, it appears that the following figures represent the relative rates of accident occurrence: in the East, 13,874; in the Central district, 20,592; in the South, 18,602; in the Central West, 36,172, and on the Pacific coast, 25,857.

Of preventable accidents the data showed that the causes in order of seriousness for the whole country were these: 1, automobile pulling onto track in front of car; 2, automobile operating at excessive speed; 3, insufficient clearance attributable to automobile driver; 4, miscellaneous; 5, other negligence of automobile driver; 6, inattentiveness of automobile driver; 7, automobile struck stopped car; 8, disobedience of traffic rules by automobile driver; 9, insufficient clearance chargeable to motorman; 10, defective or slippery pavement; 11, inattentiveness of motorman; 12, other negligence of motorman; 13, defective or slippery rail; 14, excessive speed of car; 15, defective equipment of automobile; 16, defective equipment of car; 17, view obstructed by snow, rain or fog; 18, interference of passengers with motorman; 19, disobedience of traffic rules by motorman.

In the Eastern district the greatest number of accidents were due to the automobile driver pulling onto the track; in the Central district to excessive speed of the automobile; in the Southern district to automobile driver pulling onto track and excessive speed of automobile; in the Central West to insufficient clearance chargeable to the automobile driver and to sudden stop of the car causing the automobile to strike it; on the Pacific coast to the automobile driver pulling onto the track. The percentage of all accidents occurring on account of negligence chargeable to the automobile driver was 64.2. The actual number of accidents reported from the several districts were: East, 4735; Central district, 6690; South, 828; Central West, 3703, and Pacific coast, 3303.



Courtesy

Every bit you have—is needed when a passenger attempts to board a moving car and falls, is bruised and shaken, and has his clothes torn.

Be careful what you say.

Use all your tact, but take advantage of the opportunity, if possible, to caution him against the danger in such practice.

Every word of caution HELPS YOUR RECORD

SAMPLE POSTER ISSUED UNDER AUSPICES OF SAFETY EDUCATION COMMITTEE, ELECTRIC RAILWAY SECTION NATIONAL SAFETY COUNCIL

Mr. Scott stated that an appendix to the report would consist of the report of the American Railway Association committee on prevention of accidents at grade crossings.

In the discussion of Mr. Scott's report all speakers agreed that collision accidents constitute a very serious operating difficulty. The importance of the co-operation of electric railway, steam railroad and automobile interests is pressing. In this connection the section voted to authorize the chair to appoint a committee of three on this subject to confer with representatives of other national societies.

Several speakers emphasized the desirability of simplicity and standardization in all kinds of warning signals, as there is a tendency now to multiplicity and confusion. It appears that some electric railways are co-operating with police departments in municipalities in marking danger points with suitable signals. In some cases red lamps at such points are found to be effective, and this effectiveness can be increased by city ordinances requiring limited speeds at such points.

The tendency of manufacturers and others to combine warnings with advertising announcements was deplored, as these distract attention from the distance warnings of electric and other railways, and tend to neutralize the effect of the latter by introducing unnecessary confusion. One speaker stated that his company is furnishing painted signs to be hung in garages, warning of danger points and the necessity for the exercise of caution.

The closing part of the discussion referred to the securing of co-operation from automobile owners in reducing the number of collisions. One good suggestion was that "near" accidents be reported to the proper railway official, giving him an opportunity to show the owner of the automobile concerned how he could have avoided even the risk of accident. This practice has been followed in at least one city with good results. In some cases, however, automobile clubs and individual owners appear to wish to throw the whole burden of responsibility upon the electric railways, and by their lack of interest prevent the fostering of the co-operative spirit. It is essential to secure co-operation of the authorities in passing legislation to regulate vehicular traffic and in enforcing it.

In closing the above discussion Chairman Spring introduced as the next speaker H. V. Drown, an abstract of whose paper with the accompanying discussion appears below.

Co-operation Between the Claims and Transportation Departments

BY H. V. DROWN

General Claim Agent Public Service Railway, Newark, N. J.

It seems to me that if I were asked what one accomplishment is most desired by the men in the claims department I would reply: "A real, whole-hearted co-operation with the transportation men." Where many claims men report that the transportation officials co-operate with them fully, others, alas, feel that they are greatly handicapped through lack of team work. No claims man, however competent he may be, can keep the damage account where it belongs without real, earnest, sympathetic help from the transportation department. At the same time no transportation official can "make good" without support from the claims department. Lack of co-operation between the two departments spells failure, or at best mediocre results will be produced.

Most of the trouble, I believe, is based on the lack of knowledge of each other's problems. The transportation man may believe that the claims attorney is too liberal in his settlements; that he is making settlements on account of accidents for which the car crews are not to blame. On the other hand, the claims department man may be convinced that the operating department is not giving proper attention to safeguarding against accidents and is not promptly and fully reporting the accidents which occur. Once the spirit of criticism and distrust is aroused antagonism and discord grow apace. I remember one case which occurred on the Public Service Railway in which a division superintendent criticized the claims department for making a certain settlement. When he understood all of the details of the case he saw that the claimant was not to blame, as he had supposed, and he finished by considering the settlement very reasonable. From distrusting our department at the beginning this superintendent became one of its strongest supporters.

Worth-while co-operation must be based on cordial personal relations. If each official has a brotherly interest in the other's welfare, such co-operation is assured. A little recreation together, or a dinner now and then, goes a long way toward bringing this about. It is remarkable how easy it is for men to merge their points of view and to realize that they are working for the same cause and are consequently necessary for each other's success. Once cordial relations are established and the necessity for co-operation realized the details of bringing the latter about follow automatically.

It is highly important for the transportation department to have certain reports from the claims department on the accident situation. On every accident of any consequence the claims department should furnish a résumé of the investigation. Such a report furnishes a basis for action to prevent the recurrence of the accident, and is also valuable as a part of the records of the employees involved. Monthly comparative statements, by carhouses and divisions, covering the numbers and character of accidents and claims are essential. Our experience indicates that comparisons based on the number of claims presented are much more reliable than those based on the accidents which occur.

In safety work, which is now conceded to be absolutely essential to good management, co-operation between the claims and transportation departments is most necessary. Officials of both departments should appear before employees as advocating safety measures and, if a property is large enough to justify the expense, one man should devote all or at least part of his time to this work. He should, if possible, be one who has had both operating and claims department experience.

All that I have said concerning co-operation between the officials of two departments applies with equal force to the whole supervisory staff and, in a measure, to the rank and file. When a manager of a property hears of such indications of co-operation as the following he may be sure that two of his departments, at least, are well on the way to the attainment of maximum efficiency: Admission by a superintendent that too many accidents of a certain type are occurring, with the request that the claim agent meet with the supervisory board to offer suggestions for betterments. The furnishing by a conductor of the names of witnesses to an accident in which he was not involved, it having been caused by one of his fellow employees. The submission by the claim agent to the superintendent of a careful study of accident figures upon which he can base intelligent efforts for improvement. The furnishing of reports by an investigator of defects in equipment or violation of rules coming under his notice, with suggestions as to how certain types of accidents may be prevented.

There are many forms of organization, including the now almost universal safety committee, through which we can work, but they are merely foundations upon which we build. Correct organization and detail are necessary, but the machine we create must be alive, it must have a heart. There must be charity and sympathy in the operation of this machine, and above all, an earnest desire to make good.

Discussion of Mr. Drown's Paper

In response to a number of questions Mr. Drown supplemented his paper with suggestions as to how the cooperation which he advocated could best be secured. He believed that safety work should always be conducted jointly between the two departments. The statements by the claims department which he advocated should, he said, give general data of the accidents, a summary of the statement of the employee most involved, the claimant's statement, and a synopsis of the information furnished by witnesses. It is not necessary to furnish to the transportation department statements of all accidents, but only those of consequence or having some particular lesson to teach.

The other points brought out in the discussion showed a general agreement with the points covered by Mr. Drown. Particular emphasis was laid upon the importance of analyzing all accidents having specific features, with a view to preventing their repetition. It is not always easy, said one speaker, to convince an operating official that his service could be improved, as he is apt to think that this interferes with his own prerogatives. There is a tendency toward a prejudice against the legal department in a railway company, anyway. This, however, could be overcome by co-operation. Finally, the two departments under discussion can cooperate by impressing the public with the fact that everything possible is being done to make the railway operation safe.

The concluding paper on the program of the electric railway section was by H. A. Nicholl. This is abstracted below.

Some Methods of Securing and Sustaining Co-operation of Trainmen in Accident Prevention Work

BY H. A. NICHOLL

General Manager Union Traction Company of Indiana, Anderson, Ind.

Securing the interest of trainmen in safety is one thing; sustaining it is another. It should not be difficult to interest them in accident prevention at the start of the work, for almost anything that is new will excite interest for a time. There would seem to be no better method of securing interest than by inaugurating a carefully considered plan for the formation of safety committees. The larger the property the more numerous and diversified as to membership should the committees be. Committees may be assigned to divisions, carhouses, departments, power stations, etc.

The safety program should contemplate sustaining interest by exciting the spirit of rivalry, loyalty, self-interest, co-operation, etc. As co-operation is the keynote to success in all undertakings requiring organized effort, committees should be formed with membership including workers from as many different departments as conditions will permit. In that way many of the problems with which each department has to contend will be better understood by employees of other departments. Committee membership should be changed frequently, permitting as many employees as possible to serve for a reasonable time, although a certain permanent membership is also desirable. In making appointments it is desirable to secure not only men who are already interested in safety work, but also some whose interest is lukewarm, thus developing greater interest.

The work of the local safety committees will consist largely in handling suggestions from their own members and from other employees. A general safety board of permanent members, heads of departments, etc., is desirable also in order that suggestions of a general nature coming up from the local safety committee may be handled in a democratic manner. The appointment of committees tends, of course, to democratize the operation of the property and furthers the co-operative management ideas, at least in so far as safety matters are concerned. Such a democratic spirit will not in any way interfere with discipline.

When safety committees are installed a general educational campaign should be undertaken, and appeals as strong as possible should be made to all employees, particularly to heads of departments. The impression should be given that, while all suggestions will have careful consideration, it will be manifestly impossible to adopt all of those made, for reasons which could be explained. Adopted suggestions increase the interest of the employees making them. They feel they have a share in the operation of the property and in the improvement of conditions, which adds to their feeling of proprietorship.

Personal responsibility is what we want when it comes to the reduction of accidents, and special stress should be laid on the benefit which comes to the employee himself when they are reduced. Self-interest is after all the strongest moving force in the world and it should never be lost sight of.

There are, I think, three general factors in successful safety work: supervision, co-operation and self-interest. Supervision is absolutely necessary, of course, whether the matter of safety is treated or not, but certainly the greater the ability of supervision the more efficient will be the work of accident prevention. Co-operation affects the spirit in which men do their work. Good feeling—the absence of knocking, bucking and friction—increases safety and efficiency. The man with a grouch is like set brakes on a car going up hill. Co-operation, like supervision, must start at the top. If officers and department heads cannot work together without friction, and in the interests of the company as a whole, then there will surely be friction all the way down the line.

Self-interest can be depended upon to furnish strong incentives for the sustaining of general interest in safety work. I have felt that the principal need for efficient and safe operation is some form of premium which will appeal to a man's self-interest. It can either be individual or general. In the first case the premium would be paid to a few who excel in personal efforts in the line of reducing accidents and operating expenses. If general it could be provided by some form of profit-sharing. Closely related to self-interest are fitness of the employee for his job and satisfaction in it. If working conditions are pleasant and the work is profitable, self-interest will prompt a man to do what is necessary to retain his position, and this should include his co-operation in accident prevention. Whatever can be done should be done to "sell the man his job" so that he will be disinclined to listen to extravagant claims of agitators as to what can be obtained for him in the way of better working conditions and increased wages for less work.

The safety methods used by the Union Traction Company of Indiana are essentially along the lines outlined. To promote interest in the committee work the company gives a dinner every six months to the members of the safety committees at which eighty to ninety men are usually present. Every six months there is also a contest to produce the best papers on some subject having relation to safety. The three prize papers are read at the dinner by the winning contestants. The prize papers are also published in the company's magazine *Safety*, which is distributed to all employees monthly. This magazine is an important factor in keeping up the interest in the work.

In order to have employees feel personal responsibility in relation to safety matters, we have tried to give "Safety First" a sort of separate entity on the property, and matters peculiarly and essentially concerned with safety are given preference.

There is no panacea that will positively sustain interest in accident prevention, but one means is the securing and developing of men of the type whose interest in accident work will not flag as time goes on. It is almost useless to attempt to sustain this interest without the right material to work with. A man must have in his heart the desire to obey or else he will disregard any restraint placed upon him, and that is where sustaining interest in safety will obtain good results. It will not do to confine our efforts to preaching safety first and fail in the training and drilling of men in their work so that they will automatically know what to do in the face of an unexpected situation. In other words, by training the men we practise accident prevention. Finally, skill in applying the personal touch by those higher up and the exhibition of friendly feeling of the men for their superiors and therefore for the company may, while not directly sustaining interest, aid by keeping employees satisfied.

Of course, interest in safety could be maintained by keeping up a big campaign if that were possible, but there are difficulties in the way of doing so. We have tried doing a little constantly in order to make safety work what might be called "the bread and butter" the steady diet in our operation.

Discussion of Mr. Nicholl's Paper

The discussion on Mr. Nicholl's paper consisted largely in an exchange of information as to methods for training employees, as this was felt to be the first essential to safety. Mr. Scott pointed out that the best results will be secured by focusing attention on the fundamentals. The external and tangible elements of the safety movement have their place but after all it is the application of the ideas outlined by Mr. Nicholl that will yield the best results. Principles are important, details are incidental.

The Industrial Commission of Wisconsin has issued a special report dealing with the extent of female labor in positions heretofore occupied exclusively by men. The report indicates that the employment of women is increasing very rapidly. The commission is co-operating with employers in securing women employees and making suitable provisions for their comfort and convenience.

Steam Roadmasters' Annual Convention

Track Labor Problem, Conservation of Materials, Oiling of Track Fastenings and Inspection of Ties Were Subjects Discussed of Interest to the Electric Railway Field

AT the thirty-fifth annual convention of the Roadmasters' & Maintenance of Way Association at the Auditorium Hotel, Chicago, on Sept. 18, 19 and 20, there were several papers which dealt with subjects of interest to electric railway maintenance of way engineers. In a paper by E. T. Howson, engineering editor, *Railway Age-Gazette*, on "The Economy of Oiling Track Fastenings," it was brought out that the practice of oiling track fastenings to protect them against corrosion has now been developed sufficiently to demonstrate the fact that oil of the proper grade will protect the rails and fastenings from corrosion and thereby extend their life materially. The paper pointed out that the principal causes of corrosion are the action of the atmosphere, the action of salt water or spray on lines located along the sea coast, the action of brine drippings from refrigerator cars, local conditions at tunnels, etc.

The selection of the proper grade of oil for the purpose of arresting corrosion is important. It must not be so thin that it will not remain on the fastenings and run off freely onto the ties and ballast, yet it should not be so thick that it will not distribute itself over the metal readily. Where the proper grade of oil is used, it has been possible to retain this coating on the fastenings for a year or more. When experimenting has been done in a limited way, the paper points out, the oil is usually applied by a track walker or section man, who carries a bucket of oil and a small broom, brush or swab. This was the method used by the Chicago & Northwestern Railway in oiling the joints on 6 miles of track in which new rails were laid last year. Ordinary crude oil was used. The cost was about $4 per single track-mile, divided 50 cents for material and $3.50 for labor.

The Union Pacific Railroad oiled the joints in 1 mile of track in each roadmaster's district in Wyoming last fall. The bolts were not tightened for two or three days after the oil had been applied, and thereafter it was found that they could be tightened more easily and that the threads on the bolts and nuts were maintained in better condition, thus bringing about a saving in both labor and material. A direct comparison of results from oiling the joints was secured when an equal number of joints, oiled and not oiled, were removed for examination. It was found that while the bolts which had not been oiled showed evidence of corrosion and cutting of the threads, the others showed no such tendency.

The Chicago, Burlington & Quincy Railroad adopted the practice a year ago of oiling all the joints and bolts when laying new rail or relaying second-hand 85-lb. rail or heavier section on main line. The bolts to be used in main line relaid track are oiled about a month in advance of their removal from the old rail. This practice permits a much larger percentage of the bolts to be reclaimed. This road has decided recently to oil not only the joints but also the base of the rail and other fastenings on certain divisions.

The Illinois Central Railroad, after experiments on its Southern lines, found such good results that the practice of oiling all joints twice a year has been extended over the entire system. The oil is ordinarily applied by hand with an ordinary whitewash or paint brush. Approximately 10 gal. of low-grade fuel oil is required per mile. The total cost of this application varied from $2.50 to $4.25 per mile, averaging somewhat over $3.

The Atchison, Topeka & Santa Fé Railroad has found that the practice of oiling track fastenings has increased the life of the bolts 25 per cent. Careful records have also shown a saving of over 30 per cent in the number of bolts required for replacement purposes on the Eastern lines, while it has been estimated that the amount of labor required to tighten loose bolts has been reduced at least 40 per cent. About 75 gal. of fuel oil, costing about 5 cents per gallon, is required per mile, making a total cost for material of $3.75 per mile and $2.50 for labor. Where the bolts and joints alone are oiled the total cost is approximately $2.50 per single track-mile.

The Delaware, Lackawanna & Western Railroad has developed this practice of oiling track fastenings further than any other road and has brought out several special devices for conducting the oiling process. The latest machine for this purpose comprises a closed car which is equipped with air compressors, air storage tanks, sand boxes, rail wiper, oil drainer, air-operated oiling devices, an automatic device for clearing obstructions on the track and adjustable circular nozzies. This car, which is a remodeled caboose, is also equipped with a headlight, speedometer and pressure gages, so that the operator may know the conditions under which he was working at all times. Approximately 1100 miles of track was oiled with this machine in the fall of 1916 at a cost of $5.60 per mile, divided as follows:

10,400 gal. of oil at 5 cents	$520.00
Engine and crew	30.00
Operator	5.00
Materials and supplies	5.00
Total cost per day	$560.00

SECURING AND RETAINING TRACK LABORERS

A committee report on the labor situation in the track department said that the best method of securing laborers to work on track is to offer them inducements equal or superior to those tendered by other employers of similar help. Of these inducements, permanency of employment is an important one. If possible the men used in summer should be continued in the service of the company during the winter. No more pernicious custom obtains than where the men in a section gang are kept guessing during the summer months as to who will be laid off when the first snow begins to fly.

Section foremen should be permitted to hire their own men, but when a foreman cannot secure his own laborers, these men should be furnished by the railroad's authorized agent, but that agent's connection with the men should end there. The custom of having the labor agent furnish the food and wearing apparel of the men should be discouraged, as this system often results in charges and deductions against the laborers' wages that the men do not know of, and in many cases do not owe, causing no end of trouble on pay day. The employment agent of the company should receive a salary rather than a commission to preclude as far as possible any charge by him to the men for their jobs.

The committee recommendation for uniform section forces throughout the year aroused considerable discussion. In this it was brought out that much work such as gaging track and tightening bolts can be done satisfactorily during the winter, thus keeping the men busy in constructive work. The lengthening of the working season by all year employment also reduces the number of men required at any one time. The present practice of hiring men for a few months creates an abnormal demand during the summer, leading to excessive competition and abuses. It was thought that permanent forces were applicable on 80 per cent of the railway mileage. One railway man described a plan in effect on his road for the last three years, whereby men are guaranteed permanent employment for the entire year. As a result, more than 90 per cent of the men now in the service have been with the road for more than one year, in spite of the present unsettled labor conditions.

Boarding camps were strongly condemned by some of the railway men present, and they urged that the railway companies should take them over.

CONSERVATION OF MATERIALS

A paper by W. A. Summerhays, assistant purchasing agent Illinois Central Railroad, dealt with the difficulty in maintaining customary stocks of material and in obtaining enough of the most necessary items to keep the railroads and equipment in safe operating condition. He said that it is very necessary that each roadmaster and storekeeper should know exactly what is available at every point on the railroad. This may be best accomplished by having, for each division, a tabulated list, kept up to date, of every item of material on the division, with its location. In emergencies a record of this sort might prove invaluable.

There is a tendency to keep a larger stock of material on hand than the working conditions on the division justify. A record such as the one mentioned above would show at a glance just how long each item has been on hand and whether it should be transferred to some other point where needed. No requisition should be passed to the purchasing agent until it has been checked carefully against the record of line stock as well as of the storehouse stock and an effort made to supply the items needed from the stock on hand.

An interesting sidelight on the handling of scrap was brought out. The author states that while the prices of new material have advanced 30 per cent to 200 per cent, the price of scrap has risen to an even greater extent. This has given rise on many railroads to a campaign toward cleaning up all scrap and putting it on the market. It is desirable at all times to market all scrap as soon as it is available and not to permit it to accumulate, but great care must be exercised to avoid selling as scrap any item which can be put to further use.

It is a very human tendency for section foremen, although they may be fully instructed carefully to inspect scrap before it is loaded for the market and to hold out every usable article, to discard with the scrap all second-hand material for which the foreman in question has no immediate need. Therefore a competent inspector should pass upon all scrap and set aside all material which is fit for further use or can be re-worked. Where facilities are provided for reworking and assorting scrap at one point on a division or railroad system, a very decided saving can be effected by employing a blacksmith to rework this material.

The great delay and practical impossibility of getting guard rails, etc., is a special reason why the roadmasters should make a careful inspection of every piece of track scrap removed. Many spring frogs and bolted rigid frogs can be made fit for use when removed from the track because of having only one part broken, by the addition of a similar part from another scrap frog. A great deal of this kind of work is being done on various railroads, some even going to the extent of fitting up small shops where second-hand pieces can be planed and fitted to supply the needed parts in frog repair. Owing to the wide difference between the cost of new material and the value of scrap material, the present is an exceptionally favorable time for installing a plant of this nature.

THE INSPECTION OF TIES IN TRACK FOR RENEWALS

A committee report on this subject recommended that special inspectors reporting directly to the supervising officer be employed to mark ties for renewals. This would secure uniform practice, prevent the removal of ties from track before their safe service life had been exhausted and distribute renewals properly. To determine the necessity for replacing the tie, its condition as to decay and wear, the amount and character of the traffic carried, its position in the track, the kind of timber, the condition of neighboring ties and the weight of the rail and tie plate should all be considered.

In any tests for soundness, the tie should not be mutilated more than is absolutely necessary. Ties should not be tested on the top except for decay around the tie plate and spikes. To test a tie for strength, one end of a pick should be inserted under the end of the tie and used as a lever. If a tie is broken under the rail this method will usually determine it.

If two ties of only one year's safe service are adjacent, one should be removed so as to leave each doubtful tie with one good neighbor. Sap rot alone should not condemn a tie for service. A tie cut down by rail wear should not be removed unless the rail is cut into the face more than 1 in. Very careful attention should be given to the inspection of red oak and pin oak and other kinds of timber which decay from the heart, as such ties usually rot from the center, leaving a hard shell which tends to hide the true condition of the tie. Where track is subject to heaving and where shimming is necessary, care should be taken to insure enough good sound timber for spiking and bracing, and careful attention should be given to the inspection of ties through road crossings, station platforms and other places where they are covered and, therefore, apt to be overlooked by the section foremen in charge.

EQUIPMENT and MAINTENANCE

HAVE YOU A GOOD WAY
OF DOING A JOB?
—Pass It Along

These Articles Have Been Selected to Provoke Thought and Stimulate Discussion. All of the Technical Departments Are Represented

Construction and Test of Two-Section Steel Pole

Poles Worth $148 at Present Prices Made for $43.77 —Test Shows Satisfactory Strength and Stiffness

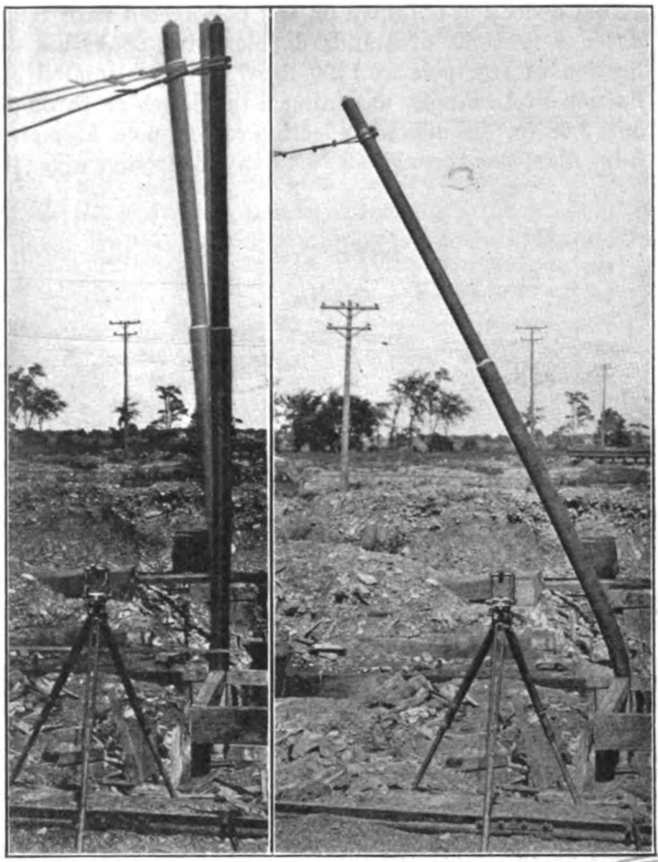
BY W. C. LANCASTER
Electrical Engineer Mount Royal Tunnel & Terminal Company, Montreal, Canada

Anything made of steel these days is costly and its shipment is quite indefinite. Therefore any economy in the use of steel poles rather than wood poles on new construction work is questionable. The writer had to decide recently whether to use wood or steel poles for the electrification of the terminal yard of the Canadian Northern Railway in Montreal. It seemed desirable to use steel poles if possible, chiefly because of their more sightly appearance, but the prices quoted by the manufacturers were prohibitive. The lowest price on a suitable tubular steel pole, delivered in Montreal, was $148.

A quantity of 8-in. and 6-in. standard steel pipe which had been used for a compressed-air line during the construction of the tunnel and terminal was available. It was in good condition and free from rust, and the suggestion was made that poles be constructed of this material. Accordingly a sample pole was made up from a 17-ft. length of 8-in. pipe and a 13-ft. length of 6-in. pipe.

Two bands, made of ¾-in. x 2-in. iron, were shrunk on the length of 6-in. pipe, one close to the end and the other 34 in. from the end. A light cut in a lathe was then taken off these bands so that a driving fit was obtained between them and the 8-in. pipe. These were then driven together and two steel pins put through the joint. A small amount of cement was placed in the annular space between the 6-in. pipe and the end of the 8-in. pipe, and this was bevelled off to make it waterproof.

This pole was then tested. It was braced in the corner of an old concrete foundation so that the butt was 5 ft. below the surface. A wire cable was fastened 18 in. from the top and carried out to such a distance that the pull was practically horizontal. The tension on the cable was applied gradually by means of a chain block, and the deflections were measured with a transit. A camera was set up behind the transit and three exposures were made on the same plate showing the pole before load was applied and also at 1550-lb. and 2200-lb. tension on the cable. A stress-strain diagram shown on the next page was plotted, from which it will be observed that the elastic limit was reached at about 2000 lb. The pole failed by buckling near the ground line.



TEST OF HOME-MADE STEEL POLE SHOWING DIFFERENT DEGREES OF DEFLECTION AND TRANSIT WITH WHICH DEFLECTIONS WERE MEASURED

LIBRARY OF THE UNIVERSITY OF CALIFORNIA

Calculating the fiber stress at the elastic limit:

$$\text{Fiber stress} = \frac{\text{moment}}{\text{modulus}} = \frac{492{,}000}{16.81} = 29{,}260 \text{ lb. per}$$

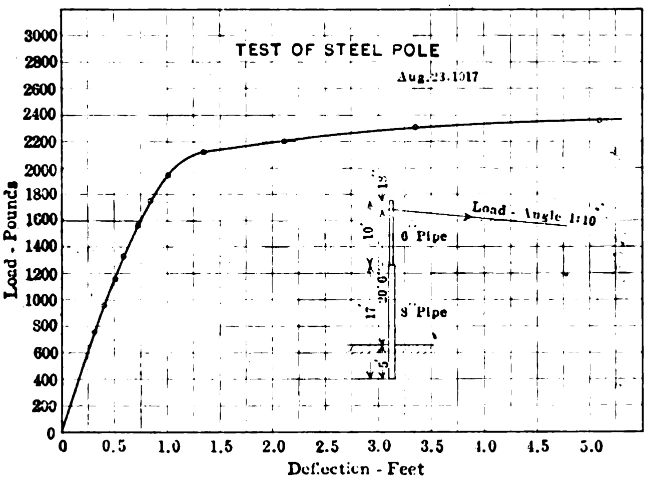
square inch. This value corresponds approximately to the value 30,000 lb. per square inch for "soft, mild steel" given in the handbook of the National Tube Company, and is considerably higher than 24,000 lb. per square inch, the figure used in the American Electric Railway Engineering Association's tables of steel poles.

The actual deflection of the pole at 1400 lb. pull was 7½ in. The deflection of the nearest standard pole of the American Electric Railway Engineering Association, which is a pole having three sections made of 8-in., 7-in. and 6-in. pipe respectively, is given in its tables as 3.68 in. at 1400 lb. pull. This deflection is calculated as follows:

$$X = \frac{Pl^3}{3EI} = \frac{1400 \times (20.5 \times 12)^3}{3 \times 26{,}000{,}000 \times 72.5} = 3.68 \text{ in.}$$

where X = deflection in inches,
P = pull in pounds,
l = length of pole from point of application of P to ground line in inches,
E = modulus of elasticity,
I = moment of inertia.

The above calculation assumes that the pole is 8 in. in diameter throughout its whole length, the smaller top sections making little difference in the stiffness. The A. E. R. E. A. tables have apparently been all calculated on this assumption. A comparison of the actual deflection obtained on the pole tested with tabulated deflections of standard poles gives: Actual deflection of test pole at 1400 lb., 7.5 in.; calculated deflection of test pole, assuming 8-in. diameter throughout, 3.68 in.; calculated deflection of test pole, assuming 6-in. diameter throughout, 9.48 in.; deflection given in A. E. R. E. A. for standard 8-in., 7-in. and 6-in. poles at 1400 lb., 3.68 in.; deflection given in handbook of National Tube Company for 27-ft. pole, 8-in. and 7-in. pipe, at 1940 lb., 3.15 in.

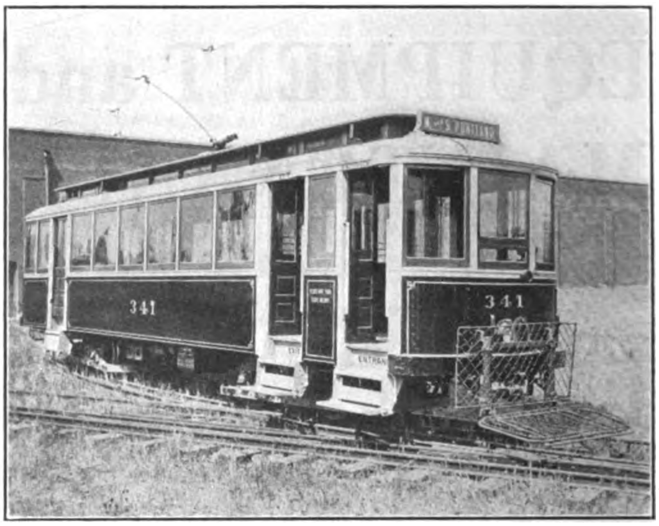


STRESS-STRAIN DIAGRAM FOR HOME-MADE STEEL POLE

From the above values it would appear that the stiffness of the swaged points of standard tubular poles must compensate for the effect of the smaller diameters of the top sections, if the assumption on which the tables are calculated is correct.

The test of the pole as regards strength and stiffness was considered satisfactory, as the poles are to be heavily back-guyed. A number have been made up at a cost for labor of $3.77 each. As the pipe from which they are made has a market value of $40 per pole, the poles are considered to have actually cost $43.77 each.

Recent warnings from Washington to conserve our gasoline supply have led railway men to wonder what effect the threatened restrictions placed upon its consumption will have upon the autobus and jitney traffic. A big oil producer voiced the opinion that when our vast fleets of airplanes and motor trucks required for war purposes impose their full tax upon the available supply of gasoline there will be little of this fuel left for hauling passengers that may be carried just as well by the electric and steam railways.



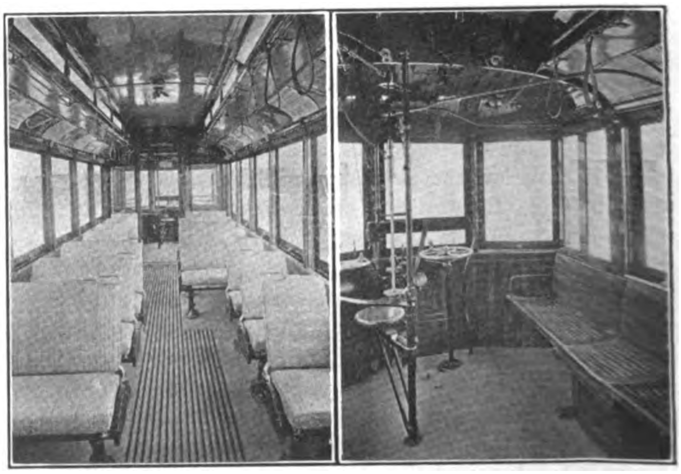
PORTLAND REBUILT ONE-MAN CAR

Portland Builds a One-Man Car

The Portland Railway, Light & Power Company, Portland, Ore., has recently rebuilt one of its old three-compartment city cars for use as a one-man car on an outside line where the traffic is light. The principal change in the body has been to replace longitudinal seats with cross-seats, and owing to the narrowness of the car, single seats are used on one side for one half of the car, and on the other side for the other half of the car. This seating arrangement is seen in one of the illustrations. While arranged for double-end operation, this car will probably be used on a loop to reduce lay-over time consumed in changing the vestibules. The car seats thirty-seven passengers, nine finding room in the rear vestibule and four on a bench in the front.

The two-leaf entrance and exit doors are separated by a panel and are controlled by separate handles. Should a departing passenger leave the sliding body door open, the operator can manipulate a door-closing pulley on a vertical rod behind so that he does not have to leave his post. This door carries the curtain which cuts off light from the car interior.

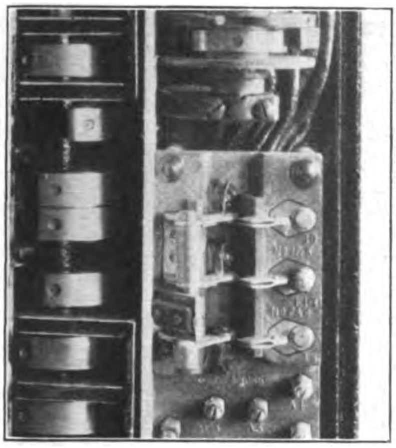
Five-cent tickets and transfer fares will be collected in accordance with the Ohmer system, which is standard at Portland. Fares are indicated and registered by setting a horizontal dial directly behind the operator and pulling a hand-hold which is placed on the other vertical rod shown in the illustration below.



SEATING ARRANGEMENT AND VESTIBULE OF ONE-MAN CAR

Life of Controller Cutout Switch Prolonged

BY MAX PASSLER
Armature Foreman Spokane & Inland Empire Railroad, Spokane, Wash.



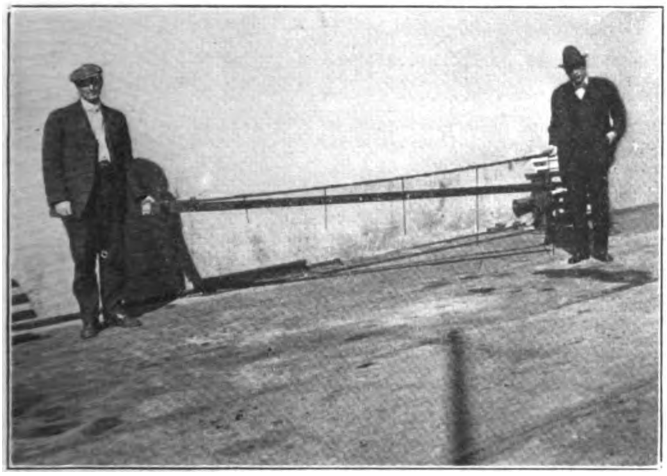
IMPROVEMENTS TO CONTROLLER CUTOUT SWITCH

On type K-28 controllers on the Spokane & Inland Empire Railroad, Spokane, Wash., considerable trouble was experienced with the cutout switch located just above the contact block. The mechanical strain of the switch was relieved by inserting red fiber stop blocks on both sides, as shown in the illustration. These were fastened to the base by two countersunk screws. The current-carrying capacity of the switches was increased by soldering second-hand copper pigtails between the switch blade and the main lead, thus shunting the hinge of the switch. These pigtail shunts can also be seen in the illustration.

Templets for Measuring Track Special Work

BY THOMAS B. MCMATH
Chief Engineer Indianapolis Traction & Terminal Company

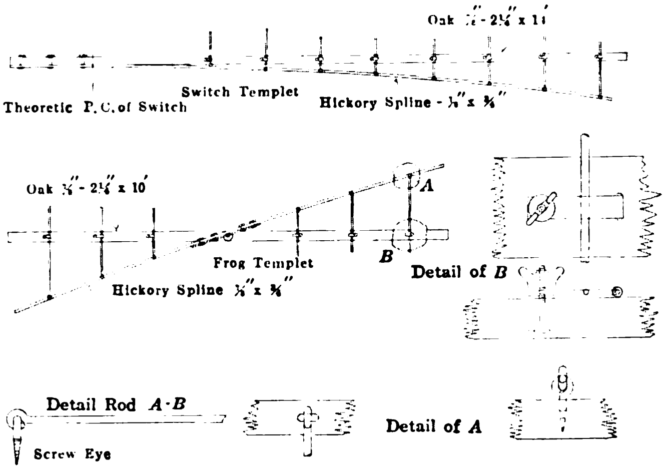
It frequently happens in taking measurements for the replacement of track special work that reliance must be placed on labor which is not altogether dependable. This often results in there being a necessary dimension lacking, or in the making up of a new track piece in the shop which does not fit the location. To make the work of securing the dimensions as nearly error-proof as possible, we have developed a set of adjustable templets which can be taken to the location, fitted to the special work piece to be renewed, and clamped in this position. The templet can then be taken to the yard and the fit of any similar piece in storage determined, or taken to the shop and the new piece made up to fit the pattern, with the assurance in either case that it will meet all of the requirements when placed in the ground.



VIEW SHOWING TEMPLETS USED IN MAKING SPECIAL WORK RENEWALS

These templets consist of two pieces of lumber. One piece is of oak, straight and stiff, to fit the straight rail, and the other is a spring hickory spline which can be bent to fit the curved rail. For measuring a frog the two pieces are hinged together at their centers and connected together at various points by 3/16-in. round rods hinged in screweyes on the spline and extending through clamps on the stiff piece. For measuring a switch or mate the spline is clamped to the straight piece at the theoretical point of curvature and then the two pieces are fitted to the track work and held to proper curvature by the same system of iron rods and clamps.

We frequently have to make frogs for temporary service and for quick replacements. These frogs are made in the following manner: The rail receiving the most frequent car service is made the through rail. The crossing rail is coped to fit by means of an oxy-acetylene torch. The rails forming the frog are then arc welded onto a bottom plate. Angle bars are bent and welded on by means of an arc welder at each corner. The top is then filled smooth, and the tread of the rail finished with the grinder.



DETAILS OF TEMPLETS USED FOR MEASURING FROGS AND SWITCHES WHICH ARE TO BE REPLACED

An ordinary frog or curve cross can be made of 9-in. girder rail at an expense of about $30. Such frogs can be made rapidly when the men become accustomed to the work. We have set a templet at 7 a. m. and had the frog in the track by 4 p. m. The usual time required to make a frog, however, is about fourteen hours, using two men in addition to the labor of smithing the angle bars.

The switch templet is of great service where partially-worn switches are on hand for temporary repairs. Many of the older switch pieces while 12 ft. long and of standard radius have a variation in the distance from the end of the switch piece to the theoretic point of curvature of the switch. The switch templet readily determines this distance. These templets are made for the Indianapolis Traction & Terminal Company's use by the Drew Electric Company of Indianapolis.

Cost Data on Special Work Renewals—IV

By M. BERNARD

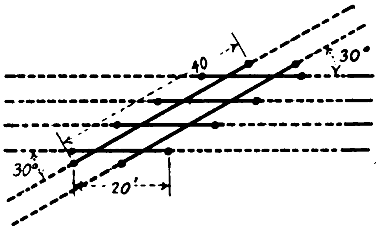
Assistant Engineer Way & Structures Department.
Brooklyn (N. Y.) Rapid Transit System

This is the fourth plate of the series of Cost Data on Special Work renewals. The previous plates were published in the issues for July 21, page 108; Aug. 18, page 279; and Sept. 8, page 406.

Fig. 11—Single Track Crossing Double Track (30 Deg.)

Length—80 ft. single track

Construction removed—9-in. girder rail*—8-in. granite on sand
New construction—9-in. girder rail*—8-in. granite on concrete

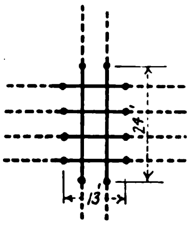


	Light Traffic	Average Traffic	Heavy Traffic
Labor	$210.00	$260.00	$290.00
Handling	65.00	70.00	85.00
Miscellaneous	39.00	48.00	55.00
Total (except materials)	$314.00	$378.00	$430.00
Cost per single track foot	3.93	4.73	5.38

Fig. 12—Single Track Crossing Double Track (90 Deg.)

Length—50 ft. single track

Construction removed—9-in. girder rail*—8-in. granite on sand
New construction—9-in. girder rail*—8-in. granite on concrete

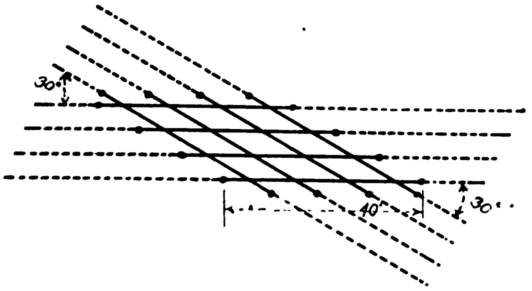


	Light Traffic	Average Traffic	Heavy Traffic
Labor	$135.00	$165.00	$190.00
Handling	37.00	45.00	55.00
Miscellaneous	25.00	30.00	35.00
Total (except materials)	$197.00	$240.00	$280.00
Cost per single track foot	3.94	4.80	5.60

Fig. 13—Double Track Crossing Double Track (30 Deg.)

Length—160 ft. single track

Construction removed—9-in. girder rail—8-in. granite on sand
New construction—9-in. girder rail—8-in. granite on concrete

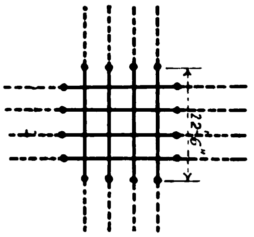


	Light Traffic	Average Traffic	Heavy Traffic
Labor	$430.00	$520.00	$600.00
Handling	125.00	140.00	175.00
Miscellaneous	75.00	95.00	100.00
Total (except materials)	$630.00	$755.00	$875.00
Cost per single track foot	3.94	4.72	5.47

Fig. 14—Double Track Crossing Double Track (90 Deg.)

Length—90 ft. single track

Construction replaced—9-in. girder rail—8-in. granite on sand
New construction—9-in. girder rail—8-in. granite on concrete



	Light Traffic	Average Traffic	Heavy Traffic
Labor	$238.00	$297.00	$335.00
Handling	73.00	81.00	101.00
Miscellaneous	45.00	54.00	63.00
Total (except materials)	$356.00	$432.00	$499.00
Cost per single track foot	3.96	4.80	5.54

*Hard-center construction. *Explanation:* By "light traffic" is meant either the divergence of cars during progress of work, or a traffic of not more than 150 cars per day of twenty-four hours. "Average traffic" denotes the passage of about 325 cars per day of twenty-four hours, and "heavy traffic" that of 750 or more.

By "labor" is meant the labor cost of tearing out the old paving and special work and installing the new at the location where the work is done. "Handling" signifies the cost of loading the necessary materials at the various storage yards as well as the unloading of same at the place of renewal. It also includes the cost of transportation and the cost of removal of old or left-over material. Since the transportation is done by a subsidiary company, which adds profit and overhead expense to the net cost, this item may differ considerably from that obtained on other railways. Under "miscellaneous" are included the expense of city inspectors, expense incurred when portable crossovers are used for divergence of cars during renewal, watchmen's wages, and incidental engineering expense. The total of these three items—labor, handling and miscellaneous—therefore includes everything except the cost of materials.

On account of the unsettled labor conditions prevailing since the beginning of the war, the costs given are based on pre-war wages, the average track labor on which these costs are based is 20 cents per hour, including the foreman's wages.

Lightning Arresters a Guard Against Rotary Flashovers

Flashovers Caused by Potential Surges Can Be Greatly Reduced by Connecting D.C. Aluminum Lightning Arresters Directly Across the Commutator

Protecting rotary converters against flashovers is a matter of vital importance in maintaining continuity of service, and it has been observed that many railway engineers have for some time been using aluminum lightning arresters to guard against such disturbances. However, as there seems to be a misunderstanding as to exactly what protection the arresters can furnish, and as to the best way for connecting them to the rotary, the following review of the recommendations of the General Electric Company is given to clarify the subject.

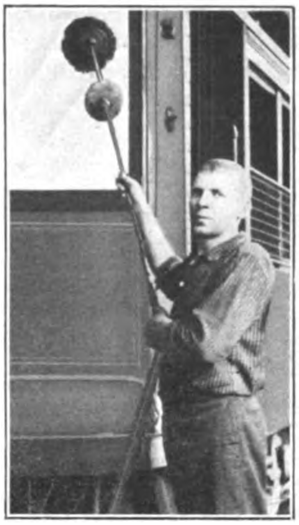
Flashovers on rotary converters may be due either to potential or current surges. Those due to potential surges may be prevented by the installation of d.c. aluminum arresters, but this arrester will not prevent flashovers due to heavy current rushes, or to improper operation of the rotaries. The arrester operates on excess potential—not on excess current. The arresters should not be used on rotary converters which operate on the same busbars with storage batteries. The latter perform the function of a lightning arrester, as they short-circuit abnormal potentials that occur on the section of the circuit to which they are connected.

Potential surges on rotaries may be the result of high potential disturbances on the a.c. side, voltage disturbances due to sudden changes in load, short-circuits on the d.c. side, or they may come from internal disturbances in the rotary itself.

As potential disturbances causing flashovers are undoubtedly of various wave forms and frequencies, and in many cases involve a large amount of energy, aluminum arresters which combine the safety valve and condenser properties are especially effective. The efficacy of the aluminum arrester is due chiefly to its safety valve effect and its high discharge rate. Connected directly across the bus rings of the rotary, kept continually charged to the normal voltage of the rotary, and having an extremely low internal resistance, the slightest rise in voltage causes a free and heavy discharge through the arrester, quickly and thoroughly relieving the rotary of the dangerous surges. As this type of arrester also has a high capacitance, high frequency disturbances involving a limited quantity of electricity will be relieved by the condenser effect. This, however, is of slight importance in comparison with the valve effect.

The arresters should be connected directly across the bus rings of the rotary, that is, with the series and commutating fields outside of the arrester, in order to reduce to a minimum the impedance in the discharge path at the point desired to protect, namely, the brushes. It is recommended that the arrester be connected directly to the circuit without an intervening spark gap. A spark gap would have the advantage of increasing the life of the aluminum part, but would decrease the protection. The former, however, is not of serious importance as is indicated by the results of hundreds of installations of similar arresters on electric railway cars. As to the number of arresters to be used, one cell for every 500-kw. rotary capacity has given satisfactory results.

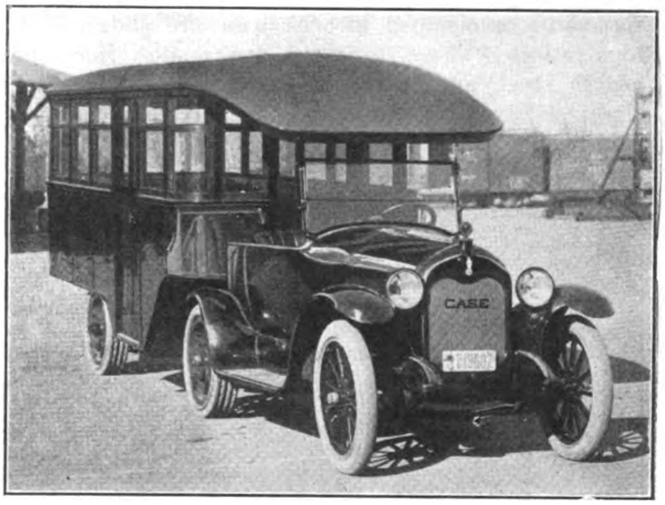
Labor-Saving Brush for Car Washing


CAR WASHING WITH LABOR-SAVING BRUSH

Car washing at the Hooker Street carhouse of the Springfield (Mass.) Street Railway is much expedited by the home-made brush equipment shown in the illustration. A continuous water supply is obtained by mounting the usual brush on the end of a pipe rod, which in turn is connected to the water main by a rubber hose. At the lower end of the handle a valve and universal joint are provided for convenient use. A rubber disk 8 in. in diameter is provided near the top of the handle to protect the user's hand against water drip. With this equipment no dipping is required, no pails have to be filled or utilized, and the time of washing is reduced about 50 per cent compared with the usual method of brush and pail.

Flexible Buses in Larger Sizes

The Pacific Electric Railway has under construction additional buses of the Fadgl flexible type which will be put into auxiliary service at an early date. The first of these cars to be put in service by the company is still in use at Fresno, Cal. They were described on page 314 of the ELECTRIC RAILWAY JOURNAL for Aug. 10, 1916.

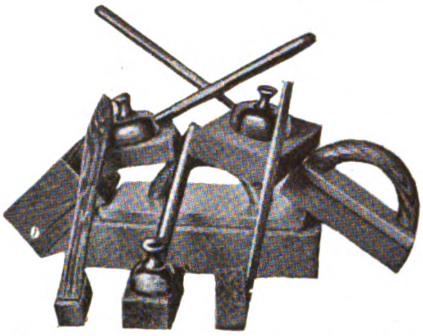


NEW ENLARGED TYPE OF FLEXIBLE MOTOR BUS

The new buses will have a seating capacity of thirty passengers and there are also improvements in the design of the bus body. A more powerful motor has been used in the larger cars, and by employing heavier construction throughout it is expected that the life of the bus will be materially increased. The new type is shown in the accompanying illustration.

Commutator Dresser Made in Various Shapes

A new variety of commutator dresser which is being placed on the market by the Ideal Commutator Dresser Company of Chicago, Ill., is a composition substance of uniform hardness claimed to have particularly efficient properties of both abrasive and lubricating character. It retains a sharp grinding or cutting surface which cuts down the ridges and high spots of both commutator segments and mica. Despite its cutting or grinding characteristics it is non-metallic and a non-conductor. It is also claimed that it does not clog up, wear smooth or collect copper dust. Because of these characteristics, it can be applied to a commutator while the machine is under service and carrying full load without danger of short-circuiting the commutator bars.

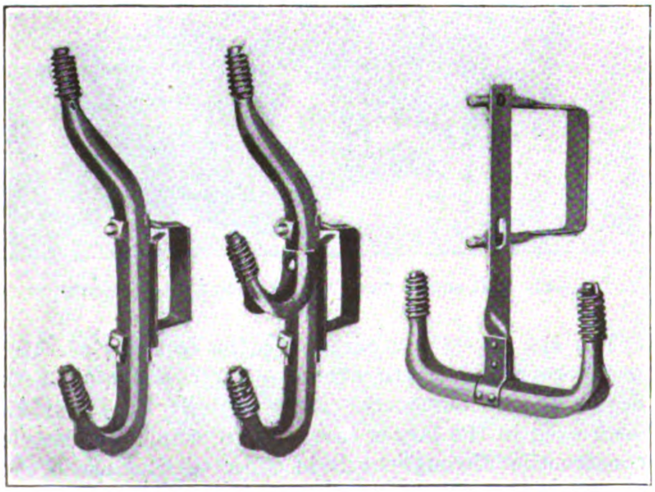


SEVERAL STYLES OF THE NEW COMMUTATOR DRESSER

The dresser is made up in a variety of sizes to fit all kinds of commutator conditions, and the blocks are equipped with convenient handles for holding against the commutators.

Insulator Brackets of Pressed Steel for Crossarm Service

Unusually heavy pressed-steel insulator brackets designed to be clamped to crossarms are shown in the illustration. These brackets are made from open-hearth steel, and it is believed that if there is the slightest flaw in the steel it will break in the forming dies. This, therefore, eliminates any flaws from the finished product. All the brackets clamp around the crossarms instead of bolting through them, thus avoiding the splitting and rotting of the crossarms caused by bolt holes. The brackets were developed by Hubbard & Company, Pittsburgh, Pa.



HEAVY PRESSED-STEEL INSULATOR BRACKETS

A Substitute for Inverse-Time-Limit Relays

In order to obtain an inverse-time-limit control on circuit breakers, relays are commonly used, but when considered for use with circuit breakers of small capacity the price is often prohibitive. This condtion has led to the development of an inexpensive inverse-time-limit attachment which can be mounted directly on the overload tripping magnets below the operating handles as illustrated.

On 100 per cent overload a time element of approximately five seconds is obtainable, and by adjustment this may be varied down to zero. By using a heavier oil time limits up to ten seconds may be attained. These attachments are made by the Westinghouse Electric & Manufacturing Company.

INVERSE-TIME-LIMIT ATTACHMENT FOR CIRCUIT BREAKERS

Hanger Wrench Perfected by Lineman

To attach or detach a trolley hanger from a span wire, Charles Boulton, lineman of the Tulsa (Okla.) Street Railway, has made the hanger wrench shown in the illustrations. The left-hand end of the tool is used to throw in the hanger, and to do this it is hooked over the span wire and around the hanger arm as shown in Fig. 2. Then the wrench is turned around the span wire, Fig. 3, and the hanger is forced into place when the wrench reaches the position shown in Fig. 4.

The other end of the wrench is used to throw out the hanger. This end has a flat chisel edge and a hook. The latter is hooked over the span wire and the chisel edge is inserted under the lip of the hanger arm, Fig. 5. The wrench is then rotated and the hanger is unhooked when the position shown in Fig. 6 is reached.

This wrench has been found very convenient in handling trolley hangers. The sales rights have been acquired by the Ohio Brass Company.

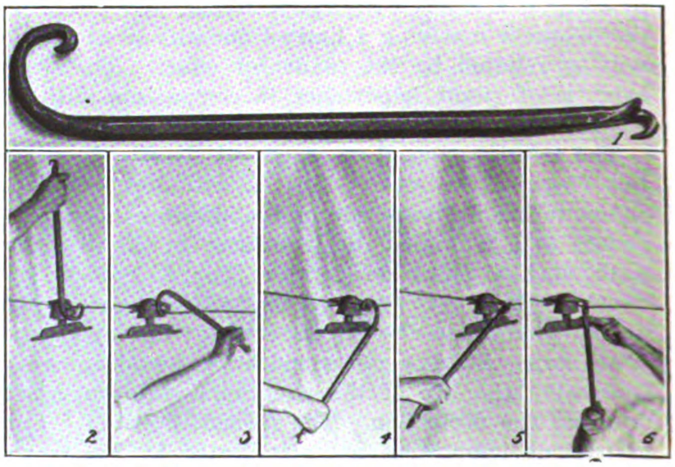


FIG. 1—TROLLEY-HANGER WRENCH. FIGS. 2-6—USING HANGER WRENCH TO ATTACH AND DETACH TROLLEY HANGER

News of Electric Railways

Traffic and Transportation

Financial and Corporate Personal Mention Construction News

Another Philadelphia Hearing

Change in Wording of Proposed Philadelphia Lease May Overcome Objections Raised Previously —Another Hearing on Oct. 5

Another hearing was held on Sept. 21 on the proposed lease of the Philadelphia high-speed lines to the Philadelphia Rapid Transit Company. The hearing was before the joint committee on finance and street railways of the Council and was presided over by Chairman Gaffney. Among those who sat with the committee were Mayor Smith and James Alcorn, a member of the Public Service Commission of Pennsylvania. Dr. William Draper Lewis, the Mayor's special legal adviser, was accompanied by City Transit Director William S. Twining. A. Merritt Taylor, former director of city transit at Philadelphia, who is opposed to some of the terms and conditions of the grant as now proposed, was attended by counsel.

DR. LEWIS BEGINS PROCEEDINGS

The proceedings were begun by Dr. Lewis, who submitted his opinion on the suggestions made by Ford, Bacon & Davis, New York, N. Y., who some time ago reported to the city with reference to the proposed lease. As noted in the ELECTRIC RAILWAY JOURNAL for Sept. 8, page 409, Ford, Bacon & Davis, in concluding their report, expressed the opinion that the proposal constituted a businesslike basis of contract, fair alike to the company and the city.

At the outset of the hearing Dr. Lewis said that undue emphasis had been laid on the section of the proposed lease dealing with fares. The Public Service Commission controlled the making of reasonable and just rates of fares. He added that if at any time it was desired to provide an increase or to bring about a reduction of fares the city officials could relieve the company in whole or in part from the obligation to pay rent for the use of the city's transit facilities. Dr. Lewis again insisted that the idea that the lease guaranteed a dividend to the company was not supported by any expression contained in the lease. On this point there was considerable discussion between Dr. Lewis and the lawyers of Mr. Taylor regarding the meaning of the words and of the phraseology of the lease.

MR. TAYLOR READS OPINION

Mr. Taylor read the legal opinion rendered to him in which the criticisms he had made previously of certain provisions of the lease were sustained. This opinion aimed at a clarification of the provisions of the lease with special reference to dividends, fares and the purchase of the company's properties. Dr. Lewis insisted that the lease was clear in the main, but that if changes were needed to make it legally perfect, these would be carefully considered.

Some of the members of the committee felt that Dr. Lewis should have more time to consider the objections raised by Mr. Taylor. The doctor, however, did answer several criticisms and is to prepare a brief in relation to the opinion of the Taylor lawyers. In a summary of the hearing the Philadelphia *Public Ledger* of Sept. 22 said it appeared at the conclusion of the hearing that the only thing left to do was to agree on the right wording for the right place and then go ahead with the adoption of the lease between the city and the company.

It was expected that Director Twining would have an opportunity to make an address, but instead he submitted to the committee a printed discussion of the basic principles and provisions of the proposed lease.

There will be another hearing on the proposed lease on Oct. 5.

Purchase of U. R. R. Lines Favored

Public Utilities Committee of San Francisco Supervisors Recommends Purchase of Private Lines by City

The public utilities committee of the Board of Supervisors of San Francisco, Cal., unanimously adopted a resolution on Sept. 25 recommending that the city purchase the property of the United Railroads if it can be obtained on equitable terms. The city engineer was also authorized to confer with the officers of the United Railroads to ascertain the valuation of the property.

This action followed a meeting held on Sept. 24 by the Mayor, a committee of citizens and the members of the reorganization committee of the United Railroads at which it was proposed to appraise the physical property now and buy on the installment plan, and also to agree with the United Railroads on a year determined to be a fair measure of its net earnings or take an average of five years' net earnings as the price to be paid by the city each year for every year of the franchises. The method proposed contemplates no bond issue, but would be carried into effect through a charter amendment which on adoption by a vote of the people and ratification by the Legislature would give the city possession of the system. The charter amendment vote cannot be legally taken until July 19, 1918, according to the city attorney. The valuation of the United Railroads now being made by the Railroad Commission of California will probably not be used under the new plan of negotiation.

Reports state that on Sept. 26 the United Railroads carried to the Supreme Court its appeal from the decision of the District Court in favor of the city in the case regarding the four-tracking of Market Street. Service on the United Railroads continues to improve. On Sept. 26 cars were run until 10.30 p. m.

Coal Case Carried to Washington

Kentucky Traction & Terminal Company Appeals Direct to the Fuel Administrator at Washington for Relief

The threatened coal famine in Lexington, where the supply recently became so low that the Kentucky Traction & Terminal Company suspended operation of its interurban lines for several hours, has resulted in a personal appeal for intervention by the office of Fuel Administrator Garfield. This was made in Washington on Sept. 21 by S. H. Dailey, general manager of the company named, and Richard Stoll, one of the leading business men of the city of Lexington. They made the statement that there was less than a week's supply of coal in Lexington and that the plant of the railroad as well as other utility plants and numbers of manufacturing plants faced an absolute shutdown. Not only would Lexington be affected but a situation similar in every respect exists in the other towns around Lexington. Citizens of Lexington drafted an appeal for help at a mass meeting, which resulted in telegrams to the district representative in Congress.

In a statement given out by Mr. Dailey at Lexington relating to the suspension of service on the interurban lines he said that there has been a shortage of coal for the last six months. The company's contractor failed to keep it supplied even when a bonus was paid on the coal, due to shortage of labor and cars, and then the strike in the eastern Kentucky field developed. During the last six months the company has found it necessary on several occasions to pay three times the amount of the contract price in order to have coal.

Objections to St. Louis Ordinances

Pending Ordinances Will Likely Be Redrafted—Franchise Expert to Be Retained

At a meeting of the public utilities committee of the Board of Aldermen of St. Louis, Mo., on Sept. 17, a committee of the Chamber of Commerce attacked the proposed ordinances looking toward the settlement of the differences between the city and the United Railways. The committee of the Chamber of Commerce which appeared before the aldermanic committee was headed by John M. Atkinson, formerly chairman of the Missouri Public Service Commission. The report opposed several features of the pending ordinances, but approved the measures in general. It recommended that Delos F. Wilcox, New York, be employed to co-operate with the Aldermen in drafting a substitute bill.

It was expected that at the meeting on Sept. 17 Charles E. Smith, consulting engineer for the city, would explain in detail his method of arriving at $60,000,000 as the valuation of the United Railways, but consideration of this matter was deferred. Mr. Smith's valuation is recognized in each of the two pending bills looking to a settlement between the city and the corporation. Further consideration of the objections to the ordinances voiced previously by the St. Louis Civic League was postponed for another meeting.

EMPLOYMENT OF FRANCHISE EXPERT UNDER CONSIDERATION

Subsequently the public utilities committee decided to recommend to the Aldermen that an appropriation of city funds be made to employ an expert to aid the committee in solving the franchise problem. It seems likely that there will be no further public hearings before the aldermanic committee until a substitute ordinance has been drafted.

The public utilities committee reported on Sept. 21 at the meeting of the Board of Aldermen, which reconvened after two months' vacation, that it is unable at present to submit recommendations on the pending United Railways settlement ordinances. According to the committee, so many conflicting views were expressed at the public hearings that it was difficult to come to any definite decision.

The committee later reversed itself on its stand taken previously in favor of hiring an expert to assist the Chamber of Commerce in drafting a substitute ordinance to settle the differences between the city and the company. On Sept. 22 the members declared that if an expert is employed he should aid the Aldermen.

The Chamber of Commerce recently submitted the two ordinances to Mr. Wilcox for an expression of expert opinion. In his reply to the chamber Mr. Wilcox said that he had not had time to make a careful study of the two ordinances, but that it required only "a superficial examination to show that they contain certain radical defects, on account of which they ought not to be considered in their present form." He mentions as major defects the lack of adequate provisions for extensions, the presence of elected city officials on the company board of directors, the absence of any provision for the avoidance of strikes, the lack of an adequate forfeiture clause and the vague and inadequate provisions for interurban facilities and rapid transit lines.

CITY COUNSELOR'S ADVICE SOUGHT

City Counselor Daues of St. Louis on Sept. 22 in a formal opinion to Barney L. Schwartz, chairman of the public utilities committee of the Board of Aldermen, answered several legal questions asked by the Aldermen relating to the proposed settlement ordinances. The Counselor was asked: (1) How extensions would be made and paid for under the ordinances. (2) Whether the United Railways would have the exclusive use of a subway for fifty years if one is built either by the city or the company. (3) Whether the Missouri Public Service Commission has jurisdiction to make rates or interfere with the clauses in the proposed ordinances if they are passed.

The opinion declares that, under the so-called partnership ordinance, the board of control would have authority to order the company to make extensions, and that the matter of extensions must be taken up for consideration within sixty days after the ordinance becomes effective.

Mr. Daues holds that the United Railways would not have an exclusive right to use a subway, if one is built. The ordinances authorize the city to build a subway and compel the United Railways to use it and pay the city a reasonable interest on the investment—whether or not the subway is a paying proposition. The city has the right to permit other lines to use such a subway, and to determine what share of the expense shall be paid by the using companies, the opinion says.

According to Mr. Daues, the State Public Service Commission has authority to make or change the fare or rates and to ignore the provisions of the ordinance if it desires.

Seattle Evidence All In

Puget Sound Wage Arbitration Well on Way to Conclusion—Wage Base Line to Be Established—Decision Probable by Nov. 1

Arbitration of the demands of the employees of the Puget Sound Traction, Light & Power Company and the Tacoma Railway & Power Company was completed on Sept. 20 as far as the presentation of evidence in Seattle is concerned. Hearings were resumed in Tacoma on Sept. 24 and were to occupy not more than two days. The entire matter will then be in the hands of the arbiters, composed of Dr. Henry Suzzallo, president of University of Washington; C. J. Franklin, Portland, Ore., representing the company, and James Duncan, president of the Seattle Central Labor Council, representing the trainmen. After the evidence is all presented Chairman Suzzallo will appoint a corps of investigators to determine the authenticity of the facts and figures in relation to living expenses, earnings of the men, conditions affecting the men, and other evidence submitted, before the board announces its findings. A month will probably elapse before the board arrives at any decision.

The last witness called in Seattle was W. H. McGrath, vice-president at Seattle, who testified to the differences between the two organizations. C. A. Reynolds, attorney for the men, had made the statement that the companies in Seattle and Tacoma were identical, and that Stone & Webster owned 99 per cent of the stock. Mr. McGrath testified that the companies are separate corporations; that Stone & Webster do not control them; that they are owned by separate groups of stockholders only a minority of whom are identical; that the bonds are held by separate groups of investors, and that the companies have separate officials and boards of directors. He said that Stone & Webster hold only 12 per cent of the stock of the Puget Sound Traction, Light & Power Company. The Stone & Webster Management Association manages both properties under a management contract with the companies. Stone & Webster specialize in public utility management and manage some properties in which the firm does not own a share of stock. The services of Stone & Webster as managers are available to any public utility anywhere.

COMPANY OFFICERS AS WITNESSES

The important witnesses for the company during the week were the various officials. A. L. Kempster, division manager at Seattle; G. A. Richardson, superintendent of railways; D. W. Henderson, superintendent of transportation; E. V. Minich, superintendent of employment; Division Superintendent Nice, and other officials, testified that they had all risen from the ranks. Mr. Kempster started with the company as an office boy twenty-six years ago in Seattle. Others had been motormen, gripmen or conductors. These men testified to intimate knowledge of the men, their living conditions and to the policy of the company to develop the men and to promote them from time to time to better positions as they qualified in the service.

The testimony for the company established the facts that the employees earn from an average of $87.25 for the lowest paid trainmen to $103.71 for the highest per month. In addition, the men receive unlimited free transportation for themselves and families. Men in other classes of employment with the company are paid in proportion. In every branch of the service except platform work an eight-hour day is the rule. The company requires a basic ten-hour day from trainmen because the requirements of traffic and the demand of the public for service compel it.

Employment lists were filed to show what the federal government and the State considered to be living wages for employment similar to that with the railway. Mail carriers and clerks are paid from $800 to $1,100 a year, and assistant instructors, janitors, patrolmen, engineers and firemen in the University of Washington from $800 to $1,200 a year.

Dr. Suzzallo announced on Sept. 19 that the board had decided to establish a wage base line below which wages would not be allowed to go, regardless of all other operating obligations. He defined this as a bare living wage, having priority over even the obligation to pay interest on money borrowed to construct and develop the company's property. Chairman Suzzallo also announced that consideration must be given to the probability of relief being afforded the company by the State, in case the board, in its final decision, added to the burdens of the company. The most important ruling was that upon the admissibility of evidence as to the company's ability to pay increased wages from present or past earnings.

Charles A. Reynolds, attorney for the trainmen, opposed the admission of any such evidence, on the admitted theory of principal and agent, contending that the company's ability or inability to pay had nothing to do with hours and wages, the matter at issue. He declared that the discussion of such evidence before the board would be unfair to the men.

The question of the fairness of the "swing run" and the possibility of eliminating it came up for much discussion during the week. It was conceded by both sides that it would be impossible to eliminate it and to furnish the standard of service demanded by the public. The men agreed with the company that the employment of two shifts to care for what is virtually a fifteen-hour day would bring unreasonable expense upon the company. Mr. Richardson, called as an expert witness, explained the schedules and runs, and presented charts showing the demand of the public for transportation and the manner in which that demand had been met. He said that schedules are arranged with a view to providing the smallest possible number of swing runs.

Twin Peaks Tunnel Line

Road Nearing Completion Which Will Afford Connection Between San Francisco Business and Residential Sections

The first electric car was run through Twin Peaks tunnel in San Francisco, Cal., on Sept. 5. It was a municipal work car loaded with crushed rock. The road will probably be put in regular operation on Dec. 1. It is expected that by this time the outer tracks for the municipal electric railway will be completed on Market Street between Church Street and the tunnel, permitting operation of the tunnel cars down Market Street to Van Ness Avenue to Geary Street to the ferry. The system will afford a much-needed rapid transit connection between the business district and a desirable residential section heretofore undeveloped.

In the construction of the railway through the tunnel the contractors installed the overhead work simultaneously with the laying of the rails on the subgrade and are using the skeleton track for hauling the ballast. It was originally intended to use a third-rail through the tunnel, but an overhead trolley system was installed instead. This will permit all surface cars to be used on the tunnel lines without modifications. Seventy-pound A. S. C. E. rails in 60-ft. lengths are used.

The tunnel is of a horseshoe section, but has a false ceiling, consisting of a 4-in. suspended slab running through practically its entire length. The space above the slab forms the ventilation duct. Owing to the possibility of noisy operation should the usual trough and trolley be supported on barn hangers from this slab ceiling, it was decided to use catenary suspension. As the headroom is limited, the hangers are quite short, and the suspension cable was pulled up flat under 1800-lb. tension, with frequent points of support. A block signal system will be installed through the tunnel.

The entire work is under the supervision of M. M. O'Shaughnessy, city engineer of San Francisco. Eaton & Smith are the contractors.

Portland Men Insistent

Unwilling to Wait Longer Than Oct. 1 for Decision in Fare Case Before Pressing Their Wage Demand

A strike in Portland, Ore., was forecast on Sept. 20, when the recently organized car men's union notified the Portland Railway, Light & Power Company that the men's recent demands for increased wages and the eight-hour day must be met by Oct. 1. The company recently announced that it felt the men were entitled to more pay, but said it could not afford to meet the increase under the conditions that existed at the time. A petition for permission to increase fares from 5 cents to 6 cents, filed by the company, is now before the Public Service Commission of Oregon.

The official statement of the union says in part:

"The demands take effect on Oct. 1, irrespective of any action by the Public Service Commission. We made our demands to the company and President Griffith said the company could not pay it."

Information from Salem from the Public Service Commission is to the effect that the commission's decision regarding an increase in fares will be made about Oct. 1. It has been unofficially reported that instead of ordering a 6-cent fare the commission may issue orders to the company which will result in a sufficient number of small economies to enable the company to meet the demands of the car men.

More Careful Subway Studies Suggested for Cleveland

An adverse report on the proposed rapid transit commission ordinance, to be voted on in Cleveland, Ohio, at the November election, has been made by the executive board of the Cleveland Engineering Society. This followed a report made to the board by a special committee.

It is the belief of the board that the City Planning Commission should first make a careful study of the subway matter, formulate plans and acquaint the public thoroughly with the proposed improvement. Then it might be advisable to appoint a commission under the provisions of the state law to execute these plans, but not before. According to the board, only in this way will it be possible to formulate plans for both the present and future needs and it is argued that whatever is done in the way of improvements to meet immediate demands should be a part of a general scheme which will also take care of the future growth of the city.

The society is not opposed to the construction of subways. On the other hand, it is the belief of members that subways and underground terminals are necessary now, but it is felt that such an important improvement should be well planned, so that there may be no mistakes that might block extensions later on.

Three-Car City Trains Discussed

Fielder Sanders, street railway commissioner of Cleveland, Ohio, informed the street railway committee of the City Council on Sept. 24 that the time was not far distant when three-car railway trains will become necessary in the city. In this Joseph Alexander of the Cleveland Railway agreed with Mr. Sanders.

Councilman Kadlecek has introduced an ordinance for the regulation of the weight of electric railway cars. For some time he has been endeavoring to make some move that would take the interurban cars off the local tracks and this ordinance is intended to further this end. Councilman McGinty proposed that the interurban lines entering the city charge the same rate of fare per mile within the city that they receive outside and turn the extra amount over to the Cleveland Railway for the purpose of maintenance of tracks. He thought that this would produce about $300,000 a year.

The street railway committee has approved the purchase by the Cleveland Railway of twelve acres of land at Lorain Avenue and West 117th Street, on which a new carhouse is to be erected. It is expected that a cross-town line will be built near there and the new house and yards will thus take care of two lines. The cost of the land was $22,500.

Key Route Men Finish Case

The testimony of platform men of the San Francisco-Oakland Terminal Railways, Oakland, Cal., before the board of arbitration has been concluded after eight meetings. On Sept. 18 representatives of the company outlined its case. The principal questions raised by the company were: (1) What is the economic maximum that the company can afford to pay? (2) What is the social minimum that the men can afford to work for? The company states that three rights are to be considered, as follows: (1) The right of the public to receive adequate service; (2) the right of the utility to fair remuneration on its investment; (3) the right of the employee to a fair living wage.

It is claimed that platform men on the East Bay lines are paid higher schedules than in the majority of cities of this class and under similar conditions; that the cost of living is no higher than elsewhere; and, finally, that the company is unable to pay interest on its investment at the present time and therefore cannot afford to meet the demands for higher wages.

It is expected that the company's side of the case will be concluded by Oct. 15. The testimony already presented is to be charted in order that the material may be summarized with the least confusion.

Missouri Short Line Increases Wages

The Kansas City, Clay County & St. Joseph Railway, Kansas City, Mo., known as the Missouri Short Line, has increased the wages of its trainmen, effective on Sept. 15. The old schedule, in force a year, and the new follow:

Period	Wages	
	Old	New
First six months	26 cents	27 cents
Second six months	27 cents	28 cents
Second year	27½ cents	29 cents
Third year	28½ cents	30 cents
Fourth year	29 cents	31 cents
Fifth year	29½ cents	32 cents
Sixth year	30 cents	33 cents

J. R. Harrigan, general manager of the company, gave to the men their first intimation that they would receive a raise after the strike of the Kansas City Railways had been settled. He called the men into his office and said that he had hoped to readjust their salaries eventually, but that in view of their commendable conduct, particularly during the recent strike in Kansas City, he would hasten the action.

Bay State Duties Assigned

The Bay State Street Railway, Boston, Mass., announces in *Triangle Talks* for Sept. 22, a division of the positions of vice-president and general manager in order to relieve R. S. Goff, vice-president and general manager, of some of his exacting duties. The duties of first vice-president have been assigned to R. B. Stearns, in charge of all departments. The duties of general manager have been assigned to Mr. Goff as head of a new department as follows: All matters before legislative committees, all matters before the Public Service Commission, all matters before the State Highway Commission, all matters including franchises and fare details with cities and towns, all matters relative to labor agreement. Mr. Sparks is appointed assistant to the first vice-president.

Arbitration Rejected in Chattanooga

F. W. Hoover, vice-president of the Chattanooga Railway & Light Company, Chattanooga, Tenn., late on Sept. 18 informed John B. Colpoys, federal mediator, that his company would not consider settlement of the strike of the employees of the company on the basis proposed by him. The proposal of Mr. Colpoys was to the effect that the company resume contractual relations with the former employees, reinstating all men who had not been guilty of acts obnoxious to the company and that all matters in dispute should be submitted to a board of arbitration selected by the parties to the controversy.

Increase in Wages in Atlantic City.—An increase in wages of 2 cents an hour, dating from Sept. 15, has been granted to the motormen and conductors employed by the Atlantic City & Shore Railroad, Atlantic City, N. J. The increase will bring the wage rates of the men on the Atlantic Avenue line up to 25, 27 and 29 cents an hour, and the rates for the men on the Ocean City line up to 27, 29 and 31 cents an hour. A. J. Purinton, superintendent of the company, said the increase was given as an evidence of the company's good-will and an appreciation of the rising cost of living.

Recalcitrant Police of Seattle on Trial.—The trial of E. W. Benjamin and twelve other policemen of Seattle, Wash., who on July 20 refused to obey orders of Charles L. Beckingham, chief of police, and ride on cars of the Puget Sound Traction, Light & Power Company, to protect the motorman and conductor from violence from strikers and their sympathizers, has been set for Oct. 1. The case will be heard before Judge Kenneth Mackintosh. The thirteen striking policemen are joined in one information charging failure of duty as public officers. Following the refusal of the men to board the cars, Chief Beckingham discharged them, and their appeals from that order are now before the City Civil Service Commission.

Centre Street Loop Hearing Continued.—Continuing its inquiry into the conditions in the Centre Street loop subway as to service and equipment, the Public Service Commission for the First District of New York on Sept. 24 had Clifton W. Wilder, electrical engineer of the commission, on the stand. Mr. Wilder told the commission that the Brooklyn Rapid Transit Company, which operates the loop, had 300 steel cars ready, 100 nearly ready, eighteen cars partly built, an option on 100 more cars, and had a tentative option on still another 300. The railroad at present is using about 325 wooden cars a day in the loop. The witness explained that it would be difficult to have the wooden cars removed from storage on the tracks in the loop because the East New York storage yard of the company was not ready for use. The company has been unable to secure steel to complete the work now under way at East New York.

Strike in Vicksburg Settled.—After a strike lasting two days, an agreement running for a year was reached on Sept. 8 between the conductors and motormen of the Vicksburg Light & Traction Company, Vicksburg, Miss., and the management of the company. The men demanded an increase in wages of 4 cents an hour, making the scale 25 cents an hour. They also demanded that the company continue to operate its cars on the Clay and College and the Washington Street lines with two men. As an alternative to the original demand of the men O. H. Simonds, manager of the company, suggested the following wage scale: First six months, 20 cents an hour; second six months, 21 cents an hour; second year, 22 cents an hour; third and fourth years, 23 cents an hour; fifth year, 24 cents an hour. In addition to this Mr. Simonds proposed to pay the equivalent of approximately three-quarters of a cent an hour as an incentive to trainmen to render highly efficient service. The full terms of the settlement have not been made public, but it is said that the matter was finally adjusted on the basis of the company granting approximately the scale demanded by the men.

Government to Refund Excess Excise Tax.—The dismissal by the United States Supreme Court of a six-year-old suit by the Union Traction Company of Indiana against the federal internal revenue department to recover $1,543 paid as excise tax in 1911 is expected to be followed by the dismissal of three similar suits brought by other Indiana properties. The government will refund the tax to the Union Traction Company in the settlement of its suit, and it is probable that a like settlement will be made in the other cases. The three pending suits are by the Indianapolis Street Railway to recover $11,800; the Indianapolis & Northwestern Traction Company to recover $697, and the Terre Haute Traction & Light Company to recover $4,586. These properties are operated under lease by the Terre Haute, Indianapolis & Eastern Traction Company. The taxes involved in the suits were levied under the corporation tax bill of 1909, and payments were made under protest by the corporations which contended they were not doing business and were not subject to tax, their properties being operated by other companies under leases. Since the filing of the suit the Supreme Court has held that ownership is not necessarily doing business, and this ruling therefore eliminates the Indiana cases.

Financial and Corporate

Annual Report

New York Railways

The comparative income statement of the New York (N. Y.) Railways for the years ended June 30, 1916 and 1917, follows:

	1917		1916	
	Amount	Per Cent	Amount	Per Cent
Revenue from transportation	$11,195,730	97.40	$13,379,048	97.55
Other railway operating revenue	298,379	2.60	$335.483	2.45
Total operating revenue	$11.494,109	100.00	$13,714,531	100.00
Operating expenses:				
Maintenance of way and structures	$1,249.171	10.87	$1,042.356	7.60
Maintenance of equipment	910,467	7.92	855,916	6.24
Total maintenance	$2,159.638	18.79	$1,898,272	13.84
Horse power—revenue car service	53,151	0.46	82,426	0.60
Operation of power plant	608.615	5.30	752.718	5.49
Operation of cars	3,526,824	30.68	3,458.264	25.22
Injuries to persons and property	1.051,400	9.15	1,054.651	7.69
General and miscellaneous	597,697	5.20	528.105	3.85
Total actual expenditures	$7,997.325	69.58	$7,774 436	56.69
Maintenance of way and structures—reserve	$99,768	0.87	$569,475	4.15
Maintenance of equipment—reserve	39,416	0.34	275,158	2.01
Injuries to persons and property—reserve	†267.699	†2.33	†244,990	†1.79
Total reserves	†$128,515	1.12	$599.643	4.37
Total expenditures and reserves	$7,868.810	68.46	$8,374.079	61.06
Taxes assignable to railway operations	1,032.011	8.98	1,038,122	7.57
Operating expenses and taxes	$8,900.821	77.44	$9,412,201	68.63
Income from railway operations	$2,593.287	22.56	$4,302,330	31.37
Non-operating income	647,600	5.64	567,869	4.14
Gross income	$3,240.887	28.20	$4,870.199	35.51
Deductions from gross income	2,666.053	23.20	2,707,883	19.75
Net income available for interest on 4 per cent bonds	$574,834	5.00	$2,162,316	15.76
Interest on 4 per cent bonds	722,887	6.29	722,609	5.27
Balance	†$148.053	†1.29	$1,439,707	10.49
Add surplus account	†996,679	†8.67	146.509	1.07
Net income—surplus	†$1,144.732	†9.96	$1,586,216	11.56
Interest paid on adjustment mortgage 5 per cent bonds	....	....	1,584,946	11.56
Surplus	†$1,144.732	†9.96	$270	....

†Decrease or deficit.

The gross passenger revenue for 1917 showed a decrease of $2,183,318 or 16.32 per cent. The greater proportion of this decrease may be attributed to the strikes on the company's lines in August and September, 1916, continuing thereafter with gradually diminishing effect. The other railway operating revenue decreased $37,104. This is accounted for principally by a decrease in sale of power. The larger portion of such a decrease, however, is not real, owing to an adjustment having been made this year under a change in the accounting classification. The actual decrease was $12,502 or 3.73 per cent. As the result of these decreases the gross operating revenue showed a loss of $2,220,422 or 16.19 per cent.

The operating expenses decreased $505,269 or 6.03 per cent. The ratio of operating expenses to total revenue from operation was 68.46 per cent—an increase of 7.40 per cent as compared with the preceding year. The total charge for maintenance during the year, including reserve for maintenance and depreciation, was $2,298,822, which amount is equal to 20 per cent of the total operating revenue, in compliance with an order of the Public Service Commission. There was actually expended in maintenance of way and structures and equipment $2,159,638—an increase as compared with the preceding year of $261,366, and there was set aside in reserve $139,184.

The transportation expenses decreased $104,817 or 2.44 per cent. The power supply costs showed a decrease of $173,377, while there was an increase of $68,559 in the account "Operation of Cars," the latter being accounted for principally by increases in wages granted during the year. There was charged to operating expenses during the year for injuries and damages to persons and property $783,701, an amount equal to 7 per cent of the gross passenger revenue.

Advances in daily, weekly and monthly rates of pay were granted during the year, resulting in an annual increase of approximately $637,000, distributed between the various departments of the system as follows: transportation department, $270,000; car equipment department, $135,000; engineering department, $115,000; motive power department, $17,000 and other departments and offices, $100,000.

Taxes assignable to railway operations fell off $6,111. The charge for taxes in 1917 was equal to 8.98 per cent of the gross revenue. Proceedings to review the special franchise assessments for 1912, 1913 and 1914 were tried in the Supreme Court in June, 1916. The issues were somewhat involved and the court still has the cases under consideration, no decision having been rendered. The special franchise valuations for 1917, as fixed by the State Tax Commission, showed a still further decrease as compared with the valuations for 1916.

There was an increase of $79,731 or 14.04 per cent in non-operating income, which is accounted for principally by additional interest revenue received on special funds. The gross income for the year showed a loss of $1,629,312 or 33.45 per cent. Income deductions during the year decreased $41,552, the greater portion of this being accounted for by a reduction in interest on unfunded debt. The deficit for the year totaled $148,053, a decrease of $1,587,760 as compared to the preceding year's results.

The annual report states that a reappraisal of the property (in addition to that in the reorganization proceedings in 1910) is now being made for submission to the Public Service Commission in the approaching hearings on the application for a 2-cent transfer charge. It is said also that the company "is in a receptive mood toward any proposition contemplating a partnership with the city whereby the service to the public may be protected and the burdens of giving that service equitably adjusted in the public interest."

Miscellaneous operating and traffic statistics follow:

	1917	1916	Change
Rates per car mile:			
Total revenue from operation	39.75c.	39.91c.	—0.16c.
Operating expenses:			
Maintenance of way and structures:			
Expended	4.32c.	3.03c.	+1.32c.
Reserved	0.34c.	1.66c.	—1.32c.
Maintenance of equipment:			
Expended	3.15c.	2.49c.	+0.66c.
Reserved	0.14c.	0.80c.	—0.66c.
Operation of power plant	2.29c.	2.43c.	—0.14c.
Operation of cars	12.20c.	10.06c.	+2.14c.
Injuries and damages:			
Expended	3.63c.	3.07c.	+0.56c.
Reserved	0.93c.	0.71c.	—0.22c.
General and miscellaneous expenses	2.07c.	1.54c.	+0.53c.
Total	27.21c.	24.37c.	+2.84c.
Number of passengers carried:			
Cash fares	215.672.697	257,028,563	—41,355,866
Revenue transfers	13,866,986	17,752,628	—3,885,642
Free transfers	85,088,109	108,521,893	—23,433,784
Total	314,627,792	383,303.084	—68.675.292
Ratio of free transfer passengers to revenue passengers	37.07%	39.49%	—2.42%
Average fare per passenger:			
Per passenger (including transfers)	3.559c.	3.490c.	+0.069c.
Per revenue passenger	4.877c.	4.869c.	+0.008c.
Operating expenses per passenger:			
Per passenger (including transfers)	2.501c.	2.185c.	+0.316c.
Per revenue passenger	3.428c.	3.048c.	+0.380c.
Car miles	28,918,483	34,360,986	—5,442,503

Eastern Power and Light Consolidation

Pennsylvania Public Service Commission Approves Consolidation of Railway and Light Properties at Reading Into Two Units

Bonbright & Company, Inc., and W. S. Barstow & Company, Inc., New York, N. Y., announce the consummation on Sept. 13 of an important consolidation of public utility companies in Pennsylvania, controlled by the Eastern Power & Light Corporation.

By consolidation of the Metropolitan Electric Company, Reading, Pa., the Edison Electric Illuminating Company, Lebanon, Pa., and the Lebanon Valley Electric Light Company, a new company known as the Metropolitan Edison Company was formed, which now owns all of the properties of the above companies, comprising the electric light and power, generating and distribution systems which supply practically the entire electric light and power service in the cities of Reading, Lebanon and surrounding territory. The Metropolitan Edison Company also acquired the entire outstanding common stock of the Pennsylvania Utilities Company, which does practically all the gas and electric light and power business in Easton, Pa., Phillipsburg, N. J., Nazareth and Stroudsburg, Pa. The Guaranty Trust Company, New York, and Reilly, Brock & Company, Philadelphia, have purchased $3,250,000 of first and refunding 5 per cent five-year bonds of the Metropolitan Edison Company, and Reilly, Brock & Company have purchased $950,000 of one-year 6 per cent notes of the Metropolitan Edison Company.

The Reading Transit & Light Company, United Traction Company, Front & Fifth Street Railway, all of Reading, Pa., the Boyertown & Pottstown Railway Company, Birdsboro Street Railway and Reading & Womelsdorf Railway, all of which are connecting lines of the Reading street railway system, were merged in a new company to be known as the Reading Transit & Light Company. The company will operate, through ownership or lease, the street railway system in and about the cities of Lebanon and Reading, and extending from the latter to Philadelphia. The Reading Transit & Light Company acquired the stock of the Oley Valley Railway and the Neversink Mountain Railway and the entire outstanding common stock of the Metropolitan Edison Company. Bonbright & Company, Inc., have purchased $2,300,000 of two-year 6 per cent notes of the Reading Transit & Light Company.

Announcement of the plan for the consolidation of the companies was made originally on Feb. 5, and on Feb. 20 formal application for the approval of the plan was made to the Public Service Commission of Pennsylvania. The consolidation of the several companies was approved by the Public Service Commission in August. Reference to the plan was made in the ELECTRIC RAILWAY JOURNAL of Feb. 10, Feb. 24, April 28, Aug. 25 and Sept. 1.

Milwaukee Physical Value Established

Commission Finds Reproduction Cost of $37,319,297—This and Working Capital Greater than Capitalization

After more than three years of work the engineering staff of the Wisconsin Railroad Commission has submitted to the commission its report on the reproduction cost of the physical properties of The Milwaukee Electric Railway & Light Company and Milwaukee Light, Heat & Traction Company. This valuation was made as of Jan. 1, 1914, and showed a reproduction cost on that date of $37,319,297 for the property of the two companies. The capital expenditures of the two companies during the intervening years up to Jan. 1, 1917, were $3,206,700. The reproduction cost on Jan. 1, 1917, would accordingly be $40,525,997. This figure does not include any allowance for working capital or going value. The companies had cash and accounts receivable of $1,174,000, which, when added to the reproduction cost, gives a total valuation of $41,699,997.

Against this valuation of $41,699,997 the company had outstanding in the hands of the public and owned by The Wisconsin Edison Company, $41,006,000 par value of securities, or about $694,000 less than the reproduction cost of the properties. In order to determine the present value of debt represented by bonds sold at a discount, the unamortized discount may be deducted therefrom. If this is done, the present value of bonded debt and outstanding capital stock and notes is $39,500,856 as of Jan. 1, 1917, or $2,199,141 less than the reproduction cost of the properties.

New Jersey Statistics for 1915

The Board of Public Utility Commissioners of New Jersey has just issued its compilation of statistics for the calendar year 1915. The general revenue and expense figures for the various groups of utilities in the State are as follows:

	Operating Revenues	Operating Expenses	Operating Ratio (Per Cent)
Electric railways	$19,110,000	$10,230,000	53.5
Gas companies	13,190,000	6,535,000	49.5
Private electric utilities	12,650,000	5,095,000	40.3
Municipal electric utilities	163,000	101,000	62.2
Private water utilities	4,720,000	1,610,000	34.1
Municipal water utilities	5,350 000	1,945,000	36.4
Telephone companies	9,815,000	4,325,000	44.1
	$64,998,000	$29,841,000	45.9

The foregoing table includes the revenues and the expenses of every utility whose gross revenues for the year exceeded $10,000—or 99 per cent of the total gross revenues of all utilities in the State. The accompanying table shows miscellaneous statistics for electric railways in 1915.

MILEAGE, TRAFFIC AND MISCELLANEOUS STATISTICS OF NEW JERSEY ELECTRIC RAILWAYS FOR 1915

	Miles of Track Owned	Capitalization Per Mile of Track	Miles of Road Operated	Operating Revenues Per Mile of Road	Revenue Car Miles Per Mile of Road	Revenue Car Miles Per Car Hour	Average Fare Per Revenue Passenger (Cents)	Transportation Revenue Per Car Mile (Cents)	Transportation Revenue Per Car Hour	Total Operating Revenue Per Car Mile (Cents)	Operating Expenses Per Car Mile (Cents)	Operating Ratio (Per Cent)
Atlantic & Suburban Ry	17.0	$49,475	16.0	$5,000	$28,090	11.7	4.77	17.7	$2.07	17.8	13.1	73.8
Atlantic City & Shore R. R.	7.7	253,245	24.5	22,283	68,937	10.8	4.74	31.7	3.46	32.3	22.8	70.5
Atlantic Coast Electric Ry	36.1	77,562	20.3	17,883	65,083	9.4	5.00	22.4	2.11	27.5	15.9	57.9
Bridgeton & Millville Traction Co.	37.9	26,385	36.3	3,226	16.136	9.6	4.32	19.7	1.90	20.0	17.9	89.6
Burlington County Transit Co.	14.8	8,108	15.8	4,453	23,350	9.5	5.00	18.5	1.76	19.0	16.9	87.3
Cape May, D. B. & S. Pt. R. R.	13.7	21,898	10.4	1.671	13 033	8.4	5.00	12.8	1.08	12.8	22.1	172.4
Central Passenger Ry	2.8	104,354	2.1	10,544	56,300	5.6	2.10	17.8	1.00	18.7	17.6	94.1
Five Mile Beach Electric Ry	5.7	44,859	4.9	9,298	54,759	8.3	5.00	16.6	1.38	16.9	9.3	54.7
Jersey Central Traction Co.	35.4	84,746	36.8	6,356	25,600	10.8	4.90	23.7	2.58	24.8	12.8	51.0
Millville Tractioh Co.	12.5	30,640	12.5	4,019	25,511	9.6	4.82	14.6	1.41	15.8	17.1	108.6
Monmouth County Electric Co.	17.7	46,610	15.0	5,111	35,316	10.7	5.00	13.9	1.40	14.5	14.0	96.8
Morris County Traction Co.	66.8	68.093	50.0	6,914	27,621	10.6	5.80	25.7	2.73	25.8	17.6	68.0
New Jersey & Penna. Traction Co.	14.9	107,382	13.3	5,963	23,159	15.6	4.94	25.5	3.98	25.7	17.5	67.9
New Jersey Rapid Transit Co.	6.0	53.333	6.0	....	....	...	5.00	...	...	...	...	121.7
Northampton-Easton & W. Tr. Co.	18.0	112,431	18.0	3,341	12,125	16.3	5.00	27.0	4.41	27.6	14.3	51.8
North Jersey Rapid Transit Co.	14.5	110,345	15.2	3,879	19,569	15.1	9.08	19.7	2.97	19.8	14.2	71.7
Ocean City Electric R. R.	10.0	17,500	10.0	2,143	16,060	9.2	5.00	13.3	1.22	13.3	11.2	83.9
Phillipsburg Horse Car R. R.	7.1	4,360	6.9	16,959	77,288	8.4	5.00	21.8	1.83	21.9	15.5	70.5
Point Pleasant Traction Co.	3.2	62,112	3.1	2,557	15,927	6.7	5.00	15.8	1.06	16.1	12.4	77.0
Public Service Railroad Co.	•46.7	†48,536	39.8	4,328	17,066	23.5	18.72	25.1	5.89	25.4	15.8	62.4
Public Service Ry	•835.6	†161,310	491.2	32,236	104,116	9.2	4.98	30.6	2.83	31.0	17.3	55.8
Trenton & Mercer Co. Tr. Corp.	•74.1	†67,902	53.2	14,420	59,226	8.8	4.33	24.2	2.12	24.3	13.3	54.6

•Miles of track operated.

†Capitalization per mile of track operated, including capitalization of lessor companies.

Electric Railway Statistics

Comparison of Returns for June, 1917, and for the Six Months, January-June, 1917, with Those for 1916 Show Rising Costs

A comparison of electric railway statistics for the six months, January-June, 1917, with figures for the corresponding months of 1916, made by the information bureau of the American Electric Railway Association, indicates that the expenses during this period have increased faster than the revenues. The rising costs of materials and supplies, together with increases in wages and taxes paid, have disastrously affected electric railways throughout the country and particularly those operating in the Eastern district.

Data for the six months ending June 30, 1917, representing 8388 miles of line of electric railways scattered throughout the country, figured on the per mile of line basis, indicate an increase in operating revenues of but 3.14 per cent, while operating expenses increased 7.67 per cent and net earnings decreased 4.70 per cent. Passenger revenues increased but 2.57 per cent, while all other railway operating revenues increased 12.61 per cent. Data representing approximately 80 per cent of the above mileage show an increase in the amount of taxes paid of 6.46 per cent and a decrease in operating income of 7.74 per cent.

The returns from the city and interurban electric railway companies as shown in detail in the accompanying tables have been classified according to the following geographical grouping: Eastern District—East of the Mississippi River and north of the Ohio River. Southern District—South of the Ohio River and east of the Mississippi River. Western District—West of the Mississippi River.

Of the three groups shown, returns for the Southern and the Western apparently indicate a slight degree of improvement over the corresponding period of the previous year,

TABLE I—COMPARISON OF REVENUES AND EXPENSES OF ELECTRIC RAILWAYS FOR SIX MONTHS, JANUARY-JUNE, 1917 AND 1916

Account	United States				Eastern District				Southern District				Western District			
	Amount January-June, 1917	Per Mile of Line			Amount January-June, 1917	Per Mile of Line			Amount January-June, 1917	Per Mile of Line			Amount January-June, 1917	Per Mile of Line		
		1917	1916	% Increase		1917	1916	% Increase		1917	1916	% Increase		1917	1916	% Increase
Operating revenues	$97,795,096	$11,659	$11,303	3.14	$60,749,153	$12,073	$11,833	2.03	$8,138,170	$8,202	$7,881	4.07	$28,907,773	$12,229	$11,622	5.22
Passenger revenues	91,654,289	10,927	10,653	2.57	56,129,096	11,155	11,030	1.13	7,692,877	7,753	7,468	3.81	27,832,316	11,774	11,197	5.15
Other railway operating revenues	6,140,807	732	650	12.61	4,620,057	918	803	14.32	445,293	449	413	8.71	1,075,457	455	425	7.05
Operating expenses	64,730,751	7,717	7,167	7.67	41,191,266	8,186	7,515	8.93	4,624,657	4,661	4,455	4.62	18,914,828	8,001	7,575	5.62
Net earnings	33,064,345	3,942	4,136	†4.70	19,557,887	3,887	4,318	†9.98	3,513,513	3,540	3,426	3.32	9,992,945	4,228	4,047	4.47
Operating ratio, per cent	1917, 66.18; 1916, 63.40				1917, 67.80; 1916, 63.51				1917, 56.83; 1916, 56.53				1917, 65.42; 1916, 65.17			
Average number of miles of line represented	1917, 8,388; 1916, 8,307				1917, 5,032; 1916, 4,977				1917, 992; 1916, 989				1917, 2,364; 1916, 2,341			
COMPANIES REPORTING TAXES																
Operating revenues	$91,253,987	$12,963	$12,606	2.83	$58,068,248	$13,714	$13,504	1.56	$4,707,240	$8,729	$8,363	4.38	$28,478,499	$12,568	$11,954	5.14
Passenger revenues	85,564,600	12,155	11,888	2.24	53,790,752	12,704	12,617	0.69	4,356,683	8,079	7,789	3.72	27,417,165	12,100	11,518	5.05
Other railway operating revenues	5,689,387	808	718	12.53	4,277,496	1,010	887	13.87	350,557	650	574	13.24	1,061,334	468	436	7.34
Operating expenses	60,569,801	8,604	8,010	7.41	39,425,253	9,311	8,598	8.29	2,568,309	4,763	4,470	6.55	18,576,239	8,198	7,768	5.54
Net earnings	30,684,186	4,359	4,596	†5.16	18,642,995	4,403	4,906	†10.25	2,138,931	3,966	3,893	1.88	9,902,260	4,370	4,186	4.40
Taxes	6,264,973	890	836	6.46	3,855,521	911	849	7.30	382,108	709	651	8.91	2,027,344	895	858	4.31
Operating income	24,419,213	3,469	3,760	†7.74	14,787,474	3,492	4,057	†13.93	1,756,823	3,257	3,242	0.46	7,874,916	3,475	3,328	4.32
Operating ratio, per cent	1917, 66.37; 1916, 63.54				1917, 67.89; 1916, 63.67				1917, 54.57; 1916, 53.45				1917, 65.23; 1916, 64.98			
Average number of miles of line represented	1917, 7,039; 1916, 6,963				1917, 4,234; 1916, 4,179				1917, 539; 1916, 539				1917, 2,266; 1916, 2,245			

†Decrease.

NOTE.—There were twenty-nine days in February, 1916, and only twenty-eight days in February, 1917.

TABLE II—COMPARISON OF REVENUES AND EXPENSES OF ELECTRIC RAILWAYS FOR JUNE, 1917 AND 1916

Account	United States				Eastern District				Southern District				Western District			
	Amount June, 1917	Per Mile of Line			Amount June, 1917	Per Mile of Line			Amount June, 1917	Per Mile of Line			Amount June, 1917	Per Mile of Line		
		1917	1916	% Increase		1917	1916	% Increase		1917	1916	% Increase		1917	1916	% Increase
Operating revenues	$19,727,549	$2,193	$2,074	5.73	$13,339,219	$2,364	$2,232	5.91	$1,437,080	$1,448	$1,371	5.62	$4,951,250	$2,100	$1,995	5.26
Operating expenses	12,449,478	1,384	1,28'	8.04	8,468,207	1,501	1,375	9.16	808,284	815	768	6.12	3,172,987	1,346	1,277	5.40
Net earnings	7,278,071	809	79:	2.01	4,871,012	863	857	0.70	628,796	633	603	4.98	1,778,263	754	718	5.01
Operating ratio, per cent	1917, 63.11; 1916, 61.76				1917, 63.50; 1916, 61.60				1917, 56.28; 1916, 56.02				1917, 64.10; 1916, 64.01			
Average number of miles of line represented	1917, 8,993; 1916, 8,901				1917, 5,643; 1916, 5,578				1917, 992; 1916, 989				1917, 2,358; 1916, 2,334			
COMPANIES REPORTING TAXES																
Operating revenues	$14,514,297	$2,180	$2,080	4.81	$8,807,244	$2,283	$2,186	4.43	$828,517	$1,536	$1,458	5.35	$4,878,536	2,158	$2,053	5.11
Operating expenses	9,287,870	1,395	1,306	6.81	5,719,053	1,483	1,380	7.46	453,286	841	772	8.94	3,115,531	1,378	1,310	5.19
Net earnings	5,226,427	785	774	1.41	3,088,191	800	805	†0.62	375,231	695	686	1.31	1,763,005	780	743	4.98
Taxes	950,388	143	134	6.71	537,224	139	131	6.10	70,909	131	109	20.18	342,255	151	146	3.42
Operating income	4,276,039	642	640	0.31	2,550,967	661	674	†1.93	304,322	564	577	†2.25	1,420,750	629	597	5.36
Operating ratio, per cent	1917, 63.99; 1916, 62.78				1917, 64.95; 1916, 63.12				1917, 54.75; 1916, 52.95				1917, 63.86; 1916, 63.81			
Average number of miles of line represented	1917, 6,657; 1916, 6,570				1917, 3,857; 1916, 3,793				1917, 539; 1916, 539				1917, 2,261; 1916, 2,238			

while returns for the Eastern are decidedly unsatisfactory. Data for the latter district representing 5032 miles of line indicate an increase in operating revenues of 2.03 per cent and in operating expenses of 8.93 per cent, and a decrease in net earnings of 9.98 per cent. Returns representing approximately 80 per cent of the above mileage show an increase in the amount of taxes paid of 7.30 per cent and a decrease in operating income of 13.93 per cent.

Returns for the Southern and Western groups indicate that expenses have increased at approximately the same percentage rate as the earnings. The Southern group, however, shows an increase in net earnings of about 3 per cent, while the Western has gained about 4 per cent. The operating income of the Southern group has increased less than one-half of 1 per cent, while that of the Western has increased approximately 4 per cent.

The operating ratio for the country as a whole has increased from 63.40 in 1916 to 66.18 in 1917. The operating ratio of the Eastern district has increased from 63.51 in 1916 to 67.80 in 1917. The operating ratios of the Southern and Western groups have changed but little.

Rochester-Syracuse Line Reorganized

The Rochester & Syracuse Railway, Inc., Syracuse, N. Y., has been incorporated as the successor to the Rochester, Syracuse & Eastern Railroad, the property of which was sold under foreclosure on Aug. 28. The new company will have $3,000,000 of preferred and $1,500,000 of common stock. Arthur W. Loasby will be president of the new company; T. C. Cherry, vice-president and general manager, and Elbert A. Hervey, treasurer.

Interest in default on the bonds of the Rochester, Syracuse & Eastern Railroad will be paid in full. This interest amounts to $100 on each $1,000 bond up to last May. The new company will take control on Oct. 31. It will have $250,000 cash, representing the amount saved by the bondholders' protective committee and C. Loomis Allen, the receiver of the company, during the last eighteen months and profits expected during the next seven and one-half weeks.

The reorganization committee will deliver to the certificate holders in the plan for each $1,000 first mortgage gold bond of the Rochester, Syracuse & Eastern Railroad bonds and stocks of the new company as follows: $500 par value of first mortgage 5 per cent bonds, $500 of 6 per cent cumulative preferred stock; $100 of 6 per cent cumulative preferred stock, for unpaid interest, and $200 of common stock.

Originally there were outstanding $4,897,000 of Rochester, Syracuse & Eastern Railroad bonds. Of this amount $4,850,000 was turned over to the bondholders' protective committee when the Empire United Railways, Inc., of which system the Rochester, Syracuse & Eastern Railroad was a part, went into the hands of receivers. By the reorganization junior securities, including preferred and common stock of the old company, are wiped out as far as possessing value are concerned.

A digest of the plan of reorganization was published in the ELECTRIC RAILWAY JOURNAL of May 26, page 977.

Receiver for Hornell Traction

Increased Cost of Operation One of Factors Contributing to Trials of Company

Robert W. Bull was appointed receiver for the Hornell (N. Y.) Traction Company on Sept. 20 by Federal Judge John R. Hazel of the United States District Court. Application for the appointment for a receiver was made by the Anstock Company, Carson City, Nev. It is set forth in the application to the court that on Aug. 1 last the Hornell Traction Company defaulted in the payment of $1,400 interest on bonds due on that date, and that the company is threatened with a multiplicity of court actions as the result of an accident on April 21, 1917. Charles Adsit, president of the company, admitted the allegations in the application for a receiver and said that a resolution was passed by the directors of the company in which they joined in the request for the appointment of a receiver. It is stated that the company has been able to pay all current bills and that there are no general creditors.

Henry Adsit Bull, secretary and treasurer of the Anstock Company, and attorney for the complainant, says in an affidavit filed with the court that the financial difficulties of the Hornell Traction Company have resulted from a decrease of earnings and an increase in the cost of operations. He says the defendant has filed application with the Public Service Commission for leave to put into effect a 6-cent rate of fare.

In addition to being a creditor to the extent of $25,652 with interest from Aug. 8, the Anstock Company is the owner and holder of thirty-five shares of the capital stock of the Hornell Traction Company.

On April 21, 1917, the company had a serious accident, and there are now pending in the courts almost a score of claims for personal injuries so that the Anstock Company says that the property of the company is subject to judgment executions.

The receiver has been instructed by the court to continue the lines in operation.

The company was formed on Oct. 1, 1908, by the consolidation of the Hornellsville Electric Railway and the Hornellsville & Canisteo Railway. It owns and operates the local lines in Hornell, N. Y., and a 4.8 mile interurban line between Hornell and Canisteo.

Danbury & Bethel Street Railway, Danbury, Conn.—A change in the ownership and management of the Danbury & Bethel Street Railway and the Bridgeport & Danbury Electric Railway has been announced. S. W. C. Jones, Greenwich, who held a controlling interest in the properties, and John Sanders, president and general manager, have retired. Stephen Crute, New York, one of the new owners, has succeeded Mr. Sanders as president, and George P. Klinzing, Danbury, becomes secretary and treasurer in place of Mr. Jones.

Jamestown, Westfield & Northwestern Railroad, Jamestown, N. Y.—The Jamestown, Westfield & Northwestern Railroad has applied to the New York Public Service Commission, Second District, for permission to execute a mortgage of $5,000,000 and to issue thereunder $1,000,000 of 5 per cent thirty-year gold bonds. The commission proposed to hold a hearing on the application on Sept. 26.

Leavenworth & Topeka Railway, Leavenworth, Kan.—The Leavenworth & Topeka Railway has been sold by the Santa Fé and the Union Pacific Railroads to a corporation headed by F. L. Wells, Chicago, Ill. New directors, officers and an executive committee were named. A plan for permanent operation of the road will be worked out at once by the executive committee, it was announced. Until Judge John C. Pollock of the federal court lifts the receivership and approves the new ownership, W. A. Austin, Leavenworth, the receiver, will continue to operate the road. The railway is 47 miles long. It has many times been the subject of consideration for electrification.

London & Lake Erie Railway & Transportation Company, London, Ont.—In its issue of Sept. 19 the Toronto *Globe* said in part under a London date line: "The bondholders of the London & Lake Erie Railway & Transportation Company met here to-day and decided to sell the road, either in bulk or in parcels, unless the municipalities interested decide to assist it financially. This is London's pioneer radial railway, having been constructed about thirteen years ago through Lambeth, Talbotville, St. Thomas and Union to Port Stanley, and it is claimed would have paid the company had not the city electrified the London & Port Stanley Railway. As the municipalities traversed by the railway will be seriously affected by the withdrawal of the present service, it was considered probable that they would take some action to retain the railway, possibly by purchase for conversion into a hydro-radial. A resolution was passed by the bondholders instructing a committee to communicate with the clerk of each municipality and to report back at an early date."

Providence & Fall River Street Railway, Swansea Center, Mass.—The Providence & Fall River Street Railway suspended service at noon on Sept. 22. Karl Andrén, Boston, Mass., who purchased the property under foreclosure, has announced that he has given a one-week option on the road to A. H. Barney and others of Swansea, Mass. If the option is not taken up, the work of tearing up the rails will begin at once. The Rhode Island Company, Providence, R. I., which has brought the "Snake Line" cars to Providence from the State line, has announced a new schedule to Luther's Corners, giving hourly service. It is announced that the Bay State Street Railway will continue to operate cars from the Somerset and Swansea lines. This leaves a break of about 11 miles in which there is no electric railway service because of the suspension of the Providence & Fall River Street Railway. Mr. Andrén has sold some of the rolling stock to the Newport & Providence Railway and the Fitchburg & Leominster Street Railway. He says he will saw the 60-ft. rails in half and redrill them for foreign shipment unless Mr. Barney takes up the option. Mr. Andrén at first offered it to the committee for $100,000, but as he has now sold four of the cars, he has cut the price to $90,000. He requires a deposit of $20,000 by noon on Sept. 29, if the option is taken up, the remainder of the purchase price to be paid within sixty days from that time, and the first payment of $20,000 to stand as forfeited if the remainder is not paid within the time allowed.

Electric Railway Monthly Earnings

Period	Operating Revenue	Operating Expenses	Operating Income	Fixed Charges	Net Income
BATON ROUGE (LA.) ELECTRIC COMPANY					
1m., July, '17	$19,992	•$10,426	$9.566	$3.548	$6.018
1 " " '16	17,421	•8.516	8,905	3,501	5.404
12 " " '17	224,722	•109,727	114.995	42 354	72,641
12 " " '16	205,216	•104,420	100,796	36.264	64.532
BROCKTON & PLYMOUTH STREET RAILWAY, PLYMOUTH. MASS.					
1m., July, '17	$15,560	•$11,067	$4.493	$1,239	$3,254
1 " " '16	15,256	•9,795	5,461	1,109	4.352
12 " " '17	125,866	•120,294	5.572	13,926	†8,354
12 " " '16	118,790	•102,389	16,401	13,244	3,157
CLEVELAND, PAINESVILLE & EASTERN RAILWAY, WILLOUGHBY, OHIO					
1m., July, '17	$56.772	•$33.540	$23.232	$11,439	$11,793
1 " " '16	50.976	•24.555	26.421	11,468	14.953
7 " " '17	300,093	•186,100	113,993	82.007	31,986
7 " " '16	261,592	•146,017	115,575	79,630	35,945
COLUMBUS (GA.) ELECTRIC COMPANY					
1m., July, '17	$87.491	•$35.953	$51.538	$31,075	$20.463
1 " " '16	70,246	•28,591	41.655	28,651	13,004
12 " " '17	1,005,468	•381,253	624,215	344,726	279,489
12 " " '16	795,636	•335,427	460,209	344.115	116,094
DALLAS (TEX.) ELECTRIC COMPANY					
1m., July, '17	$163,707	•$103.895	$59,812	$35,164	$24.648
1 " " '16	144,235	•93.484	50,751	31,296	‡21,455
12 " " '17	2,139,920	•1,289.073	850,847	414.661	‡440,329
12 " " '16	1,901,270	•1.176,633	724,637	364.966	‡374.870
GALVESTON-HOUSTON ELECTRIC COMPANY, GALVESTON, TEX.					
1m., July, '17	$175.143	•$116,321	$58.822	$37,192	$21,630
1 " " '16	172.935	•100.904	72,031	36 280	35,751
12 " " '17	1,962,079	•1,301,593	660,486	443,142	217.344
12 " " '16	1,902.376	•1,200,898	701.478	436,822	264.656
HOUGHTON COUNTY TRACTION COMPANY, HOUGHTON, MICH.					
1m., July, '17	$31.927	•$17.127	$14.800	$5.098	$9.702
1 " " '16	31,808	•15,966	15.842	5,241	10,601
12 " " '17	340,201	•200,597	139.604	62,095	77,509
12 " " '16	310,051	•172,408	137,643	65.324	72,319
LAKE SHORE ELECTRIC RAILWAY, CLEVELAND, OHIO					
1m., July, '17	$171.234	•$106.242	$64.992	$35.120	$29,872
1 " " '16	164,595	•90,293	74.302	36,704	37.598
7 " " '17	985,156	•671,306	313.850	241,163	72,687
7 " " '16	886.916	•574,179	312,737	254,517	58,220
NORTHERN TEXAS ELECTRIC COMPANY, FT. WORTH, TEX.					
1m., July, '17	$190.881	•$116.601	$74,280	$29,149	$45.131
1 " " '16	155,966	•98,260	57,706	28,692	29.014
12 " " '17	2,123.306	•1,245.755	877,551	349.706	527,845
12 " " '16	1,836,071	•1,123,367	712,704	340,559	372,145
PADUCAH TRACTION & LIGHT COMPANY, PADUCAH, KY.					
1m., July, '17	$25,180	•$19,240	$5,940	$7.545	†$1,605
1 " " '16	26,379	•18,087	8,292	7,161	1.131
12 " " '17	308,693	•226,846	81,847	87,504	†5,657
12 " " '16	304,669	•194,841	109,828	88,063	21,765
PUGET SOUND TRACTION, LIGHT & POWER COMPANY, SEATTLE, WASH.					
1m., July, '17	$586,369	•$401,049	$185.320	$192,735	†$7,415
1 " " '16	663.746	•418.230	245,516	184,645	60.871
12 " " '17	8,734,738	•5,318,965	3,415,775	2,263,456	1,152.319
12 " " '16	7,709,641	•4.954,027	2,755,614	2,202.476	553.138
SAVANNAH (GA.) ELECTRIC COMPANY					
1m., July. '17	$78,072	•$53,543	$24,529	$24,352	$177
1 " " '16	69,445	•45,193	24,252	23,705	547
12 " " '17	897,533	•595,688	301,845	286,972	14,873
12 " " '16	791,697	•532,425	259.272	280,073	†20,801
TAMPA (FLA.) ELECTRIC COMPANY.					
1m., July, '17	$78.623	•$45.136	$33,487	$4,369	$29,118
1 " " '16	74,625	•41,162	33,463	4.396	29.067
12 " " '17	1,001,735	•546,826	454,909	52,228	402,681
12 " " '16	970,873	•519.362	451,511	52,287	399,224

•Includes taxes. †Deficit. ‡Includes non-operating income.

Traffic and Transportation

Oregon Commission Has Fare Power

Attorney General of Oregon Advises Commission That It Has Full Control of Railway Rates in Cities

Attorney General Brown of Oregon recently advised the Public Service Commission that that body is vested with full powers to raise or lower electric railway rates in the cities of the State, provided that after a full and complete hearing the facts justify such action. The opinion was asked for by Commissioner Buchtel to determine to what extent the commission has power to pass upon the application of the Portland Railway, Light & Power Company for an increased fare on its railway lines. In his opinion the Attorney General said:

WHAT THE ATTORNEY GENERAL SAID

"It has been the opinion of this office ever since preparing and filing brief in the Supreme Court of Oregon in the Woodburn case, 82 Oregon 114, that the Public Service Commission of this State is vested with the power to raise or lower passenger rates in the various cities of the State. The public utility law of Oregon was adopted by the Legislative Assembly of 1911, referred to the people and adopted by them at the November, 1912, election. This law is a general law, which affects all towns and cities alike, within the boundaries of Oregon. The utility act plainly provides whenever upon investigation the commission shall find any existing rate or rates unjust, unreasonable, insufficient, or unjustly discriminatory, it shall determine and by order fix reasonable rates of tolls, to be imposed and followed in the future, in lieu of those found to be unjust, unreasonable, insufficient, or unjustly discriminatory."

In referring to an act of 1901, which provides a maximum 5-cent fare for railways in cities of more than 50,000 inhabitants, Attorney General Brown said:

LEGISLATURE CURTAILED CITY'S POWER

"The records of the Circuit Court of Multnomah County show that in the case of the State of Oregon, ex rel. vs. Portland Railway, Light & Power Company, an action of mandamus was instituted against said company, and it was held by Judge Cavanaugh that the public utilities law superseded said act. I have carefully examined the various charters under which the franchises here involved were given. All but two of the charters were granted before the passage of the public utility act. There can be no question that the Legislature by the passage of the public utility act took away from the cities of the State the power to fix rates in future franchises. The only question remaining, therefore, is as to whether or not the cities of Portland and East Portland had authority under any of the numerous charters of the Legislature referred to to fix the rates irrevocably. I have made a careful study of all of these charters, and find no such provisions."

Reduced-Rate Tickets Eliminated

This Measure Authorized by Massachusetts Commission to Provide Sufficient Revenue in Conjunction with Six-Cent Fare

Reduced-rate tickets are eliminated and a straight 6-cent fare authorized on the New Bedford & Onset Street Railway, New Bedford, Mass., by a recent decision of the Public Service Commission of Massachusetts. In September, 1915, the commission issued a finding permitting the company to increase its unit cash fare from 5 cents to 6 cents, and to sell tickets, good at any time, at the rate of twenty for $1. On June 25, 1917, the company petitioned for authority to withdraw these tickets. The company sought this concession because the increase already permitted had failed to produce the desired financial results, and because of the burden imposed by higher wages and prevailing abnormal prices for coal and other materials.

In the year following the increase to a 6-cent fare unit, beginning in October, 1915, the traffic fell off 9.13 per cent, while passenger revenue increased about 4.45 per cent. The actual increase in earnings was $5,360.95. In the nine months ended June, 1917, the results were only slightly more favorable. The increase in the number of passengers using reduced-rate tickets for the years ended June 30, 1915, and 1917, is shown in the following table:

	1915		1917	
	Number	Per Cent	Number	Per Cent
Cash fares	1,890,022	69.44	1,112,553	47.23
Reduced-rate tickets...	678,811	29.94	1,122,265	47.64
School tickets	128,610	4.72	96,968	4.12
Excursion tickets	24,433	0.90	19,230	0.19
Through tickets	......	....	4,587	0.82
	2,721,876	100.00	2,355,603	100.00

The results in net income have been even less satisfactory on account of increased operating expenses; the net income fell from $19,209 in 1912 to $6,807 in 1917, with a deficit of $9,286 in the year following the fare increase. Since 1915 the total wage increase has been about $9,500 a year. Maintenance expense has been increased by grade changes required by the State and by extensive renewals of pole lines. Some of these expenses are probably abnormal, but the commission sees little prospect of a decrease in the total expense of operation while prices of materials and supplies remain at their present level. The company now buys its power and the unit price fluctuates, under the terms of the contract, with the market price of coal. On this account it is estimated that power will cost $7,000 more than last year. The abolition of reduced-fare tickets, it is thought, will not yield more than $11,000, and that if the company meets its requisite maintenance and fixed charges there can be no excessive return upon the investment.

DECREASED PATRONAGE NOT DUE TO FARE INCREASE

The company held that the decrease in passengers riding cannot be attributed solely or even principally to the increase in fares. A constant falling off of both business and pleasure riding had been noted before the higher fare went into effect. The company maintains that the higher fare yielded at least 10 per cent more in receipts than otherwise would have been attained. The increased use of automobiles is said to be a primary factor in the decrease in traffic.

Rehearing of Seattle Fare Case

Court Orders Rehearing of Evidence in Case Eliminating Four-Cent Fares

A writ of review ordering a rehearing of the evidence in the case of the petition of the Puget Sound Traction, Light & Power Company, Seattle, to the Public Service Commission of Washington, for the rescinding of the 4-cent fare in Seattle, was granted by the Superior Court of Thurston County at Olympia, on Sept. 19. The writ is returnable on Oct. 10. At that time the case will be reopened and the evidence reviewed before the attorneys of the company and of the city of Seattle. The writ was issued upon the petition of Hugh M. Caldwell, corporation counsel for Seattle. It was contended, among other things:

"That the order signed by the commission was and is unreasonable and unlawful, especially in that it assumes that $15,000,000 is the value of the railway properties of the company when, in truth and in fact, the commission has never determined the valuation of the respondent's system in Seattle, and had before it at the time of accepting said valuation as the basis of its order that the 4-cent ticket was an unreasonably low rate no competent evidence of the value of the company's property upon which it should be permitted to figure a reasonable return. That the commission is not authorized by law to direct or permit the elimination of a commutation ticket which the company has specifically agreed to furnish and sell as a condition to its right to occupy the streets of Seattle. That the commission based its order upon incompetent and secondary evidence, and denied to the complainant, the city of Seattle, the right to cross-examine witnesses and the right to examine the evidence considered by the commission."

Ambitious Auto Service Proposed

The General Motor Transportation Company has been authorized by the Railroad Commission of California to issue $40,000 of common capital stock, to be sold at not less than $90 a share, and to operate jitneys between Oakland and San Jose. The proceeds from the sale of stock is to be deposited in a bank as trust funds on condition that at least $36,000 shall be deposited before Dec. 15, 1917, or a later date to be determined by the commission, and if this sum is not deposited all money shall be repaid to stock purchasers. The company intends to operate six twenty-six passenger motor buses on an hourly service between Oakland and San Jose on the east side of San Francisco Bay. Permission was also asked by the company to operate between San Jose and Palo Alto, but this was denied by the commission, the evidence showing that the auto service at present operating between these points is satisfactory and adequate to take care of the present business.

Indianapolis Regulates Jitneys

The City Council of Indianapolis, Ind., has passed an ordinance regulating the operation of jitney buses in that city. It provides that no more than the comfortable seating capacity of the car shall be carried, based on the designated seating capacity of the model of car used. A license is fixed at $10 for cars seating five passengers, $15 for cars seating seven passengers, and $25 for cars seating twelve or more passengers. Jitney operators must also file indemnity bonds providing for damages not exceeding $2,500 for one person and $5,000 for any one accident. The ordinance also provides that the route to be followed must be designated, and that this route cannot be changed until the operator has filed a notice of the new route with the city controller. The driver must charge a 5-cent fare unless the amount is specified by a large sign displayed on the front of the car.

Jitney buses were not in operation in Indianapolis to any extent until during the past winter when the work of elevating the railroad tracks through the Union Station and across the city closed up temporarily some of the main streets, making necessary a rerouting of some of the South Side lines of the Indianapolis Traction & Terminal Company. A jitney organization was formed then and a number of buses have since been in operation between the center of the city and points on the South Side. Carelessness in operation, fast running and incompetent drivers have caused many accidents, and the ordinance passed by the City Council was the result of the protest of business men and petitions from residents along the streets over which the jitneys operated.

Springfield Fare Case Continued

A second hearing was held recently on the application of the Springfield (Mass.) Street Railway for permission to establish two fare units and rearrange its fare zones. The Public Service Commission of Massachusetts granted attorneys for the small towns opposing the petition an extension of time to enable their experts to make investigations into the operation of the company's property. The first hearing in the case was reviewed on page 416 of the ELECTRIC RAILWAY JOURNAL for Sept. 8.

Chairman Macleod of the commission stated there was little doubt that the company needed additional revenue, and suggested that a conference of both sides be held in two weeks which might result in an agreement upon how much additional revenue is needed by the company, and how it should be obtained.

Competition with jitneys has deprived the company of approximately $300,000 during one year, according to an estimate by an official of the company. This competition has been eliminated by an ordinance which recently went into effect requiring drivers to file a bond for $1,000. The jitneys had been running under a $250 bond required by the city of Agawam, and they contended that an additional bond in Springfield was unconstitutional. In a test case against the constitutionality of the ordinance the jitneys were recently defeated in police court.

New Time Schedule Issued by Meralco

The Manila Electric Railroad & Light Company, Manila, P. I., recently issued 50,000 time schedules in convenient form with the idea that they would be of mutual benefit to the public and the company. The printed matter is arranged in the most condensed way practicable and gives all the information that would be useful regarding the electric railway service. The folders give the time of regular cars; transfer points from route to route; a map showing the points served by the company, with figures to indicate the routes on each of the different lines; a rate card covering passenger service on special cars, and other useful information.

The distribution of the new schedules was made as follows: A copy was given to each passenger on the cars on Monday, Aug. 20, steamship lines and railroad ticket offices and hotels were supplied with copies, framed copies were hung in the company's waiting station and other public places and copies were distributed in China, Japan and Honolulu through steamship companies. The company used advertising in the local papers and car signs in the cars before the schedules were published to inform the patrons that every passenger would receive one of the folders on Aug. 20. Posters also were used to urge everyone to secure a schedule for future reference.

Higher-Fare Problem in Vermont

The St. Albans & Swanton Traction Company, St. Albans, Vt., contemplates placing an application with the Public Service Commission for authority to increase its revenue in order to give the public the service it requires. An open letter from George A. Murch, general manager, addressed to the citizens of the community which the company serves, states that relief from the present high costs of operation is imperative. It is pointed out that an increase of 20 per cent in fares would mean only a small increase to the company's patrons on a basis of their total earnings. For instance, a daily car rider earning $2 per day would be affected to the extent of only 1 per cent of his income and this percentage is even less for those receiving higher wages.

In an effort to acquaint the people with this step to be taken by the company, Mr. Murch made a statement to the public in which he said:

"It has been only by ingenuity and initiative genius that electric railway managers, and those engaged in the manufacture of electric railway supplies, have averted destruction to the industry. We feel sure that our patrons will uphold us, and be willing to pay a little more in order that we may be able to keep the lines in operation, and give a service which shall be requisite to the demands."

Skip Stops Spread in Buffalo

Elimination of Stops Has Now Been Extended to Nearly All the Lines

Although less than two months have elapsed since the skip-stop system was adopted as an experiment on two lines of the International Railway, Buffalo, N. Y., the plan has worked out so successfully that it has been extended to almost every line in the city. The skip stop has been adopted very recently on eleven additional lines, and the municipal traffic commission believes that before winter it will be made effective on all of the company's Buffalo lines. The running time on the various lines has been materially cut down and the delay caused by the bunching of cars has been entirely eliminated. The speeding up of traffic has been realized by the public and letters of appreciation of the company's efforts to better the service are being received daily.

The first announcement that the skip stop is to be made effective on a certain line is displayed in the cars by a poster signed by the municipal traffic commission. The changes are always made on a Sunday morning and the list of streets at which stops will be made is published in an advertisement in all the daily newspapers of the day previous. Streets at which cars will stop are indicated by a white band painted on the nearest trolley pole and upon which has been painted the words "Car Stop."

Route Numbers on Rockford Cars.—The Rockford (Ill.) City Traction Company will install route numbers on all its city cars in Rockford.

Hearing Held on Easton Fares.—The Public Service Commission of Pennsylvania sat at Easton on Sept. 26 to hear argument on the increase of fares by the Easton Transit Company.

Skip Stop Suggested for Memphis.—E. W. Ford, general superintendent of the Memphis (Tenn.) Street Railway, has taken up with H. H. Litty, Mayor of that city, the question of installing the skip stop on certain of the lines of the electric railway.

Fares on Philadelphia & Western Railway Before Commission.—A formal hearing on the proposed increase in unit fares from 5 to 6 cents by the Philadelphia & Western Railway, Upper Darby, Pa., was held before the Public Service Commission of Pennsylvania on Sept. 28.

Rate Increase for Illinois Road.—A general increase in the rates of fare on the Chicago, North Shore & Milwaukee Railroad, Highwood, Ill., was made effective recently in accordance with a ruling by the Illinois Public Utilities Commission. The rates were increased in most instances from 1½ cents a mile to 2 cents.

Service Changes for Harrisburg Soon.—The recommendations of Bion J. Arnold, whose report on transportation conditions in Harrisburg, Pa., was briefly digested in the ELECTRIC RAILWAY JOURNAL for Sept. 15, page 460, will be put into effect at once in so far as they do not involve questions to be decided after conferences with the Public Service Commission.

Coasting Records in Providence.—The Rhode Island Company, Providence, R. I., during the week ended Sept. 22, installed Rico coasting recorders on the cars of the Woonsocket division. One motorman had a record of coasting 35.4 per cent for the entire run. The lowest was 20.8 per cent. On the North Main to Pascoag line the best record was 30.8 per cent, and the lowest 16.3. On the Manville-Fairmount line a high record of 28.6 was made and the low was 14.2. On the Social-South Main line the records of 29.0 and 15.6.

Commission Recommendations Accepted.—The Shore Line Electric Railway, Norwich, Conn., has written to the Public Utilities Commission of Connecticut accepting the recommendations for changes to be made in its line, as suggested by the chief engineer of the commission and reviewed briefly in the ELECTRIC RAILWAY JOURNAL of Sept. 22, page 553, The recommendations made by the chief engineer were the result of his examination into the causes and circumstances connected with the collision on the railway on Aug. 13.

New I. T. S. Time-Table Folder.—The Illinois Traction System, Peoria, Ill., has issued under date of Sept. 1 an exceptionally attractive folder of time-tables and other information which pictures the equipment and service the system is prepared to give. In addition to the regular local and limited trains this service includes parlor car, sleeper and observation car accommodations for patrons, the details of which are reviewed in the folder. The folder also contains pictures and descriptions of the freight service and the block signal protection, etc.

Fare Increase on Penn Yan Line.—The Penn Yan & Lake Shore Railway, Penn Yan, N. Y., has been granted permission to increase its rate of fare. A 6-cent fare will be charged between points in Penn Yan and Holmes Inn, which is now in the 5-cent fare zone. Five cents will be charged within the city limits, but nearby points just outside the city will be in the 6-cent zone. The round trip fare between Branchport and Penn Yan will be raised from 40 cents to 48 cents. There will be four fare zones on the line and an increase of 1 cent will be charged in each zone.

Higher Fares in Twin Cities.—The collection of extra fares on the municipal railways in Fort William and Port Arthur, Ont., which became effective on July 25, is proving less troublesome than anticipated. The new schedule specifies one 5-cent fare in each city, or 10 cents for an inter-city ride and other details which were enumerated on page 711 of the ELECTRIC RAILWAY JOURNAL for April 14. Extra conductors, stationed at the dividing line between the two cities, board the cars and assist the regular conductors to collect the second fare. As the public becomes accustomed to the change it is intended to dispense with the extra help. Fare boxes are exchanged as before at this point so that each city will obtain the revenue collected within its limits.

All Day Express Service on New York "L."—As the result of conferences between officials of the Public Service Commission for the First District of New York and transportation experts of the Interborough Rapid Transit Company, all-day express trains will soon be run on the Third Avenue elevated line. The plan is to run southbound expresses until noon, and northbound until 7 o'clock in the evening. The express service will begin at 6.04 o'clock in the morning at the northern terminus of the road. It is expected that the service will relieve the congestion on the subway as well as on the elevated, and will greatly promote the comfort of those traveling during the rush hours. At a hearing before the commission A. G. Peacock, of counsel for the Interborough Rapid Transit Company, said that the proposed extension of the express service on the Third Avenue line would begin not later than the first week in November, although efforts would be made to start the service in October.

Hearing on Ohio Milk Case.—The hearing on the Ohio Electric Railway's new milk ruling which would bar milk from all passenger cars, was begun before the Public Utilities Commission of Ohio, on Sept. 21 and was continued through the following day. Commissioner H. G. Wilson of the Toledo Traffic Bureau conducted the examination of witnesses for the shippers. Shippers and dealers from Newark, Dayton, Springfield, Lima, Toledo, Columbus, New Bremen and Greenville were present. Replying to an inquiry, Fred J. Moore, general superintendent of the railway, said that the proposed elimination of milk from the passenger cars was desired to make more room for passengers and package freight. Asked if the company would carry milk as package freight, he said it would, but that the higher rate of freight would be charged. The shippers have construed this statement to mean that the road desires to secure a higher rate for the shipment of milk.

Court May Require Commission to Hear Fare Case.—Chief Justice Gummere has allowed a rule in the New Jersey Supreme Court, requiring the Board of Public Utility Commissioners to show cause why a writ of mandamus should not issue requiring the board to hear and dispose of the application of the Northampton, Easton & Washington Traction Company for permission to increase its rates. In the application the electric railway set forth that the board declined to hear the petition on the ground that it was without jurisdiction because the borough of Washington, Franklin Township, Hopatcong Township and Phillipsburg, in granting franchises to the company, had stipulated that 5 cents should be the maximum fare for a continuous ride between any of the points marking the zones into which the line is divided. The Northampton, Easton & Washington Traction Company operates between Phillipsburg and Port Murray, a distance of 17 miles. The fare for the entire trip is 35 cents. The company asks permission to increase it to 40 cents.

Hearing on Key Route Fares.—A preliminary hearing on the application of the San Francisco-Oakland Terminal Railways, Oakland, Cal., for permission to increase its fares was held by the Railroad Commission on Sept. 5. The company introduced in evidence detailed statistics with various analyses covering its whole operations for four years and ten months ended April 30, 1917, and demonstrating that the present fares are inadequate to meet the expenses which the carrier has incurred and must incur in order to serve the traffic. The purpose of the elaborate exhibits was to bring out the complete facts in the case and have the full force and effect of each particular fact understood. The average cost per trans-bay passenger in operating expenses, taxes and interest on bonds and fixed loans without considering any reserve for depreciation or sinking fund has been 9.37 cents. The average cost considering reserve for depreciation on various bases has ranged from 9.67 cents to 10.83 cents. The average revenue per trans-bay passenger has been 8.306 cents. The average revenue from commuters based on trips made has been 5.943 cents per trip. A detailed explanation was offered of the causes that make the expenses exceed the revenue.

Personal Mention

Charles F. Hewitt, general manager of the United Traction Company, Albany, N. Y., has resigned, effective Oct. 1.

A. E. Reynolds has been appointed acting general manager of the United Traction Company, Albany, N. Y., to succeed C. F. Hewitt.

M. D. Anton has been appointed acting stationmaster at the Springfield terminal of the Illinois Traction System, succeeding E. J. Carey.

Arthur Pontius, paymaster of the Fort Wayne division of the Fort Wayne & Northern Indiana Traction Company, Fort Wayne, Ind., has resigned.

E. J. Carey, station master at Springfield for the Illinois Traction System, has been appointed acting terminal trainmaster to succeed R. R. McCoy, who entered military service.

Stephen Crute, of New York, has become president of the Danbury & Bethel Street Railway and the Bridgeport & Danbury Electric Railway, Danbury, Conn., succeeding John Sanders.

L. W. Henry has been appointed superintendent of the Indianapolis & Cincinnati Traction Company, Indianapolis, Ind., to succeed Charles O. Warfel, who has been in military service since last May.

George P. Klinzing has succeeded S. W. C. Jones as secretary and treasurer of the Danbury & Bethel Street Railway and the Bridgeport & Danbury Electric Railway, Danbury, Conn., following a change in the management of the properties.

C. H. Vollmerding, assistant paymaster for the last seven years for the Fort Wayne division of the Fort Wayne & Northern Indiana Traction Company, Fort Wayne, Ind., has been promoted to the position of paymaster to succeed Arthur Pontius.

Walter S. Finlay, Jr., construction engineer of the Interborough Rapid Transit Company, New York, N. Y., has been appointed superintendent of motive power of that company and the New York Railways to take the place made vacant by the death of H. G. Stott some months ago.

Leon R. Mittenthal of Waco, Tex., formerly soliciting agent for the St. Louis Southwestern Railway (Cotton Belt), and later traffic manager for the Fred A. Jones Construction Company, Dallas, has been appointed traffic manager for the Stone & Webster Management Association, Boston, Mass.

Van Dusen Rickert, assistant general manager of the Eastern Pennsylvania Railways, Pottsville, Pa., has resigned. He will remain in his position until a successor is named to L. H. Palmer, general manager, who becomes assistant to the president of the United Railways & Electric Company, Baltimore, Md.

Alvin Coffman, claim agent and superintendent of transportation of the Roanoke Railway & Electric Company, Roanoke, Va., has been appointed claim adjuster for the City Railway, the People's Railway and the Oakwood Street Railway, all of Dayton, Ohio. Hitherto each company has had a separate claim department. It was thought that by combining all the departments into a single claim adjustment bureau the handling of claims could be facilitated. Before becoming connected with the Roanoke Railway & Electric Company Mr. Coffman was superintendent of the Richmond office of Pinkerton's National Detective Agency.

Daniel F. Linnehan, an investigator in the claim department of the Schenectady (N. Y.) Railway, has been appointed acting claim agent. He has been in the employ of the company for a period of twelve years, the first two of which he served in the transportation department. Mr. Linnehan entered railroad work in 1899 with the New York, New Haven & Hartford Railroad. Four years later he became a conductor for the Old Colony Street Railway, now a part of the Bay State Street Railway, Boston, Mass., and in 1905 entered the service of the Schenectady Railway in a similar capacity. Mr. Linnehan succeeds Charles J. McAleer, who recently accepted an appointment for service in France. The claim department has since been in charge of Charles J. Witherwax, general passenger agent.

R. W. Levering, as reported in these columns, recently, has been appointed local superintendent of the Lafayette division of the Fort Wayne & Northern Indiana Traction Company, Fort Wayne, Ind. Mr. Levering is a graduate of the electrical engineering department of Purdue University, class of 1908. He took a special two-year apprenticeship course with the Chicago, South Bend & Northern Indiana Railway immediately after graduation, and was later appointed assistant to the general superintendent of the road. He served in that capacity until April, 1911, when he went to Lafayette, Ind., to become superintendent of that division of the Fort Wayne & Northern Indiana Traction Company. At the death of his father, in May, 1912, he resigned to take over his father's insurance business, and has continued in that work until the present time. Mr. Levering has been serving as a member of the Lafayette Board of Public Works and has had charge of the water works department for the last two years. In his new position he will superintend the local city electric railway system and 40 miles of interurban line, together with several local retail power systems in towns in the district.

R. W. LEVERING

H. C. Blackwell, vice-president and general manager of the People's Light Company, Davenport, Iowa, on Oct. 1 will become general manager of the Kansas City Light & Power Company, Kansas City, Mo. Mr. Blackwell is known in electric railway circles for his part, associated with J. G. White & Company, in building the interurban line between Alton and East St. Louis, Ill., and the electrification of the electric railway system of Centralia. He was also for a few years chief engineer of the Wabash Railroad. Mr. Blackwell was graduated from Purdue University in 1902. He went to Davenport in 1906 as engineer for the companies headed by Joseph F. Porter, now president of the Kansas City Light & Power Company. He is now a member of the board of directors of the Tri-City Railway & Light Company, the holding company of the railway and light properties of Davenport, and of which Mr. Porter was president. Mr. Blackwell is also gas engineer for the United Light & Railways Company of Grand Rapids, Mich.

Robert B. Stearns, recently appointed senior vice-president of the Bay State Street Railway, was the guest of honor at a dinner of welcome given at the Copley-Plaza Hotel, Boston, on the evening of Sept. 26. About eighty electric railway executives from New England and others interested in electric railway affairs were present. Arthur A. Ballantine, attorney Middlesex & Boston Street Railway, presided, and the speakers, besides Mr. Stearns, were Matthew C. Brush, P. F. Sullivan, L. S. Storrs, A. H. Ford, C. V. Wood and C. C. Peirce. All of these referred to the present electric railway situation in New England, and while it was felt that an increase in fares would help, the thought was expressed that that remedy alone would not entirely relieve the situation. What is needed is a broad view of the entire matter to be followed by legislation to the end that electric railway investments may again become attractive to capital. Railway managers were urged to present their views as to the proper remedies to the special committee of the Legislature now studying the questions and to stimulate an interest in the subject in the public at large. Reference was made by the speakers to the broad experience and ability of Mr. Stearns in electric railway work, and the hope was expressed that his entry in New England would help the railway companies in the solution of their problems. In the final speech of the evening, Mr. Stearns urged the railway companies to act together and referred particularly to the assistance which the trainmen could give in explaining to the public the needs of the companies.

L. H. Palmer, general manager of the Eastern Pennsylvania Railways, Pottsville, Pa., has accepted the position of assistant to the president of the United Railways & Electric Company, Baltimore, Md., effective Oct. 1. No successor to Mr. Palmer has been named. For the present he will continue his former duties, spending part of each week in Pottsville. Mr. Palmer became connected with that company in April, 1916, as general superintendent, but he was appointed acting general manager in May, following the death of W. B. Rockwell, and was made general manager last November. Mr. Palmer's previous electric railway experience was with the Metropolitan Street Railway, New York, N. Y., now known as the New York Railways. He became connected with this company in 1906. Two years later he was appointed assistant to the general manager for the receivers of that company, and in April, 1909, he was made superintendent of transportation, but resigned in 1912 to join the organization of Harrison Williams. In June, 1915, Mr. Palmer was engaged by the United Railways & Electric Company, Baltimore, to do some special work for the president of the company. His next connection was with the Eastern Pennsylvania Railways. Mr. Palmer has always been very active in the work of the American Electric Railway Transportation & Traffic Association.

Obituary

William W. Keith, who was associated with the San Francisco-Oakland Terminal Railways for a number of years in various capacities, having been its traffic manager just before accepting the position of harbor manager for the city of Oakland, died of heart failure recently at Oakland, Cal. Mr. Keith was fifty years of age.

Albert G. Wheeler, formerly interested in the construction of underground telegraph lines in New York and other cities, died on Sept. 23 at his home in Chicago. In 1899 he went to Chicago and in the same year formed the Illinois Tunnel Company, which constructed several miles of tunnel under the business section of the city, to be used for hauling freight. He was also interested in the construction of telephone lines there.

Prentiss Cummings, for many years vice-president of the West End Street Railway, Boston, Mass., died at his summer home in Paris Hill, Me., on Sept. 17. Mr. Cummings was born at Sumner, Me., in 1840. After he received a legal education at Harvard University he was admitted to the Bar in 1870. In 1874 he was appointed United States Assistant Attorney, and later he served in the Massachusetts Legislature. From 1885 to 1887 he was president of the Cambridge (Mass.) Street Railway, later becoming vice-president of the West End Street Railway.

James C. Ernst, who for years was a prominent figure in electric railway and lighting interests in Cincinnati, Ohio, and Covington, Ky., died at Asheville, N. C., on Sept. 20. Mr. Ernst went to Asheville in 1912 because of ill health. Twice he returned home to resume his place in business, but a year ago he terminated all business connections and has since remained at Asheville. He was for many years connected with the Cincinnati, Newport & Covington Light & Traction Company, the Cincinnati, Newport & Covington Railway and the South Covington & Cincinnati Street Railway, all related corporations. All the cars of the Cincinnati, Newport & Covington Railway stopped running for one minute during the hour of the funeral. Mr. Ernst was a former president of the company.

E. S. McLean, general superintendent of the Boston & Worcester Street Railway, Framingham, Mass., died suddenly on Sept. 23. Mr. McLean had been connected with the company since its organization in 1903. He began his electric railway career as a motorman for the Milford & Uxbridge Street Railway, Milford, Mass. Upon the opening of the Boston & Worcester Street Railway he entered its employ in a similar capacity, and after about two and a half years he was made foreman of the Westborough carhouse. He later was appointed foreman of the Framingham carhouse and subsequently became chief inspector. In February, 1910, he was appointed master mechanic of the company to succeed William H. Wadsworth, and became superintendent of the company four years later.

Construction News

Construction News Notes are classified under each heading alphabetically by States.

An asterisk (*) indicates a project not previously reported.

RECENT INCORPORATIONS

***Jacksonville, Miami & Tampa Interurban Railway, Jacksonville, Fla.**—Application for a charter will be made by the Jacksonville, Miami & Tampa Interurban Railway to construct a line from Jacksonville through Duval County to Pablo Beach, St. Augustine, Daytona, Cocoa and Melbourne to Miami; also from Daytona west to Sanford, and from Hopkins, on the east coast, to Haines City, Lakeland, Plant City and Tampa, and finally on to Tarpon Springs, about 500 miles. The motive power will be either oil, gasoline or electric. Capital stock, $10,000,000, of which $5,000,000 is preferred. Temporary officers: True Davis, president; Frank N. Campbell, vice-president; Joseph E. Hunt, secretary, and Ross C. Cox, treasurer.

Rochester & Syracuse Railway Company, Inc., Rochester, N. Y.—Incorporated as the successor to the Rochester, Syracuse & Eastern Railway, the property of which was sold under foreclosure on Aug. 8. Capital stock, $4,500,000. Officers: Arthur W. Leasby, president; Talmadge C. Cherry vice-president and general manager, and Elbert A. Harvey, treasurer.

FRANCHISES

Denver, Col.—The Denver Tramway has made application to the City Council of Denver for a revocable permit to extend the line on Broadway north from Colfax Avenue to connect with the Sixteenth, Seventeenth and Eighteenth Street lines.

***Whitesburg, Ky.**—The City Council of Whitesburg will sell a franchise for a street car line to operate in Whitesburg, with interurban lines to West Whitesburg, Caudill and Sandlick. It is reported that W. A. Daniels will probably purchase the franchise.

Schenectady, N. Y.—The Public Service Commission for the Second District of New York has approved the application of the Schenectady Railway to double-track that portion of its Rugby Road division now in service as single track, and construction work will be begun at once.

Boyertown, Pa.—The Reading Transit & Light Company will ask the City Council of Boyertown for a franchise to construct a loop on Chestnut, Fourth and Washington Streets to connect the Reading and Chestnut trolley lines.

Dallas, Tex.—The Dallas Southwestern Traction Company has received a thirty-five year franchise from the Commissioners' Court granting a right-of-way along the West Dallas Pike to Cement City and thence to Eagle Ford and Irving. The franchise was presented by E. P. Turner and associates and supersedes one granted to John T. Witt, trustee. Construction will be begun at once by the company and it guarantees that 10 miles of the road will be completed and in operation within eight months. The line will eventually be extended to Grand Prairie, Mansfield, Lillian and Cleburne. The Creek Construction Company has the contract to construct the line. J. E. Bassett, secretary. [Sept. 1, '17.]

Fort Worth, Tex.—The Northern Texas Traction Company has received franchises from the City Commission to construct trackage necessary to handle the heavy traffic incident to the army activities of Camp Bowie near Fort Worth. One franchise authorizes the company to construct a loop track on Commerce Street between Seventh and Eighth Streets for the purpose of handling the Camp Bowie traffic without congestion and the other authorizes the company to build spurs and terminal facilities on a plot of ground owned by the company just off Commerce Street at Belknap. On this site all interurban cars not in use will be kept, in addition to the many extra cars being used at certain hours during the day in handling the Camp Bowie traffic. The improvements will represent an expenditure of about $100,000.

Norfolk, Va.—The Virginia Railway & Power Company has received a permit from the City Council of Norfolk to operate its cars over the Bay Shore viaduct and over such of the Bay Shore and Atlantic Terminal tracks as are necessary and to construct tracks on Omohundro Avenue and Twenty-fifth Street in order to facilitate traffic between Norfolk and the naval base at Pine Beach.

TRACK AND ROADWAY

Birmingham Railway, Light & Power Company, Birmingham, Ala.—Plans are being made by this company for the double-tracking of Nineteenth Street.

Clear Lake Railroad, Lakeport, Cal.—An amended application has been made by the Clear Lake Railroad to the Railroad Commission of California for permission to build its proposed line from Lakeport to Hopland. The application asks permission to issue $500,000 in bonds and $150,000 in stock, to cover the contract price to build the road, and asks for an additional sum to ratify a previous issue of stock, and $25,000 stock for the purchase of a terminal site in Lakeport. The commission is also asked to approve the new survey of the route, made in July, which traverses the mountain range between Hopland and Lakeport, 22½ miles, at a maximum grade of 3.3 per cent on the Lake County side, where the heavier haul will come, and 4½ per cent on the Mendocino County side. The line partially follows the present county road. Robert B. Woodward, Lakeport, secretary.

***Savannah, Ga.**—Plans are being considered for the construction of an electric railway from Savannah to Port Wentworth. The Rotary Club, Carleton B. Gibson, president, is interested.

Pella-Leffler Short Line Railway, Pella, Idaho.—This company, which was incorporated in June, 1917, with a capital stock of $300,000, reports that construction will probably begin in the spring of 1918 on its proposed line from Pella to a junction on the Wabash Railway, 4½ miles. The surface contact system will be used and power will be secured from the Pella City municipal plant. P. H. Van Gorp, Pella, president. [June 23, '17.]

***Hazard, Ky.**—William Pursiful, J. L. Hays and others will organize a company to construct a line in Hazard, with extensions to First Creek, Harvey, Lothair, Glowmar and Diablock suburbs.

Kentucky Traction & Terminal Company, Lexington, Ky.—Plans are being considered by this company for the relocation of its tracks on West Main Street from the side to the center of the road and the extension of the line ½ mile out the Leestown road to the limits of the city of Lexington.

Shelbyville & Frankfort Realty Company, Shelbyville, Ky.—According to statements made both at Shelbyville and at Frankfort, construction of the proposed electric railway to connect the Louisville & Interurban Railway at Shelbyville with the Kentucky Traction & Terminal Company at Frankfort is contingent only on obtaining rights-of-way without cost to the promoters of the project. Phillip & Beach, construction engineers of Philadelphia, are representing a large Eastern company, it is stated, which is ready to begin the work when the rights-of-way have been secured. Committees representing the various communities through which the line might pass are engaged in this work at present. Two routes have been surveyed, one 22 miles long and the other about 28 miles long. [Aug. 4, '17.]

***Detroit, Mich.**—The construction of an electric railway between Detroit and Adrian is under consideration. The Detroit Chamber of Commerce is interested.

***Kalispell, Mont.**—Col. A. A. White, capitalist, who is interested in the construction of an electric railway from South Missoula to Flathead Lake, reports surveys will be made this fall for the line, under the supervision of N. B. Miller, formerly chief engineer of the Great Northern Railway Company. The proposed route will leave South Missoula, crossing the Northern Pacific tracks near the sugar plant, thence to the old Indian agency near Arlee, thence through St. Mary's Pass to St. Ignatius, Ronan, and Finley Point on Flathead Lake, with a branch along the waterfront to Polson. The electric railway will connect with the ferry boats to be operated by the Flathead Lake Hotel Company, being promoted by Col. White, and will serve tourists who will patronize the $1,000,000 summer resort to be built at Flathead Lake.

New York Municipal Railway, Brooklyn, N. Y.—Proposals will be received by the New York Municipal Railway for the erection of third-rail and appurtenances on the Culver line, Brooklyn, bids to be opened Oct. 8. For plans and further information, apply to Chief Engineer's Office, Room 602, 85 Clinton Street, Brooklyn, N. Y.

International Railway, Buffalo, N. Y.—Work has been begun by the International Railway on the construction of a single-track line along the River Road from the upper Tonawanda and Grand Island ferry to the Wickwire Steel Company's plant in Tonawanda, about 1 mile. It is expected that the line will be ready for operation within two months.

Ithaca (N. Y.) Traction Corporation.—Engineers have begun surveying for the extension and improvements on the Cayuga Heights line which are to be made by the Ithaca Traction Corporation. While the preliminary work has been begun, it is stated that the greater part of the laying and relaying of track will be deferred until spring.

Durham (N. C.) Traction Company.—An ordinance has recently been adopted by the Board of Aldermen of Durham requiring the Durham Traction Company to begin work of reconstructing its track on West Main Street on Oct. 1, preparatory to the paving of the street by the city. The company is also required to reconstruct its track on Main Street from Milton Avenue to the Norfolk & Western Railway crossing; on Chapel Hill Street from Vickers Avenue to Rigsbee Avenue and on Mangum Street from Main Street to Cleveland Street. The ordinance specifies that the rail now in use shall be replaced with 7-in. grooved girder rail.

Northern Ohio Traction & Light Company, Akron, Ohio.—Arrangements have been made between the County Commissioners and the Northern Ohio Traction & Light Company for the company to extend its tracks over the North Hill viaduct.

Youngstown & Niles Railway, Youngstown, Ohio.—Construction is under way on this company's line from Youngstown to Niles, and it is expected that the system will be in operation by late fall. It will be a high-speed line, built entirely on private right-of-way. Cars will enter Youngstown via the Steel Street-Mahoning Avenue route. Its operation will require the purchase of additional cars by the company, which is allied with the Mahoning & Shenango Railway & Light Company. J. P. Wilson, Youngstown, president. [June 30, '17.]

Niagara, St. Catharines & Toronto Railway, St. Catharines, Ont.—Work will be begun at once by the Niagara, St. Catharines & Toronto Railway on the rehabilitation of its system in Niagara Falls, Ont.

Toronto & York Radial Railway, Toronto, Ont.—A complete survey is being made by Charles Johnston, engineer, and J. F. Deadey, superintendent, of the line of the Toronto & York Radial Railway along the lake shore, Toronto, with a view to extensive improvements. Plans are being considered for either moving the present power plant at the Humber River to New Toronto or the establishment of a plant at Port Credit.

Northern Texas Traction Company, Fort Worth, Tex.—The City Commission of Dallas, in awarding a contract for paving Seventh Street from Bishop to Tyler Street, in Oak Cliff, voted to require the Northern Texas Traction Company to spend $11,786 in laying heavier steel with concrete foundation.

Salt Lake & Utah Railroad, Salt Lake City, Utah.—It is reported that the Salt Lake & Utah Railroad will construct an extension from Salt Lake City to Eureka.

Seattle (Wash.) Municipal Railway.—The Board of Public Works of Seattle recently awarded two contracts for the improvement of Division A of the Seattle Municipal Railway, one for a trestle approach on Thorndyke Avenue and the other for an extension on Leary Avenue, to R. H. Travers, Seattle. The contract for the Thorndyke Avenue approach was let for $5,862, and the Leary Avenue extension for $19,554. The sum of $42,000 is available for this extension, of which $25,000 was appropriated by the Council from the light fund, and $17,000 from bonds voted for the construction of a steel bridge across Salmon Bay, at Fifteenth Avenue N. W.

SHOPS AND BUILDINGS

Pacific Electric Railway, Los Angeles, Cal.—Improvements are being made by the Pacific Electric Railway at its Macy Street yards, Los Angeles, including the construction of a car inspection house, 246 ft. x 85 ft.; a car repair shop, 160 ft. x 150 ft.; a two-story trainmen's building, 32 ft. x 32 ft., and a storehouse, 22 ft. x 25 ft. The total cost of the buildings will be about $151,000.

Omaha (Neb.) Street Railway.—Plans are being made by the Omaha Street Railway for the construction of a new carhouse to cost about $100,000.

Trenton, N. J.—The New Jersey & Pennsylvania Traction Company and the Public Service Railway will now have to build terminals in other than the center of the city of Trenton to prevent cars congesting traffic. An old ordinance gave the railway companies permission to allow cars to stand at the terminus for four minutes. The ordinance now requires that terminus must be established three-quarters of a mile from the center of the city. The cars are parked in the center of the city, only a stone's throw from a fire quarters. The companies are to have a reasonable amount of time in which to prepare to establish terminals in other sections of the city.

Cleveland & Youngstown Railroad, Cleveland, Ohio.—A contract has been awarded by the Cleveland & Youngstown Railroad to the Walsh Construction Company, Cleveland, for the construction of a freight terminal at Orange Avenue and East Twelfth Street, to cost approximately $675,000.

POWER HOUSES AND SUBSTATIONS

Chicago, Milwaukee & St. Paul Railway, Chicago, Ill.—According to A. M. Ingersoll, assistant to the vice-president of the Chicago, Milwaukee & St. Paul Railway, as soon as the company secures title to land at Tacoma Junction, work will be begun on the proposed $160,000 substation which the company will erect in connection with the electrification of its line between Othello, Seattle and Tacoma.

Iowa Railway & Light Company, Cedar Rapids, Iowa.—Work will soon be begun on the remodeling of the electric plant of the Iowa Railway & Light Company at Cedar Rapids, to cost about $40,000.

Hagerstown & Frederick Railway, Frederick, Md.—Extensive improvements are contemplated by the Hagerstown & Frederick Railway, including the erection of a new power plant at dam No. 5 on the Potomac River, about 7 miles above Williamsport. The new power station will be erected on the site of the former plant on the West Virginia shore and will be equipped with three turbines having a rating of 2500 kw. The company also contemplates rebuilding dam No. 4, near Sharpsburg, where the power plant has been closed down because of the failure of the water supply.

Kansas City (Mo.) Railways.—This company plans to erect a substation 50 ft. x 75 ft. at Thirty-first and Montgall Streets, Kansas City, Kan.

Interborough Rapid Transit Company, New York, N. Y.—This company will construct a substation at 351 East 139th Street to serve the Bronx division of the Lexington Avenue subway, which will run east through 138th Street to Southern Boulevard.

Northern Ohio Traction & Light Company, Akron, Ohio.—A high-tension line from the power plant in Tuscarawas Street W. through the west park and thence to the transforming station of the Central Power Company at Waco will be built by the Northern Ohio Traction Company. It is the plan of the company to have two more stations of the same size installed at the plant in Tuscarawas Street W.

Valley Railways, Lemoyne, Pa.—It is reported that this company plans to construct a new power plant at Wormleysburg.

Manufactures and Markets

Discussions of Market and Trade Conditions for the Manufacturer, Salesman and Purchasing Agent

Rolling Stock Purchases Market Quotations Business Announcements

Standardization Now Particularly Significant

Local Conditions and Pride Versus Progress and Economy—Manufacturers and Railways Should Lend Support to Hasten the Benefits of Movement

By ERNEST E. STIGALL
Purchasing Agent Kansas City Railways

The whole subject of standardization would seem to warrant special consideration at the present time and in the coming conference of the American Electric Railway Association. Its importance just now is more pronounced because of the magnified results to be had from its accomplishment. Standardization tends rapidly to reduce the manufacturing costs and hence the selling prices to the railways. The abnormal heights of the prices at present prevailing make any program which will tend to reduce them of special significance. Standardization would reduce the costs and in addition would improve deliveries because concentration upon one or a few designs would greatly increase the gross output as compared with that when manufacturing many designs. It would also help to offset in a measure the shortage of labor.

Standardization would do away largely with the necessity for the railways to carry much of any stock of devices, for if the manufacturers knew there was going to be a good market for their products they could afford to carry a reasonably large stock where this involved only a few designs. On the other hand, the railways would know that they could get quick delivery from the manufacturers' stock on a standard article and would therefore not need to figure supplies for long periods ahead. In other words, the railways would get service from their manufacturers and eliminate a good part of the carrying charge.

Such a process as that of standardization can of course not come as a revolutionary measure, but must be one of evolution, but if everyone would lend his support to the movement it would hasten the day of standards. Too often there is a personal pride involved, so strong that it will not submit to the adoption of the standard in the place of a design prepared by local talent. But in most such instances the individual is sacrificing common sense economy for the sake of satisfying his personal vanity and egotism. Frequently, also, one hears a railway man say as the final fling when he is cornered in an argument on using a certain standard design, "Well, local conditions won't permit us to use it." I am strongly inclined to believe that "local conditions" should be much less emphasized in many phases of railway work, and more attention should be paid to the advantages of making and using standards.

As justification of this opinion, it may be cited that one very large railway system comprising over thirty different city properties of widely different characteristics, gives the uniform specifications of 9 m.p.h. schedule speed, six stops per mile of ten seconds duration, and 2000 ft. of 3 per cent continuous grade with four stops on the grade, when ordering motors for any of these properties. Another example is the adoption of a standard safety car by the Stone & Webster Management Association of identical design and equipment for use in the Central, Southern and Pacific Coast states, ignoring, seemingly, the so-called "local conditions."

Materials for track and overhead line construction and maintenance are particularly susceptible to improvement through standardization. Power house and substation equipment, and car building and maintenance and other shop work also offer good possibilities for cost lowering through the adoption of standards.

Standardization would bring about an advantage to the manufacturer, and indirectly to the user, further than that resulting from the quantity production of one design, for the reason that a large part of the selling cost would be eliminated. Little selling effort would be necessary on standard designs of equipment. It would simply mean that the manufacturer could sell for less than present costs because, first, of the reduced production and selling costs, and second of the willingness as a general rule of the manufacturer to take a smaller margin of profit on an article manufactured in large quantities.

However complete standardization might become it need never reach the point that it would serve to stifle initiative in making improvements. It would simply mean that with standardization well established new devices and improvements on the old ones would be thoroughly studied and tried out by two or three railways and proved better or inferior to the standard. This would eliminate the continual changing around from one design to another by so many companies and would replace this practice with a thorough trial by selected companies under a plan whereby the results of the test would be published. But the important consideration —especially now in war times—is to move forward as rapidly as possible with the work of standardization as one important means of supporting the nation-wide policy of economy.

Delivery Situation on Motors

Railway Equipment Delivery from Four to Seven Months, Dependent on Size

Two years ago the electrical market began again to show signs of life, and then quickly it advanced into a boom market. One of the first lines to feel the quickened pulse of buying was motors, and ever since the late fall of 1915 deliveries on motors have been very tardy. To-day they are, on the whole, worse than they have ever been.

Inquiries into the condition of motor deliveries revealed an immense number of unfilled orders. In fact, it is now virtually certain that the manufacturers of all types of motors, including stationary types, are together no less than 150,000 motors behind in delivery. In the larger sizes conditions are worst. There is a very active demand for stationary motors of 500-hp. rating and larger, and it is well known that manufacturers are not able to keep pace with requirements.

There are indications that before the beginning of 1918 higher prices will be placed on motors. With the exception of an advance by one concern on small stationary motors a few days ago, prices have remained steady for some months. Buyers of these motors can still meet their requirements if speed and make are not specified. Every week a number of motors, first of one size and then another, come on the market, and there is, therefore, a fair stock of miscellaneous equipment available.

Second-hand houses and speculators, foreseeing this condition last year and early this year, placed orders for future delivery, and these motors are now coming on the market. They are, however, being taken up very rapidly.

On railway motors, because of the general situation in the field, deliveries are a little better than in stationary motors. There is so little buying that railway motor manufacturing facilities are not entirely taken up as in other departments. Quotations are now being made on railway motors of four to five months delivery for sizes from 25 to

60 hp. For the larger sizes from six to seven months are required. On large orders these are the delivery dates for first shipments, the remainder following at specified intervals. Of course, it may occasionally be possible to procure motors in certain sizes in shorter time, but in general the above conditions will prevail.

While under normal conditions manufacturers would be making railway motors continually and would thus be able to ship from stock or in a week or two in some instances, no stock is now being carried. No motors are being made except as ordered. Labor is scarce and it is believed to be better to keep the men at other work when the railway orders are slow.

Wire Unaffected by 23.5-Cent Copper

Establishment of a Government Price for All Finds Market Temporarily Upset, with No Sales at Announced Figures

On Sept. 21 the government price of 23.5 cents a pound for copper was announced. This price is for all, government, Allies and private purchasers. For weeks and weeks those vitally interested have awaited this announcement, only to find themselves more at sea now that it has been made than they were formerly. The copper market is in a very excited condition, but almost no business is being done. Certain it is that there have been no transactions at 23.5 cents. On Monday last there were some sales at 26 cents, but none was reported at a lower price. Those who have a supply of the red metal seem loath to part with it while the atmosphere of the market is so cloudy. Buyers, moreover, were probably for the most part bargain hunting, and it is doubtful if there will be any real inquiries for any considerable tonnage until the government clears up a great many points now in doubt.

As for copper wire, the announcement of the 23.5-cent price has made no difference. Base is still firm at 36 cents, with an occasional manufacturer quoting at 35 or 37 cents. The wire manufacturers have contracted for copper long ahead at prices in excess of the government figure, and consequently it is not reasonable to suppose that wire base will soften any, provided, of course, that the demand is maintained.

Wire for the government is, of course, a different proposition. The price is merely the conversion price, since the government furnishes the producers with the raw copper.

Wire manufacturers will make no predictions regarding the future. At present they are at sea and, as far as is possible, are refraining from buying any raw material. It seems to be pretty generally felt, however, that irrespective of the government price the law of supply and demand will prevail, unless the government makes some ruling to the contrary.

The price of 23.5 cents seems sufficient to guarantee a reasonable profit to all producers so that there is no apparent reason for curtailing production. A recent study made of producers' costs showed the highest cost to be a fraction over 20 cents a pound.

Deliveries are much better on copper, but it is well known that a large volume of buying has been deferred pending the settlement of the government price situation.

Statistics just compiled by the National Lumber Manufacturers' Association show that during the twelve months ending July 31 the mills reporting to the association cut 15,602,000,000 ft. of lumber and shipped 15,741,000,000 ft., or 0.009 per cent more than production. Shipments the first seven months of 1912 were 7.7 per cent more than last year, with no increase in cut. During July this year 732 mills in all parts of the country and operating in all kinds of timber, cut 1,389,000,000 ft. and shipped 1,566,000,000 ft., or 12.7 per cent more than production. The cut in July this year was 1.3 per cent less than July last year, with shipments 19.6 per cent greater. During the four weeks ending Aug. 31, 320 Southern and Western mills have cut 606,000,000 ft. of lumber, shipped 778,000,000 ft. and accepted orders for 613,000,000 ft.

Government Fixes Price for Steel Products

Priority Board to Control Distribution of Iron and Steel Through Licenses, Placing Private Interests Last in List

Government prices for steel products, showing decreases from 47 to 70 per cent over recent high prices, were announced in Washington on Monday, following a voluntary agreement by the steel interests and the War Industries Board. Certain of the raw materials necessary to the production of steel were also reduced in price.

The distribution of iron and steel will be placed under the absolute control of the Priority Board through licensing. Preference will be given to the War and Navy Departments and the Emergency Fleet Corporation of the United States Shipping Board. Next will come the supply for the needs of the Allies. Private interests not engaged in war work must wait until the last before obtaining supplies.

Although the new prices apply to all, it is very doubtful if they will cause any drop in prices of any railway equipment into which steel enters largely. In fact, the control of iron and steel distribution may prove a great hardship to certain manufacturers of railway equipment. It is now known that the government has restricted the supply of sheet steel to private manufacturers because the rolling mills were needed to turn out tinplate. Any further reduction in the supply of iron and steel will result therefore either in deliveries much more delayed or in the temporary withdrawal of certain articles from the market.

Conditions of supply and demand, however, have been so chaotic during the last two years that any stabilizing influence will be welcomed in many quarters. One of the leading executives in the electrical manufacturing industry, who is in a position to have the most authoritative information on conditions generally, said to a representative of the ELECTRIC RAILWAY JOURNAL regarding the effect of the prices on electrical manufacturing:

"The effect will be wholesome and encouraging to enterprise. It will offer a relief from a runaway condition into which we have drifted."

NEW YORK METAL MARKET PRICES

	Sept. 20	Sept. 26
Prime Lake, cents per lb	26¼	23½
Electrolytic, cents per lb	26¼	23½
Copper wire base, cents per lb	36	36
Lead, cents per lb	8	8
Nickel, cents per lb	50	50
Spelter, cents per lb	8⅜	8½
Tin, Straits, cents per lb	61¾	62
Aluminum, 98 to 99 per cent, cents per lb	42	41½

OLD METAL PRICES—NEW YORK

	Sept. 20	Sept. 26
Heavy copper, cents per lb	24¼	23¼
Light copper, cents per lb	20½	20½
Red brass, cents per lb	19	19
Yellow brass, cents per lb	16¼	16¼
Lead, heavy, cents per lb	8	7
Zinc, cents per lb	6	6
Steel car axles, Chicago, per net ton	$42.00	$42.00
Old car wheels, Chicago, per gross ton	$33.50	$31.00
Steel rails (scrap), Chicago, per gross ton	$41.00	$35.00
Steel rails (relaying), Chicago, per gross ton	$55.00	$55.00
Machine shop turnings, Chicago, per net ton	$17.50	$17.00

RAILWAY MATERIALS

	Sept. 20	Sept. 26
Rubber-covered wire base, New York, cents per lb.	36	36
No. 0000 feeder cable (bare), New York, cents per lb.	36½	....
No. 0000 feeder cable (stranded), New York, cents per lb.	33¾	....
No. 6 copper wire (insulated), New York, cents per lb.	33½	....
No. 6 copper wire (bare), New York, cents per lb.	36	36
Rails, heavy, Bessemer, Pittsburgh	$38.00	$38.00
Rails, heavy, O. H. Pittsburgh, per gross ton	$40.00	$40.00
Wire nails, Pittsburgh, per 100 lb.	$4.00	$4.00
Railroad spikes, 9/16 in., Pittsburgh, per 100 lb.	$7.00	$7.00
Steel bars, Pittsburgh, per 100 lb.	$4.00	$4.50
Sheet iron, black (24 gage), Pittsburgh, per 100 lb.	$8.85	$8.85
Sheet iron, galvanized (24 gage), Pittsburgh, per 100 lb.	$9.55	$9.55
Galvanized barbed wire, Pittsburgh, cents per lb.	4.85	4.85
Galvanized wire, ordinary, Pittsburgh, cents per lb.	4.65	4.65
Cement (carload lots), New York, per bbl.	$2.22	$2.22
Cement (carload lots), Chicago, per bbl.	$2.31	$2.31
Cement (carload lots), Seattle, per bbl.	$2.65	$2.65
Linseed oil (raw, 5 bbl. lots), New York, per gal.	$1.22	$1.20
Linseed oil (boiled, 5 bbl. lots), New York, per gal.	$1.23	$1.21
White lead (110 lb. keg), New York, cents per gal.	13	11
Turpentine (bbl. lots), New York, cents per gal.	44	44

ROLLING STOCK

Honolulu (Hawaii) Rapid Transit & Land Company has ordered ten cars from The J. G. Brill Company to be equipped with Westinghouse 546 motors and K-36 control and General Electric CP-27 compressors. It is reported that this company has purchased additional equipment for use on cars now in operation.

Springfield (Mass.) Street Railway and Worcester (Mass.) Consolidated Street Railway, noted in the ELECTRIC RAILWAY JOURNAL of Sept. 15 as having ordered twenty cars for Springfield and ten cars for Worcester, have specified the following details for this equipment. The cars for Springfield are to be delivered some time before Christmas and those for Worcester about Jan. 1, 1918.

Builder of car body, Osgood Bradley Car Co.
Type of car, 30-ft. Convertible Prepayment
Seating capacity 44
Weight (total) ....42,000 lb.
Bolster centers, length. 19 ft. 8 in.
Length over bumpers. 43 ft. 4 in.
Length over vestibule.....42 ft.
Width over all........8 ft. 6 in.
Height, rail to trolley base, 11 ft. 5½ in.
Body ....Steel
Interior trim ....Mahogany
Headlining ....None
Roof ....Arch
Air brakes....General Elec. Co.
Axles ....Old equipment
Bumpers..7-in. Hedley Anti-Climbers
Car trimmings. Statuary Bronze
Control, type. Worcester, K-35, Springfield, K-6, (temporarily from other cars)
Couplers..None—our standard draw bar
Curtain fixtures .. National "D" — Hartshorn National Plug Rollers
Curtain material .....Pantasote
Destination signs......Keystone
Door operating mechanism, Osgood Bradley manual control
Fare boxes...International C-15
Fenders ....Pfingst fenders
Gears and pinions, Old equipment
Hand brakes, Horne double-acting
Heaters ....Gold
Headlights, Crouse Hinds' Melobeam
Journal boxes....Old equipment
Lightning arresters, Westinghouse S No. 154397
Motors..None purchased, Outside hung
Paint......Company's standard
Registers.....International R-7
Sanders ....Murphy
Sash fixtures..Osgood Bradley convertible type
Seats, style..Osgood Bradley walkover type
Seating material....Birch slats
Step treads...Stanwood with Mason safety tread
Trolley catchers...Q P catchers
Trolley base, U. S. No. 13 (from other cars)
Trolley wheels, Wheels—Company's standard
Trucks, type. Worcester, Brill 27 G 1 (from other cars), Springfield, Wason 21 (from other cars)
Ventilators ....Osgood Bradley
Wheels ....33-in. C. I.
Special devices, etc., Westinghouse line switch Utility heat regulators

TRADE NOTES

Philip K. Condit, formerly export manager of the Western Electric Company, has been appointed assistant director of the bureau of export licenses and placed in charge of the New York office at 11 Broadway.

Railway Improvement Company, New York, N. Y., received a great deal of favorable comment for its coasting recorders in the Sept. 22 issue of the *Trollier*, the weekly publication issued by the Rhode Island Company, Providence, R. I.

Degnon Aqueduct Construction Company, Queens, N. Y., has been incorporated with a capital of $25,000, the incorporators being R. P. Gustin, 68 Hunters Point Avenue, Queens, Long Island City; C. A. Baker and H. F. Karst, 52 Broadway, New York City. Besides constructing electric and other railways the company will also carry on a general contracting business.

Automatic Controller & Manufacturing Company, Ogden, Utah, which will take over the patents of Cleveland Redfield, has been incorporated with a capitalization of $100,000, to manufacture electrical and other machinery. The officers are: Cleveland Redfield, president; J. W. O'Brien, vice-president; William J. Stone, secretary; Thomas Q. Whitehill, treasurer.

Peerless International Corporation, 50 Pine Street, New York, N. Y., has been organized to conduct an export, import and general engineering and contracting business, with the following officers and board of directors: Alfonse Kaufman, president; Simon Weiner, vice-president; F. A. Beardsley, secretary; William M. Blain, treasurer; Walter W. Birge, president Air Production Company, and L. K. Comstock, president L. K. Comstock & Company.

Bradford-Ackermann Corporation, New York, N. Y., has been appointed the Eastern sales office for Young Brothers Company, Detroit, Mich. The sale of Young ovens, for japanning and drying purposes, will in the future be handled by this office for the New England States, New York, New Jersey, Maryland, Delaware and eastern Pennsylvania. An engineering department will likewise be available for manufacturers in the East who are interested in quick drying and baking processes, and special oven designs will be offered to meet various requirements.

The Automatic Straight Air Brake Company has been incorporated under the laws of Delaware with a capital stock of $5,000,000 preferred and $20,000,000 common to manufacture and sell a new type of air brake, the invention of Spencer G. Neal, who is the designing engineer of the company. The directors are: A. B. Boardman, A. M. McCrea, K. B. Conger, H. I. Miller, C. R. Ganter, S. C. Holaday, A. M. Trueb and G. C. Pierce. The officers will be H. I. Miller, chairman of the board and president; K. B. Conger, vice-president and treasurer; A. M. Trueb, secretary and auditor, and G. C. Pierce, chief engineer. The company will have offices at 14 Wall Street, New York. Good progress is being made in the preparation for a railroad officers' demonstration of the brake, which will take place in New York the early part of October.

NEW ADVERTISING LITERATURE

Pringle Electric Manufacturing Company, Philadelphia, Pa.: Bulletin No. 101 describes its disconnecting switches equipped with locks.

Westinghouse Lamp Company, New York, N. Y.: A bulletin for agents and purchasers, furnishing data pertaining to incandescent lamps.

Esterline Company, Indianapolis, Ind.: The largest graphic meter in the world for the largest station in the world is the subject of a recent bulletin.

B. R. Shearer, Johnson City, Tenn.: The Shearer automatic system for use in power plants and on electric drive installations is a topic treated in a leaflet that has been distributed.

Ford, Bacon & Davis, New York, N. Y.: Pamphlet dealing with recent construction work, specifically describing and illustrating a public grain elevator and appurtenances at New Orleans, La., attention being given to transportation facilities.

D & W Fuse Company, Providence, R. I.: Catalog No. 2, recently mailed to the trade, illustrates and describes oil fuse cut-outs for 2500 volts. Cut-outs for use up to 13,000 volts for the polar type, subway type and also heavy service are entered into and detailed.

W. N. Matthews & Brother, Inc., St. Louis, Mo.: A folder, with suggestions for installing Matthews fuse switch, type BF. Another folder has also been prepared by the company with directions for utilizing its hold-fast adjuster, a fixture that may be used in any position.

Link-Belt Company, Chicago, Ill.: Electric hoists are described in book No. 246, embracing the dominant features of the Link-Belt hoist, work on which these hoists can be employed, together with a table of lifting capacities, direct-current and alternating-current hoists.

Ivanhoe-Regent Works of General Electric Company, Cleveland, Ohio: Ivanhoe reflecto-cap diffusion for industrial plants is illustrated and described. The relation of better light to greater output is treated in the leaflet, and also prices and shipping data are furnished.

Electric Machinery Company, Minneapolis, Minn.: The company's synchronous motors is the subject of bulletin No. 168, in which induction motors are compared with synchronous motors. How these motors are used in driving paper-mill machinery, rock crushers, rubber mills, fans and blowers, and high-pressure pumps are given descriptive attention.

Westinghouse Electric and Manufacturing Company, East Pittsburgh, Pa.: Reprint No. 58 describes gears and side rods of electric locomotives on American railways. Circular No. 1570, by Nicholas Stahl, treats of synchronous motors for power-factor correction. For those not familiar with technical calculations the fundamental principles governing power factor and its control are taken up and established. For all the problems of power-factor correction likely to arise in ordinary operation a simple graphical solution is furnished.

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The Conference on Tuesday

The Place: 29 West Thirty-ninth Street, New York.
The Time: 9.30 a. m. sharp.

THERE should be a good attendance at the conference of the American Electric Railway Association next Tuesday. The subjects relate entirely to the two topics uppermost now in the minds of electric railway managers—how to provide the labor for the operation of the cars and how to increase the receipts so as to pay for the expenses of operation and leave a fair amount for the return on invested capital. The first question involves the practicability of the war bonus as a means of wage adjustment in the electric railway industry as well as the possible substitution of women for male employees. There will be papers on both of these subjects. With higher fares, there are two points to be considered: how are they to be obtained and are they to be in the form of an increased uniform fare or some sort of a zone system? The advocates of both plans will be heard. Owing to the length of the program the secretary announces that the conference will begin promptly at 9.30 a. m.

Help the Nation by "Selling" the Liberty Loan to Employees

NO more patriotic duty can be performed by those who cannot join the armed forces of the nation than to furnish to the Government funds for the present crusade. Electric railway corporations and officials realize this, of course, and they will do their duty with the second Liberty Loan as they did with the first. But besides buying bonds for themselves there is another most commendable act—that is, inducing others to buy. In this direction electric railway managements can do much good by explaining to employees the fundamentals of bond buying, by showing the facility of purchase and even co-operating through a partial-payment plan, and also by impressing upon employees the need of investment from current savings. It is highly desirable that employees should not finance their bond purchases from accumulated savings-bank deposits, for not only would they thus lose the betterment of their financial status which current savings would mean, but their demands upon the banks might cause a forced liquidation of securities and thus seriously depress values. These points should be explained to employees in simple language. Slips in pay envelopes, bulletins in car houses, talks before benefit-association and other meetings or some other method suited to local conditions can readily be used for conveying the message. For the next few weeks the whole country will be one vast field for the use of expert salesmanship in putting the Liberty Loan across to the people, and electric railways as employers will, we are sure, be prompt to do their share.

Better Late Than Never, But Better Never Late

THE words quoted elsewhere in this issue from the decision of the Washington Public Service Commission in abolishing 4-cent tickets in Seattle show a real appreciation of its duty in helping utilities to meet new conditions. The commission frankly acknowledges that heavy burdens bear upon the electric railway service in Seattle to-day, that this service has commendable features and that its efficiency should be maintained. Hence financial relief is now granted—a most praiseworthy move. But—and we say this not to criticize the Washington commissioners but rather to point out a fundamental defect in most commission laws—has not the relief been deferred longer than it should have been? The table appearing in this issue shows that only six times in the last seventeen years has the real rate of return for the Seattle railway property been 6 per cent, and that after 1909 it dropped until in 1915 and 1916 it was minus 1.29 per cent and 0.83 per cent respectively. Is not this striking evidence of the accuracy of President Brush's recent assertion, *i.e.*, that under present rate procedure an electric railway must first become actually unsuccessful before aid can be secured. This, of course, should be changed, for good railway credit depends upon the maintenance of successful operation rather than upon a recovery from actually experienced misfortune.

Publicity Justified Because the People Want It

ELECTRIC railway companies, like all other public utility companies, exist, in the last analysis, on public sufferance—that is to say, the public has both the right and the power to decide under what restrictions public service shall be rendered. Most of our public services began their life's history under private ownership, and that status will persist unless the public becomes convinced by positive evidence of the need of a change. But the fact nevertheless is that the system is on trial. Is it working well? The public wants to know the details. Is it working badly? The public wants to know the details. These simple facts are sufficient to justify a policy of publicity, and Mr. Lee's article on "Advertising in Publicity Work" takes up the cudgel in behalf of the public service company anxious to inform the public of its work and aims. He defends it against the attack of the politician who charges that the use of advertising space for this purpose is a subsidizing of the press. He also considers some of the practical details concerning publicity ways and means.

Saving a Road from the Junk Pile

No greater mistake has been made by the public in transportation matters than the assumption that once an electric railway is built and placed in operation continuous service will be maintained thereafter, regardless of the inadequacy of the revenue derived from the traffic. Hence, when the citizens of the Fall River, Mass., district awoke one morning, a fortnight or so ago, to find that preparations had been completed to remove the Providence & Fall River Street Railway in the most literal sense from the map of Massachusetts, something close to consternation reigned among those dependent upon its service. With the dismantling of the road immediately in prospect—and with the high prices now prevailing for scrap metal there is large junk value in any electric railway property—the citizens of Swansea, Somerset and Seekonk, as well as the Chamber of Commerce of Fall River and other groups of business men and manufacturers, realized that the existing service would be wiped out unless the road was rescued from the results of its recent sale at auction, following the default of its bond interest.

In the face of this situation the people came to the rescue of the property, and a vigorous campaign led to a stay of sentence upon the road pending its purchase by the local public at a figure representing about one-quarter of its former capitalization and floating debt. At this writing, final arrangements are being completed for the transfer of the property to these local purchasers, and it is expected that operation will be resumed inside of a fortnight.

Two aspects of the case are of special interest: the unwillingness of the public to see the property junked, and the possibility that future costs of service will be met from operation. The original investment was wiped out at the foreclosure sale, despite the existence of a 6-cent fare unit on the line. In its through-passenger business the road suffered from the competition of the Providence-Fall River electrified line of the New Haven system, and while a considerable freight and express traffic was handled, most of the revenue went to connecting or adjacent street railways. As regards the future, it is unlikely that fares will be increased above the 6-cent basis for the present, but plans are afoot to secure legislation this winter which will authorize a municipal guarantee of a 6 per cent return upon the purchase price of the road, $90,000, after the payment of operating costs; also, it is hoped, the reduction of certain taxation burdens. Whatever may be the future situation as regards fares, the action of the public in rushing in at the last moment to save the property from being dismantled is eloquent evidence of the necessity to a community of electric railway service.

Effect of Small Car Body Capacity on Schedules

The operating advantages of the one man car are so marked that it is very important for railway managers not to overemphasize in their own minds one of the advantages of this car, namely, the increased schedule speed brought about by a reduction in car capacity. We referred to this matter in the leading editorial in our issue of Sept. 22—the "More Service for Less Cost" issue—but it is worthy of further exposition. There is, perhaps, a tendency to lay undue stress on this advantage because it was only two or three years ago that the extremely large car, as exemplified in the double-deck designs of 1913, was spectacularly demonstrated as unsatisfactory because of its frequent stops and low speed.

With a car that carries small passenger loads, it is obvious that relatively few passenger stops will be made and that schedule speed will be relatively high because, in city service, schedules are absolutely dominated by the number of stops per mile. The relation, however, between car-body size and schedule speed is by no means proportional, and a car about half the size of the present standard would not, other factors being equal, be twice as fast. Instead, it would be something like 10 per cent faster, the actual figure depending upon a number of variables of which by far the most important is that of passenger stops. This is on the assumption that the same rates of acceleration and braking are used with the small cars as with the large ones. Obviously higher rates will produce higher schedule speed but, as Kipling says, that is another story.

Probably the most reliable data ever published on the subject of passenger stops and car capacity were obtained in the Newark tests of the year 1913, and the curves derived from these in connection with fairly representative city lines and heavy traffic indicate that a reduction in car capacity from, say, fifty seats to thirty seats would reduce the passenger stops (as differentiated from stops, or their equivalent in slow-downs, made on account of vehicular interference) from, say, ten per mile to about seven and five-tenths per mile. This decrease of two and five-tenth stops per mile for a twenty-passenger decrease in the load on the car, is probably a typical example of the results to be expected from such a change, and at the same time it is close to a maximum, because as congestion increases the relative values of the two figures draw together and as it decreases the concrete values of the figures grow less. Now, no matter what other operating conditions exist in connection with a change in car capacity, there is only one thing that can happen because of such a reduced number of stops per mile. This is a saving in time proportional to the number of eliminated stops. Regardless of the original speed attained with a large car body, the speed of a small car on the same run will be greater only because the latter can devote to normal movement certain periods of time during which the large car is stationary or is accelerating or braking at relatively low average rates subsequent to or prior to passenger stops.

Relation of Schedule Speed and Stops Per Mile

IN the case just mentioned there will be about two and five-tenths stops eliminated per mile, and the time that the small car can save because of its reduced capacity may be measured exactly if the time lost at each stop is known. On this point it is generally assumed that the elimination of one passenger stop saves about fifteen seconds. This commonly used figure may be explained by the assumption of a 15 m.p.h. average running speed, the average rather than the maximum being taken because the average speed is the speed from which braking begins and to which acceleration extends in connection with the average stop. Then, for stops with acceleration and braking rates of 1.5 m.p.h.p.s. (this figure is a minimum for modern car operation and appreciably lower rates need not be expected upon a properly operated road) the car will travel about 110 ft. during a ten-second braking period and 110 ft. during a ten-second accelerating period at an average speed of 7.5 m.p.h. Thus the two periods will occupy twenty seconds, and if a five-second stop is included the total time elapsing from the commencement of braking to the end of acceleration after the stop will be twenty-five seconds. If the stop had not been made, the 220 ft. of track within which the above cycle of operation was completed would have been covered at the average running speed of 15 m.p.h., and this would have required ten seconds in time. Therefore, the net loss due to the stop would be the difference between the two figures, or fifteen seconds.

On the basis that a thirty-passenger car may make two and one-half fewer stops per mile than a fifty-passenger car, the total time saving for the small car, at fifteen seconds per stop, is thirty-seven and five-tenths seconds per mile. The saving can be appreciably no more than this because a low accelerating rate has been assumed, and the increased speed of the small car may be properly determined in no other way than by the incorporation of this saving in time into the schedule. With an original schedule calling for 8 m.p.h. (under which a mile is covered in 450 seconds), this saving of thirty-seven and five-tenths seconds of time means an increase of about 9 per cent in speed, or if the original speed were 10 m.p.h. (and a mile covered in 360 seconds) the increase would come to about 11 per cent.

Comment may, perhaps, be introduced here with regard to the effect of a greatly increased length of stop on the above results. If, for example, stationary time at each stop should be assumed at the high figure of ten seconds instead of five seconds, the time lost at a stop becomes twenty seconds, and the saving due to two and one-half eliminated stops per mile becomes fifty seconds instead of thirty-seven and five-tenths seconds. If, as before, the original schedule called for 8 m.p.h., the new speed would then become 9 m.p.h., an increase of 12½ per cent. This, however, represents an extreme, and in general it may be said safely that the speed increase due to the reduced number of stops made possible by decreasing the capacity of a standard car to that commonly used in one-man car design is not far from 10 per cent in any case. In brief, among the many advantages that may properly be expected from small one-man cars, that of increased speed is limited in extent. Any improvement in schedules exceeding 10 per cent arises from such a factor as improved propulsion equipment and may not be credited to the reduced number of stops arising from the reduced size of the body. This fact must have due weight in connection with any proposals to reduce one-man car capacities still further, or to make them appreciably less than the sizes that are now generally used, since there is the definite penalty of an increased number of units to be purchased for every decrease in car capacity.

The Practical Man Needs Mental Stimulus These Days

"YOU ought to give us more equipment and maintenance articles of a nature to provoke thought," said the head of the mechanical repair department of an important railway recently; "that's the kind that is most interesting and helpful to me." Our good friend struck here the keynote of the equipment section as well as all other departments of this paper. That some articles do not stimulate his thought may be due partly to the failure of the writers to put sufficient thought into the articles, and partly to the fact that what stimulates one man would not necessarily appeal to another. If each reader gets one or more mental "jolts" each week he has at least something to be thankful for.

The comment from this engineer which we have just quoted indicates a natural desire on the part of the men in the field for mental stimulus which it is the duty and privilege of their technical paper to supply. We hope and believe that this desire is widespread, although it is not as general as it should be. There is no place in these days for the old-fashioned rule-of-thumb methods applied in a humdrum manner in the shop or the power house, on the track or the line. The interesting task, the stimulating job, is the one which taxes one's resources of ingenuity, resourcefulness and initiative, and it also is usually the one done most economically. The high costs of labor and materials put an extra premium on these qualities to-day, and these qualities are the result of vigorous, spontaneous thinking.

When one considers that a single practicable idea may save thousands of dollars in real money he certainly ought to be stimulated if he has any mental capacity at all. Whether the thinker gets his share of the saving which he produces or not (although he deserves to get it) he has done the industry a good service. And one does not have to be the designer of a new type of car or power house to come into this game. It's open to everybody and there's plenty of room. This is one of the convincing reasons for the support of a technical paper in each field of industry—to transmit the news of these improvements so that all will benefit.

RE-ENGINEERING AN INTERURBAN LINE—NEW 1200-VOLT, 59,000-LB. CAR

Re-engineering an Interurban Line

Change Made from Single-Phase to 1200-Volt D.C., from 90,000-Lb. to 59,100-Lb. Cars, from Generating Station with Extremely Low Load Factor to Purchased Power, Etc., in Attempt to Reduce Operating Expenses to a Basis Commensurate with Traffic—New Substations First to Be Built According to National Electrical Safety Code

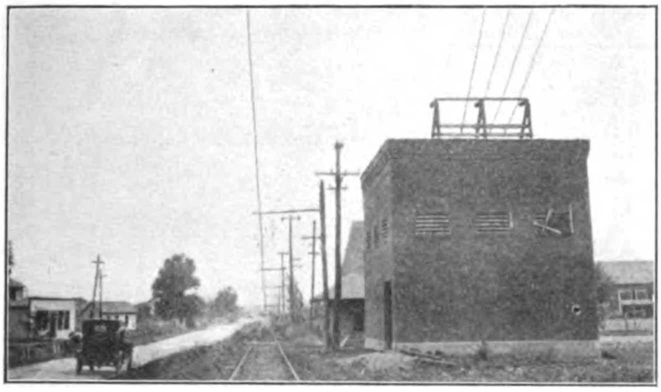
WHEN a road intended originally to be a 150-mile line connecting two important traffic points turns out to be a 22-mile line extending from one of these points out to a small town, it is not surprising that the engineering for the bigger project should be a complete misfit for the smaller one. Such in a word were the circumstances which surrounded the building of the Fort Wayne-Decatur (Ind.) electric line in 1906, and the passing of the road into the hands of a receiver in 1912. It was the original expectation that the railroad would be promptly extended from Decatur to Springfield, Ohio, and the short piece of line from Fort Wayne to Decatur was engineered and constructed in accordance with what was considered the most economical plan for the larger project. This first 22-mile section of the line was placed in operation on Feb. 2, 1907, by the Fort Wayne & Springfield Railway, but the extension to Springfield never materialized. However, the equipment was purchased to fulfill the original idea of the promoters, from which it was deemed necessary to adopt as high a trolley pressure as was possible at that time—6600 volts—making use of the 25-cycle a.c. single-phase system and the very heavy cars which go with it.

A power house for supplying energy to this line was constructed at Decatur, and equipped with a 680-hp. heavy-duty cross-compound Buckeye engine direct connected to a 450-kw. Westinghouse generator. The power house was built for two such units, but only one was installed. The guarantee on this equipment was a rate of 14 lb. of steam per kilowatt-hour with a 26-in. vacuum, but owing to the extremely low load factor which prevailed at the station with only one car operating on a three-hour schedule this rate was never reached. The cars were making only 11,000 miles a month with an energy production of 30,000 kw.-hr. a month. This made the cost of power run up to 12.66 cents per car-mile, not including any overhead expense or line losses, the figure given being the average cost during the first six months of 1915.

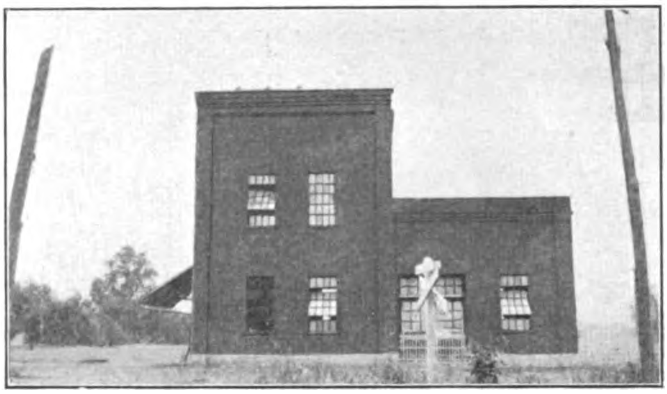
Operation went on under these conditions with comparatively light traffic until Sept. 12, 1912, when the property passed into the hands of French Quinn of Decatur, receiver, who operated the road until Dec. 2, 1915. At this time it was sold at public sale by the court and purchased by the holders of the receivers' certificates in the name of Charles H. Worden of Fort Wayne, trustee. Thereafter, until July 1, 1916, the road was operated as an individual enterprise by S. W. Greenland, general manager Fort Wayne & Northern Indiana Traction Company. Through various operating economies the expenses of the road were somewhat reduced during this period. For instance, by a more efficient use of labor at the power house the cost of energy per car-mile was reduced to 10 cents for the first six months of 1916 as compared with 12.66 cents for the same period the year before. It was impossible, however, to gain what might be considered economical operation, owing to all the handicaps placed upon the property by the misfit equipment.

On July 1, 1916, the property was bought by the Fort Wayne & Decatur Traction Company, incorporated in Indiana, of which James H. Haberly of Fort Wayne is president. An arrangement was then made with the Fort Wayne & Northern Indiana Traction Company to operate the road, and it was thereby continued in the hands of Mr. Greenland.

With a financial rehabilitation of the property accomplished, it was decided that the physical property should be re-engineered and equipped with modern cars and a power distributing system of proper design for the length of road and nature of the traffic. In order to maintain the investment in the distribution system as low as possible, it was determined that by making



RE-ENGINEERING AN INTERURBAN LINE—STEP-UP SUBSTATION BUILT ACCORDING TO STANDARD CODE



RE-ENGINEERING AN INTERURBAN LINE—ROTARY CONVERTER SUBSTATION BUILT ACCORDING TO STANDARD CODE

use of a 1200-volt d.c. trolley pressure, a single substation located midway on the line between Fort Wayne and Decatur would prove satisfactory. The complete rehabilitation of the property, therefore, included the scrapping of the old cars and power house and the building of new substations.

CHANGES NECESSARY FOR THE NEW SYSTEM OF OPERATION

The changes necessary in the old plant to adapt it to the 1200-volt system were not as extensive as might at first be imagined. The old catenary overhead was entirely suited to the new scheme, for the No. 0000 trolley contact wire and the ½-in. steel messenger cable, also used as a feeder cable, provided ample current-carrying capacity for the 1200-volt system with the d.c. supply station located near the middle point of the line. With the 6600-volt single-phase system but one rail had been bonded. The second rail was bonded for the d.c. system, but otherwise no change here was necessary. The old a.c. lightning arresters located about 1½ miles apart were adjusted for 1200-volt use and redistributed along the line so as to have a 1-mile spacing. The grounds were also renewed by driving 12-ft. of 1-in. or 1½-in. galvanized iron pipe into the ground at the foot of the pole.

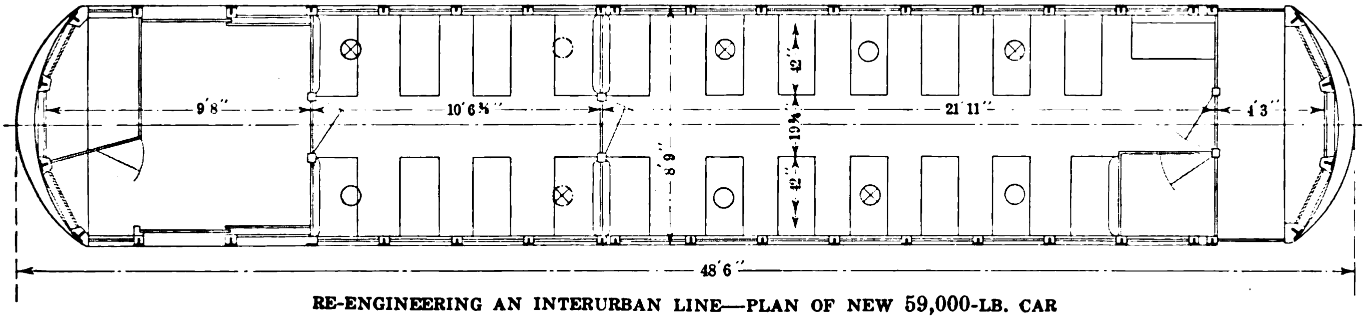
The work necessary to supply energy to the rotary substation comprised a 1½-mile extension of one of the heavy 4000-volt, three-phase, four-wire feeders in Fort Wayne to serve a step-up substation located just outside the city, 4½ miles from the power house. At this point the voltage is stepped up to 33,000, and the power is transmitted over a new three-wire, three-phase line, mounted on the poles which support the trolley brackets and extending 9 miles to the rotary converter substation. This makes the total distance of this substation from the power house in Fort Wayne approximately 13.5 miles. No. 2 copper wire was used for the high-tension line and the poles on which it was placed are of chestnut and 45-ft. long.

During the construction work when the substations had been completed at 1 o'clock p. m. on a Saturday, the old power house caught fire and burned at 2 p. m. This left the road without any power supply, since there was still a mile of the high-tension line to the substation to be built, and the railway was therefore left without power supply. It was necessary to dispense with service until the following Thursday.

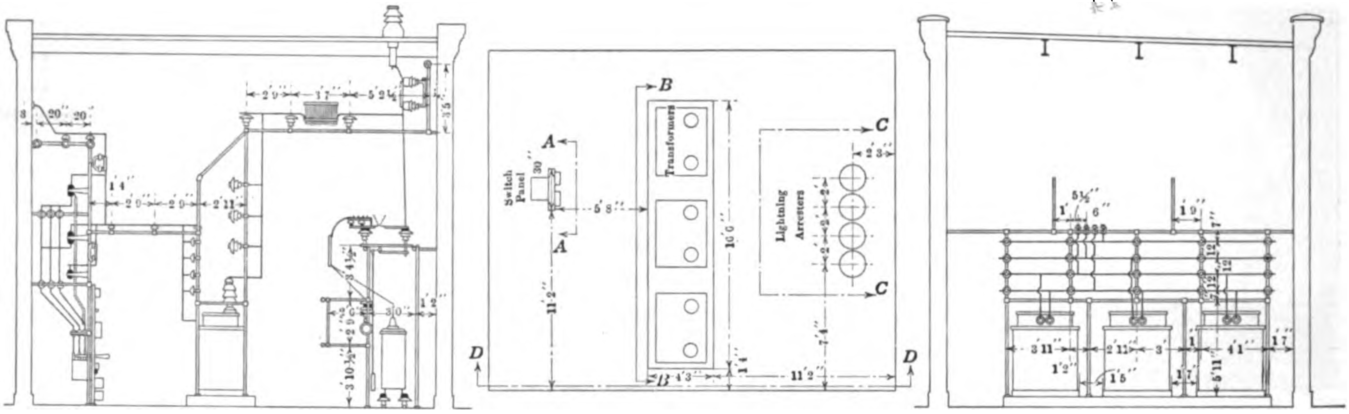
STANDARD CODE SUBSTATIONS

The interesting feature about the step-up and rotary converter substations is the fact that they are the first to be built absolutely in accordance with the new Bureau of Standards safety code. The interest in this connection is very largely one of clearances, and these are shown quite completely in the several accompanying drawings. The step-up substation has a very simple layout whereby the 4000-volt circuit enters at one side of the building, passes through the hand-operated oil switch and the disconnecting switches on either side of it, thence through the transformers and electrolytic lightning arresters, and out at the opposite side of the building at the 33,000-volt potential. The liberal clearances and generally neat layout of wiring are at once noticeable when one enters the station. The advantages of following the rules of the code in the design of the station can readily be appreciated when one sees the completed work, and the additional building cost necessitated by the more liberal clearances is insignificant in stations of this size, according to E. S. Myers, electrical engineer Fort Wayne & Northern Indiana Traction Company.

The equipment in the step-up substation comprises three 150-kva. transformers, complete with electrolytic lightning arresters, and the switchboard panel for the incoming 4000-volt feeder. The building itself is con-



RE-ENGINEERING AN INTERURBAN LINE—PLAN OF NEW 59,000-LB. CAR



Cross Sectional Elevation *D-D* Floor Plan Section *B-B*

RE-ENGINEERING AN INTERURBAN LINE—CROSS-SECTION (DD) THROUGH STEP-UP STATION. FLOOR PLAN STEP-UP SUBSTATION. LOW-TENSION BUS ARRANGEMENT STEP-UP STATION

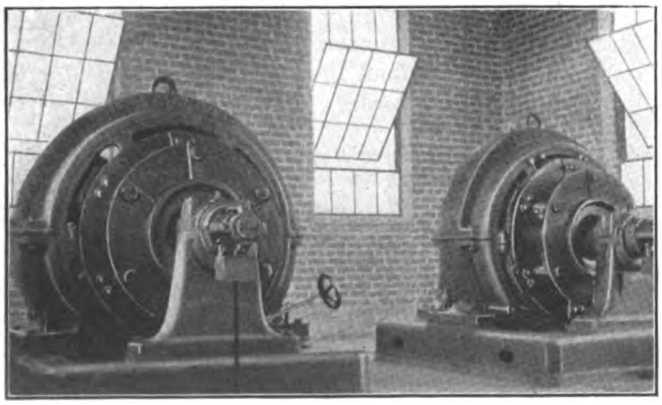
structed with red brick walls and concrete floors and roof. Three ventilator openings in each of the four side walls are provided, but otherwise there are no windows. The cost of this station was as follows:

Material	$1,544.17
Labor	1,230.48
Electrical equipment	4,470.28
Labor and installing	215.55
Total cost	$7,460.48

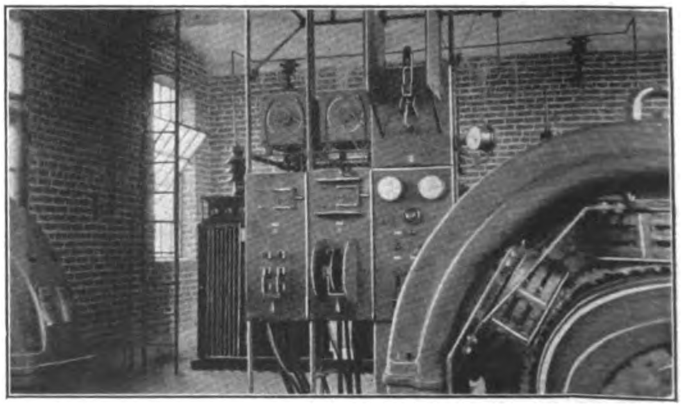
The rotary converter substation is also a red brick building with concrete floors and roof, which includes space for use as a waiting room and a smaller room ing over the two rooms is two stories in height and the tion to the operating room. The portion of the building over the two rooms is two stories in height and the space above the rooms serves as a gallery on which the oil switches and electrolytic lightning arresters are installed. Large wire-glass steel-frame windows furnish good daytime lighting for the operating room. A 6000-lb. simple crane, with chain hoist, is carried on offsets in the side walls, and serves for handling the equipment in the main operating room. Equipment installed in the gallery must be handled by other means, since the crane track is only slightly above the floor level of the gallery.

The path of current through the substation is very simple and direct. It comes in off the high-tension line at the roof line at the back end of the gallery and passes down through the aluminum lightning arresters, up through the choke coils, down to the oil switches, and down to the three 150-kva., 33,000/390-volt transformers on the main floor, and thence into the 4-ft. x 4-ft. tunnel underneath the floor. From here the low-tension cables extend over to the switchboard, and thence on through the tunnel to the two 200-kw., 600-volt, 1200-r.p.m., three-phase, 60-cycle interpole rotary converters operating in series to produce the 1200-volt line pressure. The switchboard has but a single feeder panel and one circuit breaker from which connection is made to the outside trolley at a distance of 5000 ft. either way from the substation. The trolley is fed at this distance from the substation to provide resistance in the circuit between the trolley connection and the rotary as a means of cutting down voltage disturbances. It is a practice with the Fort Wayne & Northern Indiana Traction Company to make these connections 2500 ft. from the substations on 600-volt trolley supply and double the distance on 1200-volt supply. In addition to the single feeder panel in the switchboard, there are provided also two starting panels. The meters are installed on the feeder panel with a bracket-type station voltmeter mounted on the frame. The oil switch is manually operated from levers extending through this panel.

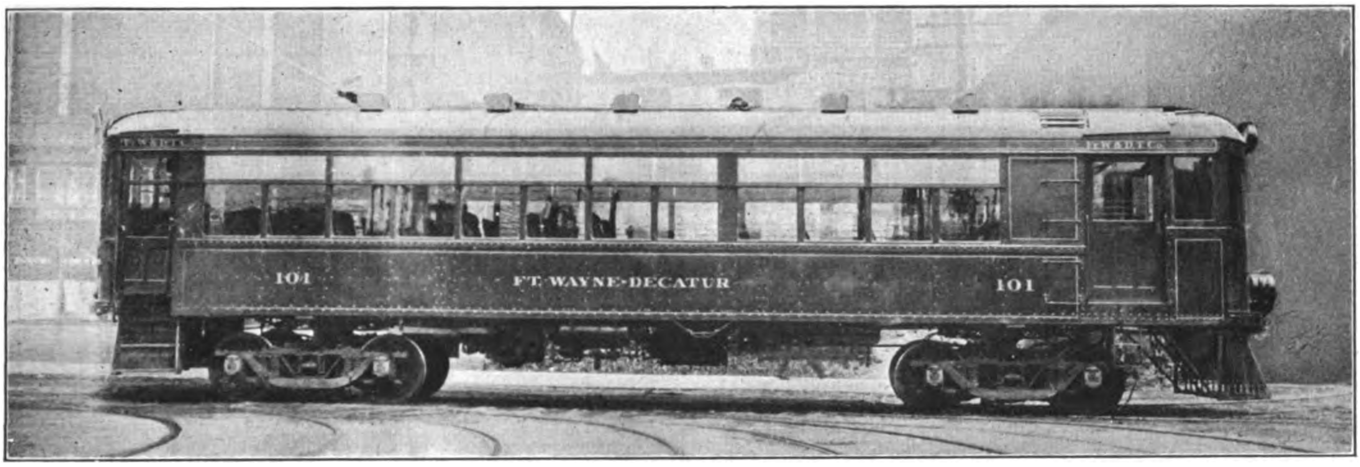
The transformers at the step-up substation are star-connected, while those at the rotary substation are connected in closed delta with the neutral grounded at the substation only. Through this arrangement if a heavy ground occurs on one leg of the high-tension line the neutral ground may be opened up and the grounded leg made use of temporarily as the system ground. and operation thus continued. By this means it is possible to avoid tying up the line. As another means of maintaining the service without interruption, the relays in



RE-ENGINEERING AN INTERURBAN LINE—TWO 1200-R.P.M., 600-VOLT ROTARY CONVERTERS OPERATING IN SERIES



RE-ENGINEERING AN INTERURBAN LINE — SWITCHBOARD AND TRANSFORMERS IN ROTARY SUBSTATION



RE-ENGINEERING AN INTERURBAN LINE—THE NEW CARS WEIGH 30,000 LB. LESS THAN THE OLD

the step-up substation are set with a time lag of eight seconds, so that any temporary disturbance will not operate the oil switch. This station is operated without an attendant, and it is therefore very desirous to keep the transformers on the line, unless there is an extremely heavy and continuous disturbance.

The rotary converter substation complete cost $16,178.99. This total was made up of the following items:

Material	$3,814.47
Labor	1,606.69
Electrical equipment	10,214.19
Labor of installing	543.64
Total cost	$16,178.99

NEW 1200-VOLT ROLLING STOCK

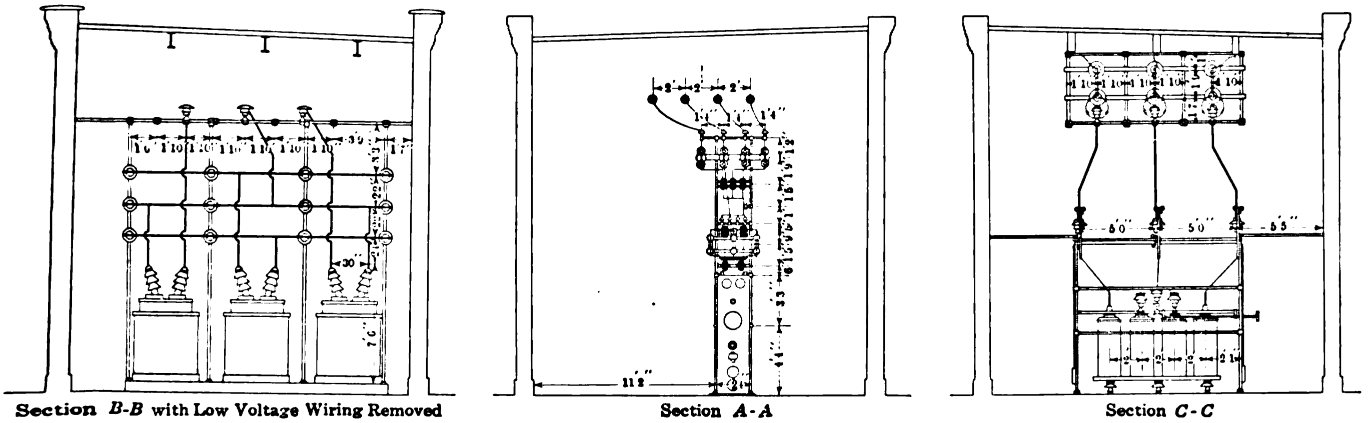
With the change from alternating current to direct current the old cars weighing approximately 90,000 lb. each were dismantled and three new passenger cars weighing 59,100 lb. each were purchased in order to give a one-and-one-half-hour service, instead of the three-hour service formerly provided. These cars are of all-steel construction except for the wood interior finish, and are equipped with Baldwin 73-18-K trucks, Westinghouse 307-CV 600-1200-volt motors and HL control. The car bodies are 48 ft. long over all with a weight distribution as follows:

	Pounds.
Body, electrical equipment and air brake	32,600
Trucks	15,900
Motors	10,600
Total	59,100

An express car also purchased is constructed of wood, but is supplied with the same equipment and given a gear ratio for a speed of 35 m.p.h., while the passenger cars are geared for 45 m.p.h. All cars are equipped with a changeover switch for operating on the 600-volt trolley supply in Fort Wayne. This switch is located in the cab just above the motorman's head, where it is within easy reach. Throwing the switch over in the cab automatically makes all the necessary changes in connections underneath the car by means of a piece of apparatus separate from the HL control and specially designed for the purpose.

The D-2-N Westinghouse Traction Brake Company air compressor utilized has two separate windings and a commutator at each end of the armature for use on both the 600 and 1200-volt trolley pressures. The change-over from 600 to 1200 volts on the air compressor is also included in the operations controlled by the master change-over switch installed in the motorman's cab. Peacock no-staff hand brakes are installed in the center of the cab at the front end of the car.

The cars are built for single-end operation, and all switches are located just above the windows on the front end of the car where they are within easy reach of the motorman and very accessible for repair. The sand box, air governor, etc., are also located within the cab. The car-body interior is divided into a main passenger compartment, a smoking compartment and a baggage compartment, in addition to the motorman's cab. The smoking compartment provides a seating capacity for sixteen passengers and the main compartment for thirty passengers, or a total of forty-six. The seats are of unusually generous dimensions, and are likewise liberally spaced. They are 41½ in. wide over

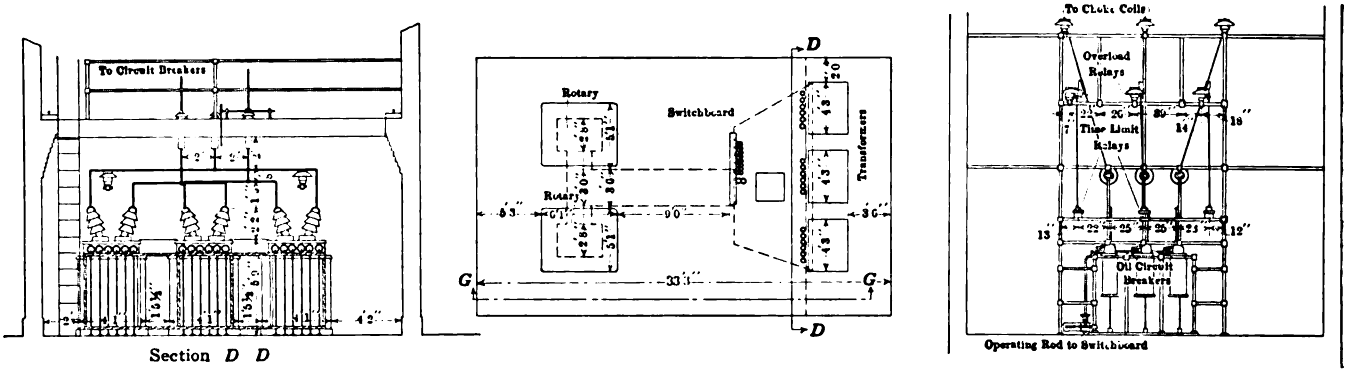


Section *B-B* with Low Voltage Wiring Removed

Section *A-A*

Section *C-C*

RE-ENGINEERING AN INTERURBAN LINE—HIGH-TENSION BUS ARRANGEMENT STEP-UP STATION. SWITCH PANEL AND INCOMING LINE STEP-UP STATION. LIGHTNING ARRESTERS AND CHOKE COILS



Section D D

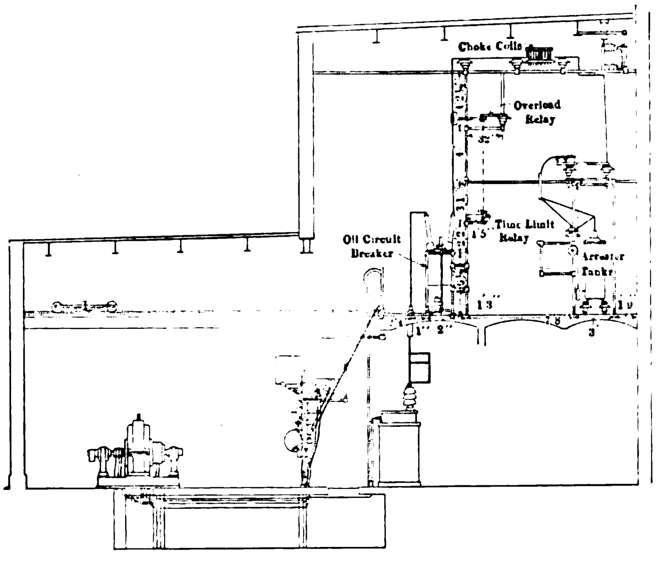
RE-ENGINEERING AN INTERURBAN LINE—TRANSFORMER CONNECTIONS, ROTARY SUBSTATION. FLOOR PLAN, ROTARY ROOM AND SWITCH GALLERY, ROTARY SUBSTATION. OIL CIRCUIT BREAKERS AND RELAYS, ROTARY SUBSTATION

the arm rests, with backs 28 in. high and spaced for 31½-in. centers. They are all stationary seats and are covered with plain green plush in the main compartment and with fabrikoid in the smoking compartment. The omission of an inside side panel in the cars also adds width to the seat space. The seats were supplied by the St. Louis Car Company, which also built the cars. The two plush-covered seats in the main compartment next to the center bulkhead are protected against wear from the feet of the passengers occupying the first forward-facing seats by means of an iron strap which extends across the front edge of the cushion.

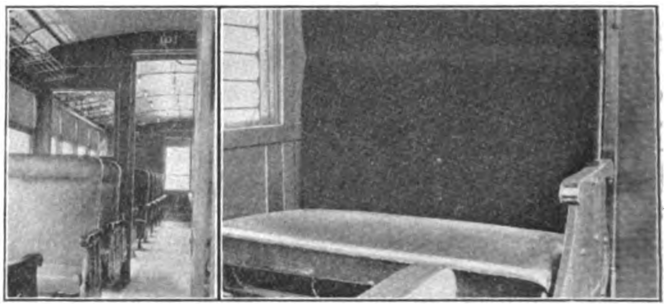
The car bodies are 8 ft. 6 in. wide. The arched roof is supported on T-posts, which extend over the top of the car to form the one-piece carlines. The three steel bulkheads act to stiffen the car body as well as to separate the several compartments. The floor is constructed with a maple flooring laid with the lower layer lengthwise and the upper layer crosswise of the car. This is covered with ¼-in. battleship linoleum in the aisle with a molding strip on each side to protect the edges. This double flooring is made use of as an insulation against the cold in the winter time. Further insulation from the cold is also provided by the use of ¾-in. flaxlinum insulation placed between the outside and inside steel plate sheeting. The cars are heated with the Peter Smith hot water system.

The car interior is finished in birch stained a light cherry, and the Agasote headlining is painted a cream color. One of the features which adds materially to the beauty of the car and to the pleasure of riding in it is the use of the Forsyth beadless brass sash, which gives the impression that the car has no sash at all. These are fitted with O. M. Edwards locks and Forsyth weather strips. Pantasote curtains on Curtain Supply Company ring fixtures and Rex all-metal rollers were used. The Imperial prism glass in the upper Gothic sash also adds materially to the exterior beauty of the car. Five-bar window guards built in sections covering two windows are hinged at the bottom so that they can be readily dropped for cleaning the window glass.

The artificial night-lighting within the car is provided by two rows of 23-watt Mogul base lamps set in the headlining over each seat. These are connected ten in series on the 1200-volt system and five in series on the 600-volt system. The change-over on the lighting system is also included as one of the operations controlled by the main change-over switch.



RE-ENGINEERING AN INTERURBAN LINE — CROSS-SECTION THROUGH ROTARY SUBSTATION



RE-ENGINEERING AN INTERURBAN LINE — LOOKING TOWARD REAR END OF NEW CAR. IRON STRAP TO PROTECT PLUSH CUSHIONS

The rear vestibule of these cars is equipped with the O. M. Edwards trapdoors. Ventilation within the car is provided by ten Railway Utility intake and exhaust ventilators. A 1200-volt General Electric Company luminous arc headlight is installed just above the bumper on the front end of the car, and an ordinary incandescent headlight for use on the 600-volt trolley supply inside of Fort Wayne city limits is installed on the roof.

These cars were designed by Arthur W. Redderson, superintendent of motive power Fort Wayne & Northern Indiana Traction Company, and their use has resulted in a current consumption 50 per cent less than that formerly required by the heavier type equipment. All electrical equipment utilized in the rehabilitation of the property was furnished by the Westinghouse Electric & Manufacturing Company.

Advertising in Publicity Work

Publicity Is Justified Because the People Want It—Newspaper Advertising One of the Best Ways of Reaching the Public—The Best Time to Use This Medium and the Proper Kind of Copy Are Discussed in This Article

By IVY LEE

PUBLICITY for public utilities is justified, if for no other reason, because the public itself wants it and has a right to it. The utilities are being paid for doing a certain job for the public, and they are answerable to that public.

Is the public service working well? The public wants to know the details.

Is it working badly? The public wants to know why, and it wants that story told frankly, sincerely and fully.

The public may not agree with the company's views, but it is entitled to have them.

Electric railway men are coming more and more to appreciate that the business is theirs only in a relative sense; that the public service is really the public's and subject to the control of public opinion. It is, therefore, an important matter to the electric railway man what public opinion about the utility is.

The public has both the right and the power to change entirely the system under which utilities operate, and therefore they exist absolutely on sufferance. A man may have no opinion whatever about the business of art pottery, for instance, because he doesn't come in contact with it. It doesn't affect his daily routine. But the daily life of everybody is touched by the public utility, and everybody has an opinion about the conduct of the public utility. What the people know about you molds that opinion, and they won't know your side of it unless you tell them.

The greatest need of the moment is for the electric railways to take their story directly to the people over the heads of commissions, municipal authorities and legislatures. If trolley fares are to be raised, the people must pay the bill, and they will want and they are entitled to know why.

Public utilities, like governments, are subject in the last analysis to the will of the people. As Mr. Dooley put it: "Supreme Court decisions follow the election returns." Courts, legislatures and commissions are all subject to the popular will.

There are many ways to get the electric railway story to the public, among them by the use of advertising space in the daily press.

But electric railways and many other corporations are to-day reluctant to do that advertising which otherwise they might do for fear they will be criticised by public officials for "subsidizing the press."

Yet, in the old days when the public utility man was silent, the politician denounced him for his "secretiveness." One suspects that what really irks the politician is not the policy of honest publicity, adopted by the public service corporations, but the fact that they are making their publicity effective.

No amount of advertising will permanently sustain a mistaken argument, bolster false policies or protect from the consequences of misdeeds. "You cannot fool all the people all of the time."

Any interest, public or private, which earnestly, sincerely and candidly takes its case to the people should, at any rate, have strong public support for that fact. Every man is entitled to a full hearing in the court of public opinion.

Newspapers and advertising men—in fact, all interested in the progress of democratic institutions, whose ultimate safety must depend upon a fully informed public opinion—should omit no opportunity to make clear to public officers, commissions, even Congress, what the people want to know.

The ultimate fountain of power in a democracy is and must be the people. Corporations should take their cases to the people. If the case is sound the fact that it is presented to the people will secure its approval. If the case is weak the active presentation of it will but give critics of it an opportunity thoroughly to bombard it. The people gain in either event.

Having decided upon a general policy of publicity the electric railway man is next faced with the practical questions of methods and mediums. Just as the artist has on his palette all sorts of colors with which to produce his picture—Chinese white, purple lake, yellow ochre, burnt umber, etc., and just as he must decide whether to paint in water colors, or oils, or use pencil, pastel or charcoal, so the publicity man has his selection of methods. There are numerous means by which to address the public, among them being leaflets, posters, car cards, interviews, signed statements, speeches and advertisements. The most important of all these are the ones dealing directly with the daily newspaper, and in this discussion we shall consider the uses of advertising alone. The principles underlying sound publicity apply to all these media, of course, but the technique varies.

WHEN THE ADVERTISEMENT IS BEST

The advertisement is indispensable when one wishes to reach the whole public with his argument but hasn't the time required to prepare pamphlets or posters.

The great points of value about the advertisement as a publicity method are that you are master not only of the text but you write your own headlines and you put in your own italics.

It makes a lot of difference what the headlines say, for many read the headlines and no more. The attitude of mind of all readers is bound to be much affected by first impressions, and headlines give first impressions.

Suppose the facts are that your railway company has been unable to pay dividends and for that reason you cannot get investors to put money into the business, hence the public service is threatened. Now over a news article setting forth these facts the following headline might appear:

SEEK TO RAISE FARES
TO PAY MORE DIVIDENDS

Is the general impression left on the mind of the man who merely glances at this headline one of complete fairness to the company? But suppose the headlines over your advertisement are:

FARES MUST BE INCREASED
TO KEEP UP THE SERVICE

The man glancing at that will have a fairer notion of the real situation. But it is not a headline that newspaper men would be likely to write. It is the expression of a conclusion. In effect, therefore, it is an opinion, and newspapers generally avoid putting opinions in headlines except as to matters in which they have a direct interest.

As a piece of news, what you have to say might be accorded by the editor half a column or half an inch. As an advertisement your idea gets exactly the space you think it needs.

WHAT SHOULD WE ADVERTISE?

What should we advertise? In general, things which it is important to have printed at once but which are not likely to be regarded by newspaper men as news and hence would not appear in the paper unless paid for as advertisements.

If the mere fact of extensive advertisement for a thing gives it (as judged by the newspaper man) a news value, the paper will print a news article about it in addition to your advertisement. As an example of this we may cite George W. Perkins's recent advertisement on behalf of Governor Whitman's food bill before the Legislature at Albany. Mr. Perkins stated his views in advertisements printed throughout the State. But the fact that he did this so extensively and so effectively made the fight of news interest, and the newspapers printed news articles and editorials about it, thus multiplying the sum total of publicity Mr. Perkins obtained for his argument.

Many electric railway men have found it to be of great advantage to keep some details of daily operation constantly before the public. They explain a new routing, tell why traffic was halted for thirty minutes on such and such a street, or tell of a new improvement to be put in. These are not matters of sufficient importance for the newspaper to print as news in competition with news of the war, of the selective draft, etc. But unless told at once it will do little good. The small advertisement serves every purpose. And this keeps the public acquainted with the company's desires and plans in the public interest. That is highly important to do, and it is important to keep doing it. It puts the human note into the business too. It is no longer utterly and coldly impersonal. That is why it is important that responsible heads sign all public notices. One should always make his advertising direct and assume responsibility for it.

Very often advertising those things in which one's own business interest is not direct, but only the interest that any good citizen has, is most valuable in the beneficial reaction of public sentiment. For instance, in Elmira, when the Women's College was seeking more funds last spring the Elmira Water, Light & Railroad Company boosted the work on its cars and won public approval.

In the present 6-cent fare campaign the New York State Railways used advertising space in Rochester, Syracuse and Utica to give the public the real figures on their business covering a period of five years, with the effect that newspapers and leading citizens freely admitted that the company had proved its case.

WHEN AND HOW TO ADVERTISE

Advertise when there is something to say that ought to be said at once and said to the whole public. First impressions are deepest, and it is often most important to have the first say.

The company should not be left to make a tardy explanation after the public has secured a misconception of the facts through ill-informed newspaper reports or interviews with those who are seeking to prejudice the public mind. It is highly important to forestall your enemy, to "beat him to it," for the corporation baiter looks rather foolish making statements that have already been discounted.

The advertisement should be marked by its simplicity and dignity rather than by its ornateness or freakishness. Not that emphasis is to be avoided. Far from it. No speaker can be effective with a dull monotonous droning. As one emphasizes words or phrases by voice or gesture, so in printing a moderate amount of emphasis here and there lends interest. But it should not be overdone. Don't emphasize too many things or you lose contrast.

Do not use too many faces or styles of type. To use too big type in small advertisements is as faulty as to use too small type in big advertisements. It is generally well in public utility advertising to avoid flamboyance, over-display and generally the suggestion of great expenditures. The message does not need it. You are not advertising bargains; you are printing opinions. You do not shout at people. You reason with them.

People will not study advertisements. They glance them through. So they must not be too long nor have too many topics, and they cannot be too direct and simple.

An advertisement three columns wide, and half to three-quarters of a column deep is generally big enough to stand out well on a newspaper page, if not, indeed, to dominate it. It is important that the advertisement be simple and direct and as brief as possible with clarity. Seldom should such an advertisement have more than 400 or 500 words—300 words is better, and 200 still better.

Avoid having too many thoughts in it. Rarely go beyond three principal ideas, and one is better.

Like all really good publicity, the advertisement must be based in an honest case, and breathe the spirit of sincerity and truth. If it be merely "clever" it will fail —the cleverness will probably arouse suspicion.

There is no hocus pocus or mystery about good publicity or good advertising. It is neither subtle or mysterious nor "clever." It is honest, direct and simple.

Yet, strangely enough, that is the most difficult effect in the art to produce. The best actors in the world seem not to be acting at all, they are "so natural." That is the sign of the highest art in acting just as it is in advertising as applied to the publicity conducted by public utilities.

New P. R. R. Locomotive Has Powerful Electrical Equipment

Current Taken from Trolley at 11,000 Volts, Single Phase, and Converted by Transformer and Phase Converter Into Three-Phase Current Which Is Supplied at 850 Volts to Four Induction Motors

TESTS of the Pennsylvania Railroad's new electric locomotive are in progress on the main line electrification in the vicinity of Philadelphia, and from the trial runs already made it is certain that, while the rated capacity is 4800 hp., the locomotive is capable of developing as much as 7000 hp. at starting. In a previous article on this locomotive, published in the ELECTRIC RAILWAY JOURNAL for June 9, 1917, page 1048, the details of the mechanical construction were given. In the following article emphasis is laid on the electrical equipment, details of which were not available when the previous article was published. The Pennsylvania Railroad constructed the mechanical parts at its Juniata shops, and the Westinghouse Electric & Manufacturing Company designed and supplied the electrical equipment.

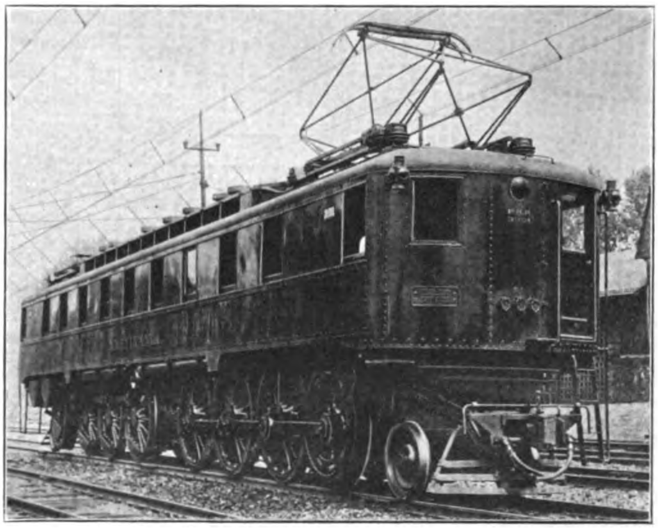
MECHANICAL FEATURES

In the general design and layout of the locomotive some of the points which were given primary consideration are as follows: (1) Even distribution of weight about both the longitudinal and transverse center lines of the cab. (2) Grouping of apparatus in a compact manner so that the locomotive would have a minimum length. (3) The location of the heavier pieces near the center of gravity of the cab so as to reduce the dumbbell effect, both in nosing and in rolling. (4) The provision of space for convenient removal of any piece of apparatus without requiring other equipment to be moved. (5) The provision of an unobstructed passageway down both sides of the locomotive, thus permitting access to both sides of all apparatus.

Each truck has three pairs of rod-connected 72-in. driving wheels grouped in a 13-ft. 4-in. rigid wheelbase. Outside the rigid wheelbase is a jackshaft, carrying on each end a gear center which is rod-connected to the adjacent driving wheel. Each gear center carries a pair of independent, flexible gear rims with 1¾ diametrical pitch and 10 deg. helical teeth. The jackshaft is driven by two motors, each of which has a pinion mounted on each end of the armature shaft. Ahead of the jackshaft in the truck is a two-wheeled swing bolster leading truck. This leading truck bolster is arranged with a combination of swing links and cam rollers to accommodate the large swing required by the combination of rigid wheelbase, together with the advance of the leading truck ahead of the rigid wheelbase.

The cab, which is 72 ft. 6 in. long, is considerably longer than any previously constructed locomotive cab. The main foundation structure consists of two girders 26 in. deep, spaced 5 ft. apart, and forming with a cover plate a box girder extending throughout the length of the cab. The electrical machinery is mounted directly on top of this box girder, which also carries the cab sides and roof through transverse bolsters and cross-bearers. The cab structure is relieved of all strains due to end shock, except those resulting from its own inertia, the train shocks being transmitted through the draft gear and the main truck framing. At the mid-length of the cab is a built-in well for the accommodation of the liquid rheostat.

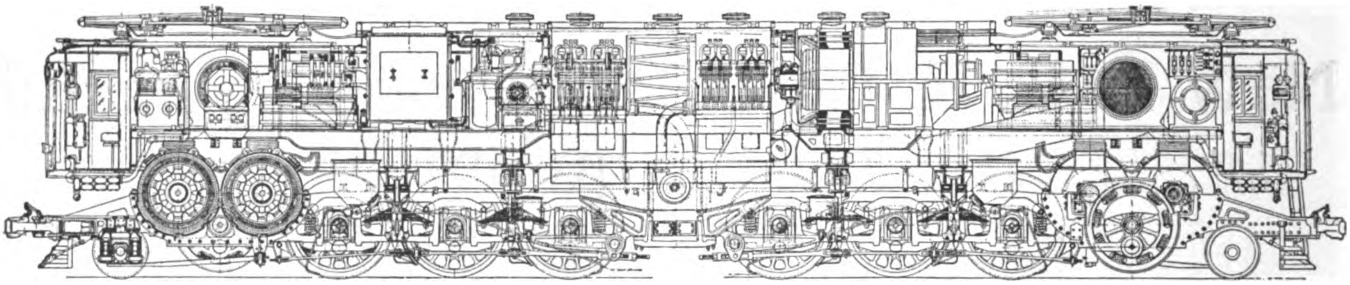
The cab is mounted on two pivoted trucks which are articulated together in a unique manner. The bumper girder on the inner end of each truck is a portion of a circular ring, rectangular in cross-section and having the truck center plate as its axis. The bumper girders of the two trucks are in contact with each other, and are surrounded by a massive link which extends down and forms a rigid part of the cab structure.



PENNSYLVANIA LOCOMOTIVE—FIG. 1—GENERAL VIEW OF GIANT ELECTRIC ENGINE

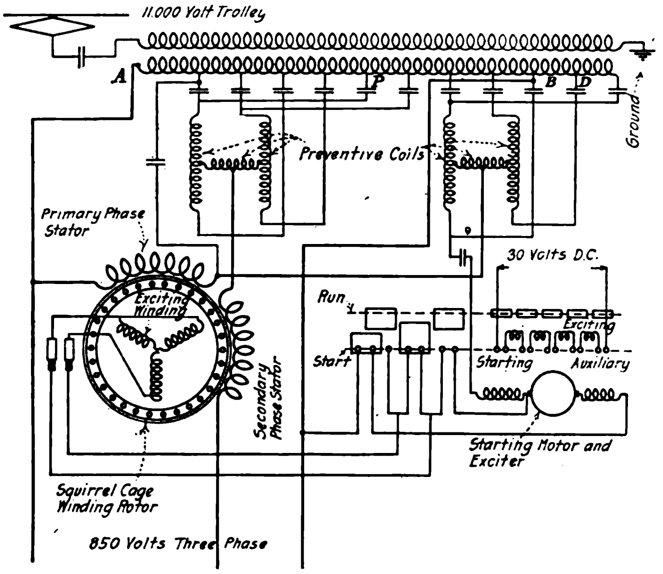
TRANSFORMER AND PHASE CONVERTER

The method of control can best be realized by following the course of the power from the trolley wire to the motors and noting what part each piece of apparatus performs and its method of functioning. As shown in the general wiring diagram, Fig. 3, single-phase current at potential of 11,000 volts is collected by the pantograph and flows through an oil circuit breaker to the primary of the transformer and then to the framework of the locomotive which forms the ground connection. The secondary of this transformer supplies power to the phase converter, which may be considered as a combined motor and generator. Its function is to transform part of the power so that it will have a phase displacement of 90 deg. from the transformer voltage. The converter is essentially an induction motor with a



PENNSYLVANIA LOCOMOTIVE—FIG. 2—SIDE ELEVATION SHOWING LOCATION OF APPARATUS. THE OVER-ALL LENGTH IS 76 FT. 6 IN.

two-phase primary winding on the stator. One winding is connected across a portion of the turns of the transformer secondary, and a second winding is so placed on the converter stator that when the squirrel-cage rotor of the converter revolves it will generate in this winding an electromotive force 90 deg. in phase position from that in the primary winding. This principle is shown in Fig. 4, which indicates the relative positions of the windings in a two-pole converter. There are four poles in the actual converter.



PENNSYLVANIA LOCOMOTIVE—FIG. 3—GENERAL WIRING DIAGRAM SHOWING SIMPLIFIED CONNECTIONS OF TRANSFORMER AND PHASE CONVERTER

The transformer primary and secondary and the winding on the converter stator are shown in the general diagram, with other details yet to be explained. It will be noted that provision is made for connecting the converter windings at various points in the secondary of the transformer, which is done to provide for balancing the phases under different loads. Connections are also made through preventive coils to limit the current to a safe value when two switches are closed at the same time in transferring a connection from one point to another.

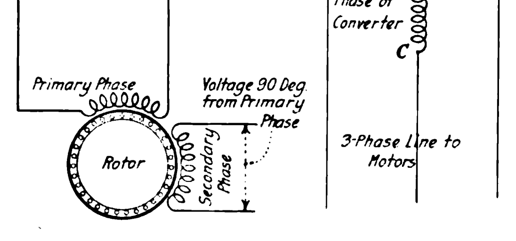
As just explained, the function of the phase converter is to transform part of the power to a second phase in quadrature with the first. As three-phase current is desired, however, another step is necessary in transforming the power now in two-phase form to the three-phase form. This is done by means of the well-known T-connection, or Scott connection, which is shown in Fig. 5. When two windings in which power is being generated with voltages at right angles are connected as shown in this diagram, three-phase power can be taken from the terminals *A*, *B* and *C*, assuming that the voltages are properly proportioned. In order to get balanced three-phase current under various conditions of load, however, it is necessary to shift the point of connection, *P*. On the Pennsylvania locomotive provision for doing so is made by the taps already referred to. The general diagram, Fig. 3, shows how the T-connection is made in this case.

As the phase converter is not self-starting a single-phase series starting motor is provided, which is shown diagrammatically in the figure, together with an outline sketch of the controller for the small machine in starting and running positions. When the converter is running the starting motor is used as a direct-current generator for the purpose of exciting the phase converter. Direct-current excitation for the exciter itself is provided by a small motor-generator set, not shown, the motor of which is a three-phase induction-type machine.

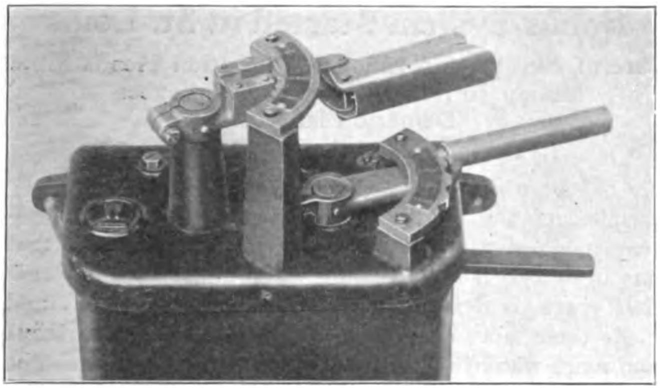
In the general diagram it will be noted that there is an exciting winding on the converter rotor which, as just explained, is supplied with direct current from the exciter when the converter is running. This is for the purpose of improving the power factor, which is, of course, much higher when the excitation is thus supplied than when it comes through the primary winding. When the rotor of the converter is at synchronous speed the direct-current excitation revolves mechanically at exactly the same speed as the revolving field, hence the possibility of this arrangement. Exciting current is taken into the rotor through a pair of collector rings represented in the diagram by conventional symbols.

CONTROL

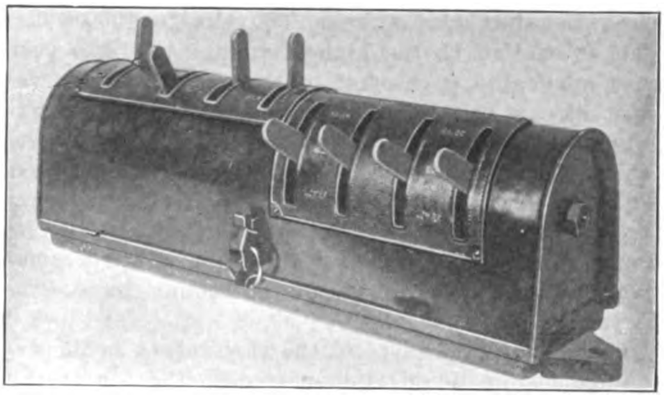
The three-phase power, obtained as outlined above, is supplied to each of the four motors through a set of five electro-pneumatically operated unit switches, which



PENNSYLVANIA LOCOMOTIVE—FIGS. 4 AND 5—DIAGRAMS SHOWING HOW PART OF THE POWER IS DISPLACED 90 DEG., ALSO THE TRANSFORMER CONNECTIONS BY WHICH THE THREE-PHASE POWER IS OBTAINED



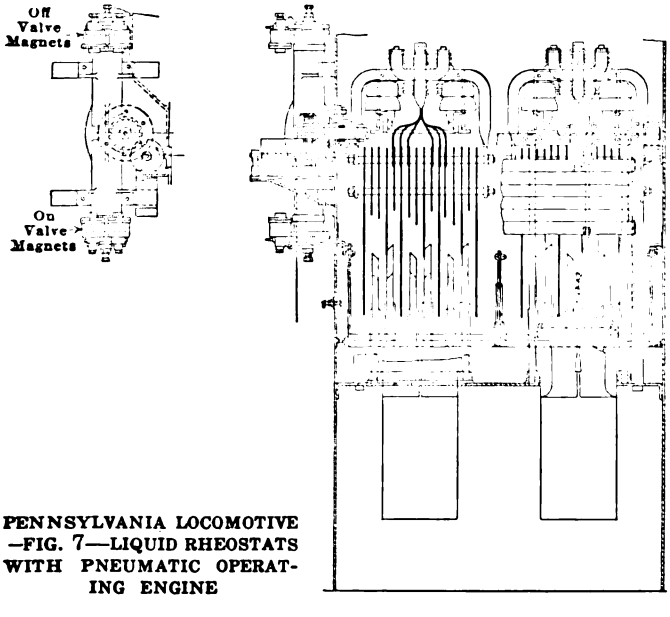
PENNSYLVANIA LOCOMOTIVE — FIG. 6 — MASTER CONTROLLER SHOWING THE THREE OPERATING LEVERS



PENNSYLVANIA LOCOMOTIVE—FIG. 8—AUXILIARY MASTER CONTROLLER FOR OPERATING LIQUID RHEOSTATS

are also used as reversing switches. One of the switches is used commonly for both forward and reverse operation, and the other four switches are used in pairs to interchange the connections of two of the phases to obtain forward or reverse rotation of the motors. The motors are arranged for the two normal running speeds of approximately 10 and 20 m.p.h. On the low speed, each pair of motors is connected in "cascade," the secondary of one motor being connected to the primary of the other, the secondary of which is connected to an adjustable liquid rheostat used for accelerating or speed regulating purposes. On the high speed the motor primaries are connected to the three-phase supply in parallel, each secondary being connected to a regulating liquid rheostat. The control is arranged so that the change from one speed to another is made without losing more than half of the accelerating or regenerating torque, this result being accomplished by effecting a progressive transition of the pairs of motors.

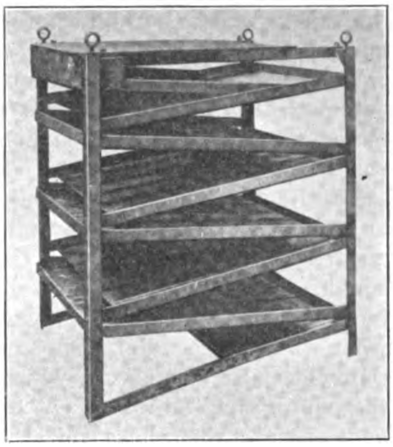
The operation of the locomotive is primarily controlled by a master controller shown in Fig. 6, there being one of these controllers located in each of the motorman's compartments. Three handles are provided corresponding to "reverse," "speed" and "acceleration" control. The "reverse" handle is used for changing the direction of rotation of the motors by closing the proper set of motor primary switches. The "speed" handle is employed to change over the speed combinations of the main motors from "cascade" to "parallel" operation, and the "accelerating" handle is utilized to control the primary switches and the differential air engine which varies the level of the liquid in the rheostats.



PENNSYLVANIA LOCOMOTIVE —FIG. 7—LIQUID RHEOSTATS WITH PNEUMATIC OPERATING ENGINE

The "speed" handle has three positions, one each for the 10 and 20 m.p.h. combinations, and one midway between these two. The latter is used as a transition position to enable one pair of motors to be changed over to a new combination without entirely losing accelerating or regenerating torque.

The "acceleration" handle has three positions, marked "raise," "hold" and "lower." These words refer to the level of the liquid in the rheostat by which the speed of the locomotive during either the "cascade" or the "parallel" motor connections is varied. A movement of the handle to the "raise" position and then back to the "hold" position will give a positive increment to the height of the liquid level, and a movement of the handle to the "lower" and then back to the "hold" position will lower the level of the liquid rheostats.



PENNSYLVANIA LOCOMOTIVE—FIG. 9 —COOLING POWER TRAYS WHERE AIR IS BLOWN AGAINST THE ELECTROLYTE

Overload protection is obtained by a current limiting relay, the advantage of this means of protection being that the circuit is not opened. The relay will first arrest the rise of the liquid level in the rheostats, and then lower this level if the accelerating current goes beyond a certain fixed maximum value.

The four liquid rheostats required to govern the driving motors are located in two separate tanks, the casings of which are built as a part of the locomotive frame. Each tank contains two sets of electrodes. Centrifugal pumps circulate the liquid continuously through each of the tanks. The level of the liquid in each tank may be varied independently by means of tubular overflow valves, which are controlled by differential air engines of the Westinghouse PK type, Fig. 8. The maximum pressure across the electrodes of these rheostats varies from 850 volts to 1000 volts. This is said to be the highest voltage that has ever been applied to a rheostat of this type, the achievement having been made possible by the use of staggered insulating barriers located in the bottom of the tanks. The barriers increase the resistance between adjacent electrodes by causing the current passing through the electrolyte to follow elongated paths. The liquid rheostats are located in the center of the locomotive, one pair on each side of the cooling-tower compartment.

To cool the electrolyte in the rheostats a small percentage of the liquid is by-passed to the top of the cooling towers, one of which is shown in Fig. 9. While the liquid is flowing over the surface of the cooling trays air is blown over the trays in a direction opposite to that of the flow of the liquid. In this way the body of the electrolyte in the main supply tank is sufficiently cooled by the expenditure of a relatively small amount of pumping energy and by the sacrifice of a small quantity of electrolyte lost by evaporation.

The circulating pumps draw the liquid from the main tank and force it into the electrode compartments through flow equalizers which prevent splashing and insure the equalization of flow over the entire width of the tank. When the liquid level has reached its maximum height, which occurs when the overflow valves occupy their uppermost positions, a set of switches is automatically closed to short-circuit the secondary motor winding and this action cuts out the liquid rheostats.

The liquid rheostats may be operated independently of each other by means of levers located in an auxiliary master controller, Fig. 8. This control is used to equalize the load on the pairs of motors and to reduce independently the current supplied to one pair of motors when the wheels slip. The auxiliary to the master controller also has levers which will raise and lower the pantograph, start and cut out the phase converter, and operate the phase-converter voltage and phase-balancing switches.

Regeneration does not require any extra control equipment. This is due to the inherent characteristics of the induction motor. The manipulation of the master controller is exactly the same for "regeneration" as it is for "running."

Bion J. Arnold Examining B. R. T. Property

The Public Service Commission for the First District of New York on Oct. 1 adjourned until Nov. 12 the hearings on the applications of the Staten Island electric railways and the surface lines of the Brooklyn Rapid Transit Company for financial relief. At the adjourned date, therefore, the several higher-fare cases now pending before the commission, including those of the Third Avenue Railway and the New York Railways, will be taken up.

The application for a postponement of the Brooklyn Rapid Transit Company case was made by A. H. Williams, counsel, on the plea that the figures desired by the commission could not be prepared for the hearing on Oct. 1. It was stated that Bion J. Arnold is making an examination of the property, and that his report will not be ready before the November date.

Bonus System Started in St. Louis

Careful, Skillful and Efficient Operation Means More Money to Transportation Employees—Demerit Plan Used

On Sept. 1 the United Railways of St. Louis placed in operation a new bonus system covering every member of the transportation department. This system, modeled particularly after one in Milwaukee that has been very successful during the last one and one-half years, is designed to give the men extra pay and make them more careful, more efficient, more courteous and more watchful as to the welfare of passengers. The following digest of the plan is taken from talks by Superintendent Cameron to employees, as reported in the *United Railways Bulletin*.

Factors in Establishing the Bonus

There are four factors which determine the bonus to be paid to employees—namely, injuries and damages; maintenance of mechanical equipment; earnings per car-mile, and wages per car-mile. For the purpose of calculation the following table of standards has been established, subject to necessary change to meet new conditions:

	City Lines	County Lines
Injuries and damages, percentage of gross receipts	5.75	1.90
Maintenance of mechanical equipment per car-mile (cents)	0.06	0.045
Earnings per car-mile (cents)	29.00	15.85
Wages per car-mile (cents)	6.44	4.37

In calculating the bonus to be paid, an entire year is considered, *i.e.*, the current month and the preceding eleven months. For instance, in figuring the bonus for September, the cost for each month beginning with October, 1916, will be used. This is because one month should not be considered as a proper guide, and this rule will hold good in figuring all the factors of the bonus.

How the factors are employed is illustrated by the following notes: If the employees operate cars in such a manner that the expenses of the claims department fall below the standard established for the payment of damages, the difference between the standard and what it paid is transferred to the bonus account. Similarly, if through the exercise of proper care the maintenance of the mechanical equipment costs less than the standard established, the difference between the standard and the actual cost is transferred to the bonus account. If by careful operation—courtesy, running cars on even space, hauling one's own passengers, carefully watching for passengers and requiring each passenger either to deposit his fare in the box or show other evidence of transportation, and not running cars ahead of time—the earnings per car-mile exceed the standard established, the difference between the standard and the actual receipts is transferred to the bonus account. The same applies to the other factor, wages per car-mile.

The company agreed to back the bonus system to the extent of $97,000 to be given to the transportation department for bonus money. The company will not recover any part of this sum. When it is expended, there will have been established the bonus account, and then the transportation department will receive 40 per cent of the money saved by careful, skillful and efficient operation. The company will also receive 40 per cent, and the remaining 20 per cent will be set aside for the salaries of the clerical force which takes care of the bonus system.

In dividing the employees' 40 per cent, the motormen and the conductors share alike in the last three factors that go to make up the bonus. In dividing the money saved in the damages account, however, motormen receive 60 per cent and conductors 40 per cent of the share that goes to employees. The reason for this is that a motorman is more liable to be demerited for accidents, and it is desired to have the two operators receive approximately the same amount of bonus.

INDIVIDUAL SHARES BASED ON DEMERIT SYSTEM

On the first of each month each employee of the transportation department is credited with 1000 grade points. If, during the month, he violates any rule prescribed in the grade book, he is demerited accordingly. The only difference between the rule book and the grade book is that in the latter a penalty is attached to the violation of any rule. At the end of the month, each man's demerits are added and subtracted from his original credit of 1000 points, and the result thus obtained is his standing.

The value of a grade point is determined by ascertaining the amount of saving in each one of the factors in the bonus account and then establishing the total number of grade points on the entire system after demerits are deducted. Each grade point is then calculated to be worth so much money, and the man who has not been demerited during the month gets more bonus than the man who has been demerited 100 points, and so on. If a man is demerited 250 points, he does not participate in the bonus distribution that month. At the beginning of the next month, however, he is credited with 1000 points as before. If a man receives 250 demerits a month for three months in succession, he is liable to dismissal.

In the first instance the division superintendent assigns the demerits for each violation of rule. The man who is demerited is notified immediately that he has been so charged. If he is not satisfied with the ruling, he has the privilege of appealing to what is known as the bonus committee. This consists of the division superintendent as chairman and secretary, the present director of the Employees' Mutual Benefit Association and a third member. If the director is a motorman, the employees at each car station elect a conductor as the third member. If the director is a conductor, they elect a motorman. This member must have been in service for two years in good standing.

The bonus committee may add to or take from the demerits assigned by the division superintendent. If the employee is still dissatisfied with the ruling, he may appeal to the superintendent of transportation and from him to the chief executive officer of the company. No bonus committee has authority to change the grade book in any manner whatever. Suggestions as to changes, however, will be cheerfully received and considered. The members of the bonus committees, except the division superintendent, receive $1 for each meeting they attend (which will be weekly) when there are cases on appeal. If there are no cases on appeal, they receive 50 cents. All committees are subject to a call to attend a general meeting in the company's office once a month, to talk over bonus matters.

The employees who will benefit from the operation of the bonus system are as follows:

Class A.—Motormen and conductors.

Class B.—Clerks at the different carhouses, foremen, supervisors, division superintendents, the superintendent of employment and clerks, the superintendent of schedules and clerks, the superintendent of transportation and the assistant superintendent of transportation and their clerks, and telephone operators.

Miscellaneous.—Car hostlers, curve cleaners, flagmen and switchmen.

In figuring the monthly bonus, men who work from one to seven days are credited as working one-quarter of a month; eight to fifteen days, half a month; sixteen to twenty-three days, three-quarters of a month; and twenty-four days or more, a full month. For the purpose of figuring the bonus, an extra man is considered to have worked a day if he reports on time. In the case of Class B employees, $150 a month is considered the maximum salary of any employee of the transportation department, and the officers are subject to penalization and must earn any bonus paid to them.

It is assumed, says Superintendent Cameron, that at first the bonus will amount to from $1.50 to $2 a month for a man who has more than 750 grade points. When the system was started in Milwaukee, the first month's bonus was about 56 cents for each man who had more than 750 grade points. Now each man who has more than this number to his credit at the end of the month receives from $6 to $8 in addition to his regular wages.

Manchester Tramways in War Time

How This English Company Has in Various Ways Done Its Bit Toward Winning the War

BY J. M. McELROY

General Manager Manchester (England) Corporation Tramways

As soon as war broke out there was a great rush among employees of the Manchester Corporation Tramways to join the forces voluntarily, and every encouragement was given to their patriotism. This naturally caused temporary inconvenience, but this was quickly overcome by the engagement and the training of other men. We did not rest content, however, with the encouragement of our own men to enlist. By means of posters paid for by us and exhibited in the cars, we aided the national campaign in recruiting prior to the adoption of compulsory enlistment.

Members of the staff to the extent of 2738 have joined the colors, and the great majority of these are, or have been, at the front. The dependents of these men receive generous allowances from the corporation while they are away (the total paid to date being £165,000). No employee is to be any the worse off for having joined the army or navy, and his position is guaranteed when he returns to civil life.

Up to the present 159 of our employees have been killed in action or have subsequently died of wounds. Thirty-six have been officially reported missing, and eighteen have returned more or less incapacitated and unable to carry out their former duties. Other and suitable employment has been found for fourteen of these, and the others remain to be dealt with.

When it was found that the war was likely to last, and difficulty was experienced in filling the places of our men, women were requested to offer themselves.

They responded very well. They act as conductors and car cleaners at the same rate of pay as the men, and on the whole they perform their duties satisfactorily. Unfortunately, however, our experience has been that a larger percentage than we like give up the work for various reasons. We hope to reduce this percentage, and are doing everything possible to make the conditions attractive and of the best. For instance, one necessity was soon apparent—a provision for the women conductors to rest as opportunity occurred. This was accomplished by the installation of a small circular seat attached to the side of the stairway of each car. This seat tips up automatically when not in use.

We have not as yet had recourse to the employment of women drivers of tramcars. Owing to the congested condition of the Manchester streets and the abnormally heavy traffic prevailing, one hesitates to bring about this innovation unless forced by circumstances to do so.

Owing to the depleted staff, we have been compelled to discontinue the building of new cars, the laying of new track and the renewal of the existing permanent way except where absolutely necessary. No new rails have been purchased for a considerable time, and track renewals are therefore indefinitely postponed.

DELIVERY SYSTEM AND WAR CHARITIES

We have in Manchester a parcels collection and delivery system in connection with our tramways which has proved of inestimable value in this war time. The deliveries cover an area of from 8 to 10 square miles, in which we carry a large number of parcels from and to the various munition shops. With the aid of our regular and constant car service, we are enabled to deal with these parcels expeditiously, thereby saving valuable time in the transit of machinery, repairs, materials, etc. Hence indirectly the country benefits by our system. If we could not perform these services, the firms concerned would have to use their own employees at considerable loss of time. More than 120 firms are regularly handing to us for immediate delivery parcels marked "Urgent War Work."

We have been instrumental to the end of July in raising £26,723 for the many good causes in connection with the war. These efforts have not been restricted to British funds. Funds of the French, Belgium and other of our allies, the Red Cross, etc., have benefited. The method is to enlist the sympathy of the public by posters gotten up by us and displayed in the car windows, giving the necessary particulars of the object in view. Boxes are fixed on each platform for receiving the amounts the passengers are disposed to give—the system is a purely voluntary one. Our passengers have, in addition, been appealed to for suitable reading matter for the troops at the front. The latest effort (restricted to one day) resulted in the collection of more than 10,000 books.

Finally, a national shell factory has been established at one of our depots. Thus we are doing our bit towards the production of means whereby this great war must be won.

Owing to the congestion of the railroads in France, large quantities of Red Cross supplies are being transported by motor truck from seaports to Paris.

Commission Appreciates Its Duty

Additional Matter from Decision Abolishing Four-Cent Tickets on Seattle Division of Puget Sound Company

THE ELECTRIC RAILWAY JOURNAL of Sept. 22, page 552, contained a news account of the recent ruling of the Washington Public Service Commission, whereby the further sale of 4-cent tickets in Seattle by the Puget Sound Traction, Light & Power Company has been eliminated. Yet the full decision of the commission, just available, contains two sections which it seems worth while to add to the previous record. These show the rate of return on the railway property during recent years and the commission's appreciation of the present railway problems.

The commission appended to its decision a table showing the yearly rate of return from Jan. 19, 1900, to Dec. 31, 1916, for the Seattle Division without power facilities. Part of this table is reproduced herewith.

YEARLY RATES OF RETURN, IN THOUSANDS, EARNED BY THE RAILWAY SYSTEM, WITHOUT POWER FACILITIES, ON THE SEATTLE DIVISION OF THE PUGET SOUND TRACTION, LIGHT & POWER COMPANY

Calendar Year	Average Structural Cost During Period	Gross Revenues	Operating Expenses	Depreciation Not Included in Operating Expenses	Taxes	Real Net Earnings	Real Rate of Return
1900	$2,079	$704	$522	$6	$16	$159	7.65
1901	3,865	916	580	120	41	173	4.49
1902	4,965	1,307	957	126	72	151	3.05
1903	5,587	1.500	1.033	177	76	212	3.81
1904	5,950	1,669	1,196	80	85	307	5.16
1905	6,253	1,892	1,246	148	93	403	6.45
1906	6,721	2,319	1,547	140	112	519	7.72
1907	7.726	2,941	2,129	79	224	507	6.57
1908	9,084	3,185	2.329	145	184	526	5.79
1909	10.406	4,060	3,043	65	212	739	7.10
1910	11.525	3.651	2,772	150	219	508	4.41
1911	12,220	3,518	2,603	306	209	399	3.27
1912	13,036	3,486	2,555	413	243	273	2.09
1913	13,757	3,665	2,499	468	303	395	2.87
1914	14,084	3,656	2,436	506	307	406	2.88
1915	14.403	3,011	2,336	562	298	†185	†1.29
1916	14,699	3,152	2,461	516	296	†121	†0.88

(Discount not included.)
†Deficit.

In preparing the table, it was assumed that the railway system would purchase its power from the light, power and steam-heat system at the rate of 1 cent per kilowatt-hour for 500-volt d.c. power and 0.75 cent for 2300-volt a.c. power.

In deciding to allow the rate increase, the commission expressed itself in part as follows:

"This commission would be remiss in its duty if it failed to recognize the economic changes which have taken place and are still taking place, and the unbalancing of activities. We are passing from a peace to a war footing. Under these conditions few, if any, of the old relationships can continue to exist. If we have any power to aid in the readjustment of matters that new conditions may be met, we should be fair enough to exercise it.

"Every article which the company must purchase to maintain its properties is abnormally high. It is in evidence in this case that the wages of employees have greatly increased, and that further advances and new conditions are being demanded. They call for increased expenditures. All just demands of the workers of the respondent must be met. We know from personal contact with the conductors and the motormen that they are manly, courteous and efficient. From the files in this office we know that few complaints have been entered by patrons, either against the company or its employees, as to the operation of trains, and few accidents have occurred in Seattle, the fault of which is traceable to the company or any of its workers. These are commendable facts, and such efficiency should be maintained if the statute law of the State is to be complied with."

COMMUNICATIONS

"More Service at Less Cost" Issue

STONE & WEBSTER
TEXAS DISTRICT OFFICES
HOUSTON, TEX., Oct. 1, 1917.

To the Editors:

I have just finished reading—from cover to cover—the Sept. 22 issue of the ELECTRIC RAILWAY JOURNAL, "The Story of the One-Man, Light-Weight, Safety Car," and I want to take this prompt method of congratulating you upon the splendid manner in which the subject is presented. I regard the entire issue as an achievement and a tribute to the science of your organization.

The story should be studied with care by every man interested in the electric railway business, as the development of the safety car marks the beginning of a new era in electric railway service.

The safety car idea, in the full sense, was born in Texas in the mind of Mr. Birney, and developed and its practical operation successfully demonstrated on a large scale in Fort Worth, and we gladly give to the electric railway industry as a whole the experience we have had with it.

At the electric railway convention (now postponed on account of the war) the keynote of the meetings of the Transportation & Traffic Association, of which I am president, was to have been "safety cars" and "street railway service." By the time the convention is held I hope other progressive street railway ideas will have been born, developed and successfully demonstrated.

LUKE C. BRADLEY.

Guarantees Anti-Friction Bearings

RAILWAY ROLLER BEARING COMPANY
SYRACUSE, N. Y., Oct. 2, 1917.

To the Editors:

We notice on page 444 of your Sept. 15 number a communication on "Sleeve or Ball Bearings for Motors" signed "Engineer." In the last paragraph of this letter the author makes the statement, "it seems to me that if the makers of anti-friction bearings cannot afford to make a guarantee of duration longer than one year, it is because the risk is too great."

This firm has guaranteed its anti-friction bearings of all types for a period of three years and in some cases even a longer period. Such guarantee is stipulated in the back of our catalog, and if we have not advertised to that effect it is due to an oversight, which we will take steps to correct.

P. A. STACY, Manager.

Economy of Automatic Substations

SCHENECTADY, N. Y., Oct. 2, 1917.

To the Editors:

Since the publication of my article in the issue of the ELECTRIC RAILWAY JOURNAL for Sept. 15, discussing the reduction of railway operating costs by the use of automatic substations, it has been suggested that a more detailed explanation of the points brought out by the chart on page 435 might be of interest to your readers.

This chart consists of train sheets showing the effect of schedule upon the time of substation operation when equipped with automatic control.

As explained in the article, these charts apply to an assumed length of road of 50 miles with five substations, one showing 120-minute headways, the other sixty-minute headways. Each is divided into three schedules of different layovers. The time each station carries more than one-half the car load is indicated by the shaded portions, and this time is equivalent, in the case of automatic operation, to the time when the station is running. The remainder of the time the station is shut down. Table I gives in detail the time of operation of the several stations.

TABLE I—EFFECT OF SCHEDULE UPON TIME OF AUTOMATIC SUBSTATION OPERATION, GIVEN IN MINUTES OF SUBSTATION OPERATION PER HOUR

Substation Headway 120 Minutes	A	B	C	D	E	Total Substation Minutes Per Hour
Schedule I—No layovers	20	27	13	27	20	107
Schedule II—30 and 90-minute layovers	20	25	28	32	15	120
Schedule III—60-minute layovers	20	18	25	17	20	100
Headway 60 Minutes						
Schedule I—No layovers	40	35	26	35	40	175
Schedule II—15 and 45-minute layovers	25	35	40	50	45	195
Schedule III—30-minute layovers	30	50	60	50	30	220

The point that for 120-minute headways more power could be saved with sixty-minute layover, and that for sixty-minute headways more power could be saved with no layovers, simply serves to illustrate the fact that for each particular system a certain schedule will be found most economical for automatic operation. For a longer or shorter road with a different number of substations, a different schedule might show the greatest economies.

TABLE II—ASSUMED DATA AND CALCULATED ECONOMIES ON TYPICAL 50-MILE INTERURBAN ROAD

Headway between cars ... Minutes	120	60
Length of road ... Miles	50	50
Schedule speed ... M.p.h.	25	25
Weight of cars ... Tons	30	30
Number of stops per mile	0.5	0.5
Capacity of substation converters ... Kilowatt	300	300
Length of operating day ... Hours	18	18
Total car-miles per day	900	1,800
Energy consumption per car-mile. Kilowatt-hours	1.7	1.7
Total energy per day at cars ... Kilowatt-hours	1,530	3,060
Total energy per day high-tension side substation ... Kilowatt-hours	1,860	3,720
Total substation hours possible (5 substations), Kilowatt-hours	90	90
Total substation hours actual running ... Hours	30	52
Total time substations are not running ... Hours	60	38
Running light losses per substation ... Kilowatt	15	15
Energy saved per day, automatic operation. Kilowatt-hours	900	570
Energy saved per year, automatic operation, Kilowatt-hours	328,500	208,000
Total energy per day, manual operation, Kilowatt-hours	2,760	4,290
Value of energy saved per year at ½ cent per kilowatt-hour	$1,642	$1,040
Energy saved, automatic operation ... Per cent	32.5	13.3

Table II is based on the car schedules in the chart and shows the energy savings possible for the assumed conditions. As might be expected the more infrequent car service shows the greater energy saving, but it is on the railway having just such a service that the power bill is the largest proportion of the total operating expenses. The same is true with regard to the item of substation attendance. For these obvious reasons the interurban running few cars per day has been the first to make extended use of the automatic substation.

W. D. BEARCE.

Regulation of Incandescent Headlights

HOLDEN & WHITE, INC.
CHICAGO, ILL., Sept. 29, 1917.

To the Editors:

We have read with interest the article by J. R. McFarlin, in your issue of Sept. 15, concerning the regulation of incandescent headlights. Some of the statements which Mr. McFarlin makes in this article lead us to answer, calling attention to certain phases of the regulation of incandescent headlights and power lights.

We recognize the correctness of his references to the inherent regulation of Mazda lamps with tungsten filaments, but we feel that the regulation of the headlight by burning it in direct series or in multiple series with the car lights is limited to low-intensity headlights, such as are used in city and suburban service. Moreover, the maximum intensity headlight lamp which can be used satisfactorily is the 94-watt lamp, and the projection offered by this headlight is too limited for high-speed interurban service.

With the demand for increased projection, the use of low-voltage, high-intensity, gas-filled bulbs became necessary. The most acceptable lamp at first was the 32-volt, 150-watt, 4.7-amp. locomotive headlight lamp, and a number of attempts were made to use this lamp in series with several circuits of interior lamps, together with an additional resistance in order to pass the necessary full current to the headlight. This installation was never satisfactory because it was too involved and too expensive. The use of 250-watt, 110-volt lamps was not satisfactory for the same reason, namely, the cost of additional resistance and the limits of regulation.

Mr. McFarlin states that no voltage regulators have come to general use. With this we naturally take exception, because of the extent to which we have installed Watson voltage regulators, completely equipping one railway and making installations on a number of others.

This regulator, as a matter of fact, is the only device which has ever been successful in railway service in adequately regulating the interior lights and headlights so that over an extensive voltage variation there is no perceptible effect on the lights. Mr. McFarlin will admit that the drop in voltage with a Mazda lamp regulation is very perceptible, and his table shows that when the voltage across the headlight is only 50 per cent of normal line voltage, the percentage of headlight candlepower is only 45 per cent when burned in series with resistance, and is 48 per cent when burned in series with Mazda lamps.

With the Watson regulator, when the line voltage is only 52 per cent of normal, the headlight illumination is 100 per cent normal. This, however, is at the limit of the regulator.

But take a case where the line voltage is 70 per cent or normal. Then, according to Mr. McFarlin's chart, the headlight would show 57 per cent normal candlepower if burned in series with resistance, and 69 per cent, if burned in series with car lights. Under the same trolley voltage condition, the headlight burned with the Watson regulator would be normal and not at all decreased in intensity. At the same time the interior car lights also would be normal in intensity and there would be no reduction of illumination.

Our scheme of regulation permits the use of either a standard 4-amp. arc or an incandescent headlight, using a 37.5-volt, 4-amp. lamp in a Golden Glow, or a Crouse-Hinds reflector headlight, or an 80-volt, 4-amp. lamp in U. S., General Electric, Golden Glow or Crouse-Hinds headlight. The Watson regulator was described in the ELECTRIC RAILWAY JOURNAL for Dec. 16, 1916.

W. MCK. WHITE, Vice-President.

AMERICAN ASSOCIATION NEWS

Conference on Tuesday, October 9,
begins at
9.30 a. m. *sharp*

Chicago Section Meeting

About 120 members and guests attended the regular meeting of the Chicago Elevated Railroads' company section on Sept. 18. J. H. Mallon read excerpts from President Wilson's proclamation of April 15 covering the necessity of conservation of material and labor. General Manager E. C. Noe and G. T. Seely, assistant general manager, delivered short addresses on the need of conservation in all departments during the present national crisis. This thought was reiterated by representatives of the transportation, road, shop, electrical and store departments, who explained briefly the necessity for conservation in their respective fields and pointed out the ways it could be accomplished.

James K. Miller of the legal department then spoke on "What We Are Fighting For." The names of 168 company employees who have enlisted were then read, including ten who are already commissioned. Several vocal and instrumental selections constituted the entertainment for the evening.

Bulletins on Freight Car Loading and the Second Liberty Loan

The eighth of a series of bulletins being sent out by the American Association Committee on National Defense was issued on Sept. 27. It contained the letter of Sept. 14 issued to shippers and receivers of freight by the Commission on Car Service of the Special Committee on National Defense of the American Railway Association. The letter urges the use of the maximum capacity of freight cars in moving commercial freight while the requirements of the government in the present emergency are putting an unusual burden on the freight-handling facilities of the railroads. It points out that it is most unpatriotic of any shipper not to use the full carrying capacity of cars since the failure to do so may prevent other shippers from getting any cars at all during the period of car shortage. Two lists of suggestions are furnished which can be of direct use to both shippers and receivers in an effort to conserve the railway facilities. Member companics are requested to co-operate in this important movement.

Bulletin No. 9, which was issued on Monday of this week, calls attention to the request of Secretary of the Treasury McAdoo that the association render its assistance in the campaign to give publicity to the forthcoming Liberty Loan. The use of dash signs and space on the interior of cars and doubtless many other means may be found helpful. It is suggested that all electric railway managers get in touch with their local Liberty Loan committees to secure needed information regarding the bonds in order to present their advantages to employees. The details of several partial payment plans on file at the association headquarters will also be furnished on request. The committee hopes to see increased effort along these lines so that the good showing made by the industry in connection with the first loan may be excelled.

Data on One-Man Cars

Supplementary Information Is Given to the Table Published in the Issue of Sept. 22

SUPPLEMENTARY to the table covering structural and operating features of the single-operator car which appeared in the special issue of the ELECTRIC RAILWAY JOURNAL for Sept. 22, pages 541, 542 and 543, the following tables are added in an effort to furnish all the available information on this subject. They include reports which were received too late to be incorporated in the special issue and in the cases of the Tucson Rapid Transit Company and the East St. Louis & Suburban Railway, corrected data which have come to hand. These data, as a whole, are the result of a direct canvass of all the railways reported to have one-man cars in operation or under construction. It may be that there are a few other companies having such information, but the information which has been secured covers a very large percentage of the field.

The present compilation is divided for convenience into general and special data but includes the same items as presented in the previous table. The significance of the data was touched upon briefly in the introduction to the table on page 540 in the issue of two weeks ago.

EQUIPMENT DATA ON ONE-MAN CARS

Company	Type of Motor	Gear Ratio	Door and Step Control Used, and Hand or Air-Operated	Are Air Brakes Used?	Do Controller and Brake Have Automatic Features?
ARIZONA					
Tucson Rapid Transit Co	G.E. Auto Type 1063 E.I.-W.I.	1:10	Hand	No	Yes
COLORADO					
Grand River Valley Ry		. . .	Step	Yes	Yes
ILLINOIS					
C. Ill. P. S. Co. at Anna	G.E. 800	14:68	None	No	No
C. Ill. P. S. Co. at Taylorville	(1) G.E. 78A (2) G.E. 800B	(1) 14:69 (2) 14:67	None	No	No
Central Illinois Trac. Co	G.E. 800	17:64	Hand	No	No
E. St. Louis & Suburban Ry	G.E. 67	15:69	Hand	Yes	No
KANSAS					
Hutchinson Interurban Ry	. . . .	14:67 15:68 16:81	Hand	No	No
OKLAHOMA					
Enid City Ry	G.E. 54	14:67	Hand	No	No
WEST VIRGINIA					
Ohio Valley Electric Ry	West. 101B2	18:64	Hand	Yes	No
CANADA					
Moncton Tramways, Elec. & Gas Co., Ltd	C.G.E. 1000	17:67	None	No	No

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Figures relating to the interstate bridge between Portland, Ore., and Vancouver, Wash., show that more than one-third of the tolls of the bridge have been paid by the Portland Railway, Light & Power Company. That company paid from Feb. 15, the date of the opening of the bridge, to July 31 the sum of $25,695 for tolls, as against $40,512 paid by the general traveling public. Vehicle traffic is steadily increasing, however. For March the vehicle and foot passenger tolls amounted to $4,472, in April to $6,218, in May to more than $7,000, in June to $9,308, and in July to $11,426.

TABLE SHOWING GENERAL DATA ON ONE-MAN CARS

Company	Population (1917) of Cities Served	Number of Cars of All Types Owned	Number of One-Man Cars Operated	Length Overall of Present One-Man Cars	Width of Same Over Sheathing	Weight of Same Without Load, Pounds	Single or Double End	Seating Capacity	Are Fare Boxes Used?	Sched. Speed in M.p.h. with One-Man Cars	Normal Headway in Minutes, Using One-Man Cars
ARIZONA											
Tucson Rapid Transit Co	20,000	9	3	28'6"	7'6"	9,800	Double	28	Yes	7½	12
COLORADO											
Grand River Valley Ry. at Grand Junction	8,500	7	2	30'	....	....	Single	40	Yes	....	20
ILLINOIS											
Central Illinois Public Service Co. at Anna	3,500	3	3	30'	7'8"	22,000	Double	.....	No	9	2)
Central Illinois Public Service Co. at Taylorville	10,000	3	3	33'	7'8"	22,000	Double	.....	No	10	2)
Central Illinois Traction Co. at Paris	9,000	7	3	28'-30'	6'2"	18,000	Double	......	No	9	2)
[1]East St. Louis & Suburban Ry. at Belleville	25,600	151	5	37'	8'1½"	33,933	Double	32	Yes	7.2	2)
KANSAS											
Hutchinson Interurban Ry	23,000	23	9	18'6"-20'	....	....	Double	32	Yes	(1) 8-(8) 9	10, 15, 2) an 1 3)
OKLAHOMA											
Enid City Ry	15,000	17	5	30'	....	24,000	Double	42	Yes	....	....
Pittsburg County Ry. at McAlester	(Cars ordered. To be delivered latter part of 1917.)										
WEST VIRGINIA											
[2]Ohio Valley Electric Ry. at Ashland, Ky	20,000	53	1	39'	8'4½"	33,000	Double	40	No	7	....
CANADA											
Moncton Tramways, Electricity & Gas Co., Ltd., at Moncton, N. B	12,000	5	3	25'	7'1"	16,000	Double	26	Yes	7½	....

[1] Use two men during rush hours.

[2] This car is operated in shuttle service on 10-min. running time between termini with a 5-min. layover at each end of line.

EQUIPMENT and MAINTENANCE

HAVE YOU A GOOD WAY
OF DOING A JOB?
—Pass It Along

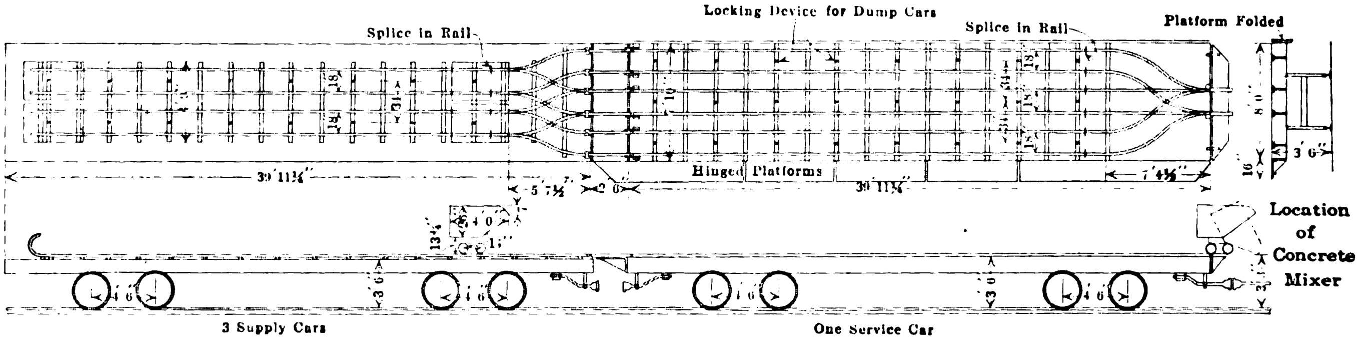
These Articles Have Been Selected to Provoke Thought and Stimulate Discussion. All of the Technical Departments Are Represented

Laying Concrete Track Base Without Storing Materials on Streets

Specially-Equipped Service Cars and Small Ore Dump Cars Used to Supply Concrete Mixer with Necessary Materials as Needed

BY EDWARD A. WEST
Chief Engineer, Denver (Col.) Tramway

A scheme for constructing the concrete base for street railway track which eliminates the necessity of storing stone, sand, cement, etc., on the city streets during the work has been devised and placed in successful operation by the Denver Tramway. A number of small ore dump cars are filled at a central material yard with a charge each for the concrete mixer at the job. These small cars are transported between the storage yard and the job on ordinary service flat cars on which narrow-gage track is laid.

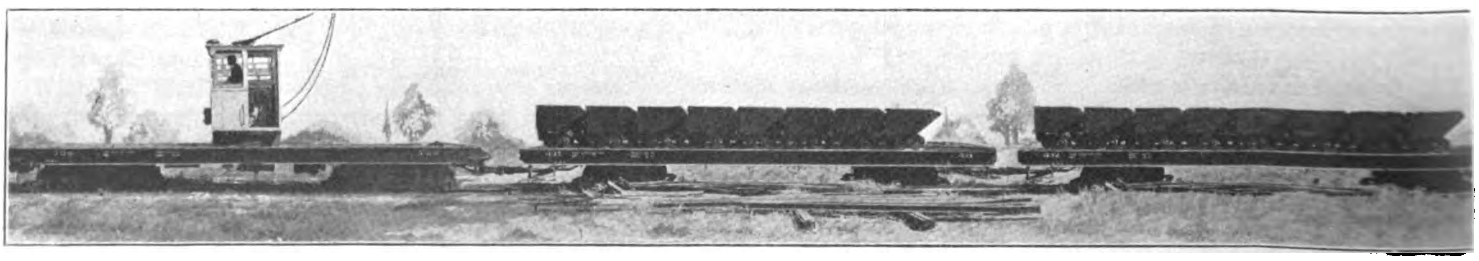


TRACK SYSTEM FOR THE DUMP CARS ON THE SUPPLY AND SERVICE CARS

The equipment includes one flat car which is called the service car of the outfit and on which three of the narrow-gage tracks are laid, as shown in the accompanying drawing. This remains with the concrete mixer which is a self-propelled machine. Other service cars, called the supply cars, are each equipped with two narrow-gage tracks which branch into three tracks at one end to connect with the three tracks on the service car. These have sufficient capacity to carry sixteen of the small ore cars at a time and are used to haul material from the centrally located material storage yard to the concrete mixer. The ore cars are securely locked to the rails by means of a lever at the rear of each car. The cars are thus held rigidly in place so that they may be safely transported through the city streets.

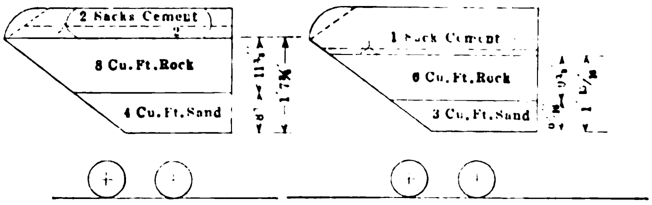
Special bunkers with spouts deliver the material directly into the ore cars, the proper amounts of sand and rock being allowed to run into each car to make up one charge for the concrete mixer. Then with all sixteen ore cars properly filled with these materials, the supply car is pulled up to the cement house close by, where a small hand-operated crane is used to lift a bag of cement and deposit it on top of the sand in each car. When loaded the car is taken to the job and the sixteen small dump cars are pushed onto the concrete mixer service car, while the empties on the latter are pushed back onto the supply car to be returned to the yard for another load.

After the work is in progress there are sixteen empty cars on the service car each time the supply car arrives. As there are three tracks on the service car it is possible to push the eight cars which are on one track of the supply car onto the vacant track of the service car. Then eight of the empties are pushed onto the vacant track on the supply car. This leaves another empty track on the mixer service car and the remaining eight



DENVER TRAMWAY CONCRETING TRAIN. ONE FLAT CAR REMAINS WITH THE MIXER WHILE loaded ore cars can be pushed onto this car. This again leaves an empty track on the supply car to receive the remaining eight empty dump cars.

The center-cab car, shown on the left-hand end of the train in the picture, is a new one constructed in our shops for hauling the supply cars between the material bunkers and the service car. The concrete mixer is a self-propelled Municipal Engineering Company Austin No. 13 type and is equipped with a water pump located on the front end to keep the storage tank on the top of the machine filled. A large reserve water tank for supplying the mixer is hung underneath the service car, but only the bottom edge of it shows in the illustration.



1-2-4 Mixture
14 Cu. Ft.

1-3-6 Mixture
10 Cu. Ft.

DUMP CAR GAGES FOR DIFFERENT MIXES

By means of this concreting outfit no material whatever is stored in the streets and no cement is found piled along the sidewalks, and no shelter is necessary to protect it from rain. In transporting the cement the bag is laid on top of the sand and rock in the dump car rather than mixed with it at the material yard, since the sand might be damp and cause a partial setting en route. The empty sacks are sent back to the material yard with the empty dump cars.

Through time studies, it was determined that three of the supply cars would be able to keep the mixer in continuous operation on any job within a radius of 4 miles of the central material yard. This calls for a thirty-minute headway of the supply cars. By the use of eleven men with this outfit it is possible to pour 225 cu. yd. of concrete in eight hours at any point within the 4-mile radius.

Our latest idea in connection with this train is to use it this fall for transferring sugar beets from the standard-gage track on our interurban line to the narrow-gage in the city. If this works out it will give the concreting train a better load factor since it will be used for a much longer period.

Rotting of wood, as is generally known, is caused by vegetable growths which feed upon its substance and so alter its characteristics that we say that the wood has become rotted. Ordinarily these vegetable growths are fungi, but there can be little doubt that the roots of grass and trees also attack wood in a similar manner.

Splice Sleeve vs. Splice Ear

All Factors Considered, the Sleeve Costs 3.06 Times as Much as the Ear

BY S. L. FOSTER

Chief Electrician United Railroads of San Francisco

To the engineer of distribution the joint in the trolley wire is as consumingly interesting as the joint in the rail is to the engineer of maintenance of way, because the joint has usually been the weakest link in the overhead construction chain.

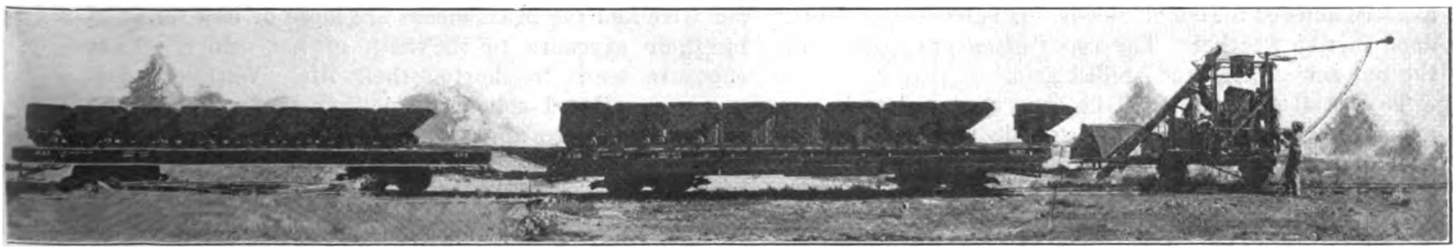
There were two leading types of overhead construction in the earliest days of that industry, namely, the Sprague and the Thomson-Houston. The former used a No. 2 B. & S. silicon bronze trolley wire and splice sleeves with which to connect adjacent lengths of wire. The latter used No. 0 hard-drawn copper and splice ears. The Sprague splice sleeve relied altogether on solder for the tensile strength of the device, whereas the other company's device had, besides the adhesion of the solder, the added strength afforded by bending back the ends of the trolley wire after they were brought up through the holes in the splice ear.

The Sprague soldered sleeve proved a failure, as the adhesion or cohesion of the solder suffered some sort of progressive deterioration due to the action of the soldering flux or possibly to molecular change similar to the well-known tin disease and aluminum disease. The ends of the trolley wires pulled out of these sleeves most unexpectedly, letting them fall to the ground. The sleeve was then improved by bringing the ends of the wire up through holes in the tube and bending them back on the sleeve, thus producing the 1917 type of splice sleeve. This bending back alone without any soldering has been found to withstand a pull of about 70 per cent of the full tensile strength of the No. 00 wire provided that the bent-back section of the wire is held bent back.

QUESTIONABLE ADVANTAGES OF THE SLEEVE

There are to-day advocates for both the sleeve and the ear. The first claim for the sleeve was that it saved waste in construction, as joints could be thus made anywhere in the span, whereas if the connection between lengths of trolley wire was made with a splice ear it had to be made at the span wire, and a short piece of trolley was always cut off. It was also claimed that there was danger of the splice ear turning over on its side and knocking the passing trolley wheel off the wire if the splice ear was located out in the span. That saving of trolley wire ends, however, has not proved to be much of an item.

On the other hand the splice sleeve was thought to make the overhead "softer," reducing the hammer blow from the trolley wheel and increasing the life of the



THE OTHER THREE BRING UP THE LOADED DUMP CARS AND TAKE AWAY THE EMPTIES joint. That may have been true of the earlier types furnished, but does not hold good to-day.

SPLICE EAR REQUIRES NO SOLDER

The splice in the trolley has been studied in the effort to eliminate the necessity for soldering, and after trying in a Riehlé testing machine all the devices on the market and many invented by the company's engineers —fourteen different designs in all—it was found that a light, properly designed splice ear holding the wire by a set screw answered the purpose best of all. The tensile strength was ample, the resistance less than that of an equal length of wire. The devices in which toothed designs were used to grip and hold the wire were found either not to hold worn and full-sized wire equally reliably or to be very deficient in tensile strength and to yield more or less under strain and admit slack into the span. The sleeves using set screws had the disadvantage that either the set screws were left projecting, and were thus liable to offer an obstruction to the passing wheels when the sleeve turned over or sidewise, or when the set screws were screwed up till the heads broke off the sleeve was no good for repeated use in case it was necessary to cut it down before being worn out.

The sleeve designed for use with solder could be employed without solder. Ample tensile strength could be secured by bending the ends of the wires over after bringing them out of the central holes in the sleeve and holding them in that position. The upturned ends of the wire could be riveted over ferrules or washers. A ⅜-in. hexagon steel nut could be screwed onto a full-sized No. 00 trolley wire and, cutting its own thread in the copper, or the bent-down trolley end could be held firmly against the sleeve by a light brass cap screwed to the tube, or the bent-down end could be given a chisel edge and reinserted in the tube, etc. All these sleeve ideas worked well in the case of full-sized wire, but not well at all on worn wire. None of them acted well when the sleeve turned over and none of them could be as quickly installed as the set-screwed splice ear. They were all very deficient in conductivity.

RELATIVE COSTS

The splice ear now used costs about 1.44 times as much as a splice sleeve and lasts twice as long according to some foremen, and three times as long according to others. At twice the life the ear costs but 72 per cent as much as the sleeve per unit of time.

To put in a sleeve calls for special tools and expert manipulation to get the two ends of the trolley inserted in the tube and brought out at the central holes. Then emery cloth, soldering flux and hot solder must be provided, calling for a forge and charcoal fire or gasoline furnace, and the solder must be carefully sweated through the tubular splicing device. Then the sleeve must be allowed to cool off slowly. It is less conveniently done in wet weather. The ropes often are injured by the hot solder pots and spilled acid.

To install a splice ear calls for no special tools nor expert work. The wires are readily put through the short vertical holes in the ear, and they are held by the set screws on either full-sized or worn wire. Weather has little effect on the speed in this case, and the work can be abandoned before completion and finished later or on some other day, whereas the installation of the soldered sleeve must be completed in one continuous operation while the sleeve and the solder are hot.

On actual surprise tests on a pleasant day it took a tower wagon crew twenty minutes and cost 71 cents for labor and material to put in a splice sleeve and two and a half minutes and 8 cents for labor to install a splice ear, or eight times as long and nine times as costly for the former as for the latter. The eight times longer required for the sleeve installation means more interruption to the car schedules and possible loss of revenue. If the sleeve costs nine times as much to install and lasts only half as long it is only one-eighteenth as desirable as the splice ear if the two devices cost the same. The sleeve costs 3.06 times as much as the ear for the purpose, considering cost to install, net cost and life of the device.

OTHER ADVANTAGES OF SPLICE EAR

When a splice ear is dangerously worn but the trolley wires are not, the wires can be removed from the old splice ear and inserted in a new one. This cannot be done economically in the case of the soldered sleeve. The sleeve has to be cut out, and as the trolley wire has thereby been shortened 17 in., two splice sleeves and a short piece of trolley wire must be used to close up this long gap.

In installing the splice sleeve it is subject to considerable strain in "picking up" or prying up the ends of the trolley wires to bring them out of the central openings in the tube. As there is only a small factor of safety in the splice sleeve originally, it often gets bent slightly in this operation and is rather summarily straightened out at the end of the job with a hammer. The result of this treatment and the bath of hot solder is that the brass of the sleeve loses its original tensile strength, and unforeseen breakages of perfectly new splice sleeves used on Phono-Electric wire have occurred at these central openings where the cross-section of the sleeves is least.

In installing the set-screw splice ear it is subject to no strain nor to any bath of hot solder. The factor of safety of the ear is originally much higher than that of the sleeve. We never have a new splice ear break either in service or under test.

When the splice sleeve was the standard the numerous line crews always kept a fire going in their forges for rapidly heating the solder. This feature meant quite a large quantity of charcoal per day for the system, not to mention the solder oxidized by the heat and thrown out as dross, the time of the men attending the fire, the wear and tear on the forges and the fire hazard to the wagons and cars. Since the adoption of the splice ear as standard no more fires are maintained on tower wagons or cars, with the resulting savings in fuel, time, solder and forge repairs.

When a splice sleeve is installed the hard-drawn copper wire and the brass sleeve are more or less softened by their exposure to the bath of hot solder. That exposure tends to shorten their life. With the set-screw unsoldered splice ear neither the wire nor the ear is exposed to any such heat and they both retain their original tensile strength, thus partially explaining the longer life of the splice ear.

The set-screw unsoldered splicer is considered so much more preferable to the soldered sleeve that it is used in San Francisco out in the span to repair wires burned off by foreign contacts, breaks at defective brazes, etc. No splice sleeves at all are used.

The splice ear has 42 per cent more conductivity when installed, is stronger originally, is simple, foolproof and reliable, while the sleeve is far more costly to install, calls for expert handling, special tools, a fire and a pot of hot solder, is unreliable and causes longer delays to the revenue traffic than the splice ear, either when being installed or being removed.

METHOD OF TESTING SPLICE EAR

A simple method of deciding on what is the most satisfactory splice ear is to secure a few specimens of each type on the market, and, after providing each end of one of each type with short pieces of trolley wire installed as in overhead practice, test these samples one after the other for elongation, tensile strength, etc., both when splicing full-sized trolley wire and worn wire. For this purpose a Riehlé testing machine or similar appliance could be used.

Much of value can be learned by careful observation of the performance of the splicers, as the strain is gradually applied in this test. Specimens of each remaining type not eliminated as unsatisfactory by the tensile strength test should then be installed in series a few feet apart on a working trolley wire on a line of heavy service. After several months' wear the length of trolley containing these test samples should be cut out in one piece and brought to the office for inspection, comparison, dissection, etc. The linemen's judgment should not be accepted as final in the matter, although much can be learned from listening to their views.

The New York, New Haven & Hartford Railroad has ordered five new electric locomotives. These will weigh approximately 180 tons each and will have 50 per cent greater capacity than any electric locomotive now in use on this railroad. In addition to being used on the electrified section between New York and New Haven these locomotives will also be used for service into the Pennsylvania station, New York, over the New York Connecting Railway and the new Hell Gate Bridge. The locomotives will operate safely at a speed of 70 m.p.h.

Special Work Economics

BY M. BERNARD

Assistant Engineer Way and Structures Department, Brooklyn (N. Y.) Rapid Transit System

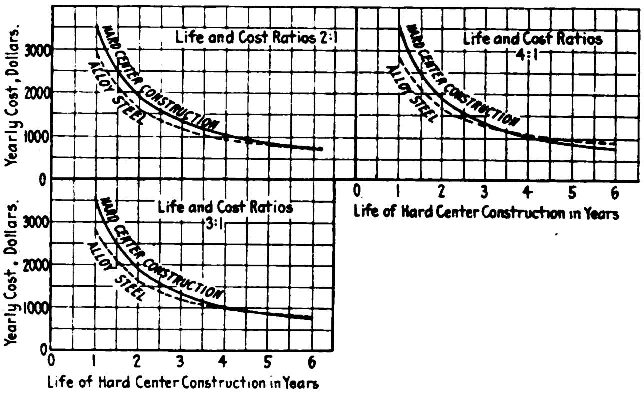
It has frequently been stated that the use of solid alloy steel special work instead of the ordinary hard-center construction is justified wherever the following ratio exists:

$$\frac{\text{Life of solid alloy steel}}{\text{Life of H.C. construction}} = \frac{\text{Cost of solid alloy steel}}{\text{Cost of H.C. construction}}$$

The reason given for this is that the solid alloy steel construction requires less renewal expense.

However, no consideration seems to have been given to the interest charges on the money invested. On account of such charges there is a possibility of the interest on the investment required with the solid alloy steel construction offsetting the expense caused by the more frequent renewals of the cheaper type of construction.

This is shown by the accompanying table, which has been computed on the assumption that the lives of the two types of construction were in direct proportion to their costs. The hard-center construction is arbitrarily assumed to have an initial cost of $2,000; therefore, when the cost ratio is 2 to 1 the solid alloy steel con-



CURVES MADE UP FROM TABLE SHOWING THE RELATION BETWEEN YEARLY COSTS OF SOLID ALLOY STEEL AND HARD-CENTER CONSTRUCTION WHEN THE INITIAL COSTS OF THE TWO TYPES VARY DIRECTLY IN PROPORTION TO THEIR LIFE

TABLE SHOWING THE RELATION BETWEEN YEARLY COST OF SOLID ALLOY STEEL AND HARD-CENTER CONSTRUCTION WHEN THE INITIAL COSTS OF THE TWO TYPES VARY DIRECTLY IN PROPORTION TO THEIR LIFE

TABLE I—COST OF SOLID ALLOY STEEL: COST OF H. C. CONSTRUCTION = LIFE OF SOLID ALLOY STEEL: LIFE OF H. C. CONSTRUCTION = 2:1

	Solid Alloy Steel	Hard Center	Solid Alloy Steel	Hard Center	Solid Alloy Steel	Hard Center	Solid Alloy Steel	Hard Center	Solid Alloy Steel	Hard Center	Solid Alloy Steel	Hard Center
Time in service	Two Years	One Year	Four Years	Two Years	Six Years	Three Years	Eight Years	Four Years	Ten Years	Five Years	Twelve Years	Six Years
Initial cost of special work	$4,000	$2,000	$4,000	$2,000	$4,000	$2,000	$4,000	$2,000	$4,000	$2,000	$4,000	$2,000
Other material and labor	1,400	1,400	1,400	1,400	1,400	1,400	1,400	1,400	1,400	1,400	1,400	1,400
Total cost	5,400	3,400	5,400	3,400	5,400	3,400	5,400	3,400	5,400	3,400	5,400	3,400
Interest at 5 per cent	540	170	1,080	340	1,620	510	2,160	680	2,700	850	3,240	1,020
Grand total	5,940	3,570	6,480	3,740	7,020	3,910	7,560	4,080	8,100	4,250	8,640	4,420
Yearly cost	2,970	3,570	1,620	1,870	1,170	1,303	945	1,020	810	850	720	737

TABLE II—COST OF SOLID ALLOY STEEL: COST OF H. C. CONSTRUCTION = LIFE OF SOLID ALLOY STEEL: LIFE OF H. C. CONSTRUCTION = 3:1

	Solid Alloy Steel	Hard Center	Solid Alloy Steel	Hard Center	Solid Alloy Steel	Hard Center	Solid Alloy Steel	Hard Center	Solid Alloy Steel	Hard Center	Solid Alloy Steel	Hard Center
Initial cost of special work	$6,000	$2,000	$6,000	$2,000	$6,000	$2,000	$6,000	$2,000	$6,000	$2,000	$6,000	$2,000
Other material and labor	1,400	1,400	1,400	1,400	1,400	1,400	1,400	1,400	1,400	1,400	1,400	1,400
Total cost	7,400	3,400	7,400	3,400	7,400	3,400	7,400	3,400	7,400	3,400	7,400	3,400
Interest at 5 per cent	1,110	170	2,220	340	3,330	510	4,440	680	5,550	850	6,660	1,020
Grand total	8,510	3,570	9,620	3,740	10,730	3,910	11,840	4,080	12,950	4,250	14,060	4,420
Yearly cost	2,836	3,570	1,603	1,870	1,192	1,303	987	1,020	863	850	781	737

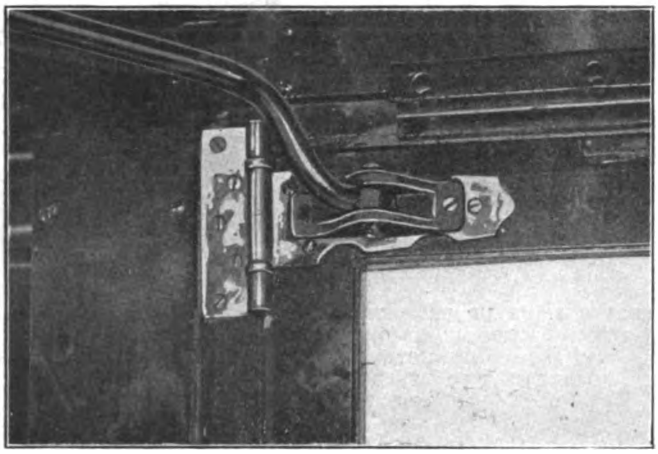
TABLE III—COST OF SOLID ALLOY STEEL: COST OF H. C. CONSTRUCTION = LIFE OF SOLID ALLOY STEEL = H. C. CONSTRUCTION = 4:1

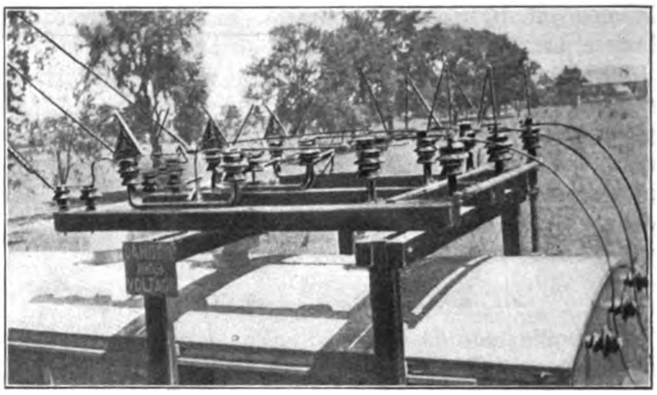
	Solid Alloy Steel	Hard Center	Solid Alloy Steel	Hard Center	Solid Alloy Steel	Hard Center	Solid Alloy Steel	Hard Center	Solid Alloy Steel	Hard Center	Solid Alloy Steel	Hard Center
Initial cost of special work	$8,000	$2,000	$8,000	$2,000	$8,000	$2,000	$8,000	$2,000	$8,000	$2,000	$8,000	$2,000
Other material and labor	1,400	1,400	1,400	1,400	1,400	1,400	1,400	1,400	1,400	1,400	1,400	1,400
Total cost	9,400	3,400	9,400	3,400	9,400	3,400	9,400	3,400	9,400	3,400	9,400	3,400
Interest at 5 per cent	1,880	170	3,760	340	5,640	510	7,520	680	9,400	850	11,280	1,020
Grand total	11,280	3,570	13,160	3,740	15,040	3,910	16,920	4,080	18,800	4,250	20,680	4,420
Yearly cost	2,820	3,570	1,645	1,870	1,253	1,303	1,058	1,020	940	850	862	737

struction will cost $4,000 and will last twice as long. The average life of special work on our system is about six and one-half years and hard-center construction is the standard construction used. From a study of the yearly cost curves plotted from the values given in the table, it will be seen that, with this average life, the hard-center construction is the more economical. The curves also show that the higher the ratio of costs, the shorter the life of the hard-center special work can be without costing more than the solid alloy steel. Another point to be considered is that when using long-lived special work at heavy traffic location, there is the possibility of not obtaining the benefit of improvements in design. Hence the condition may occur where the heavy traffic location has special work which is obsolete in the light of later improvements.

Case-Hardened Pins Used on Worcester Car Door Fixtures

On March 16, 1917, the Worcester (Mass.) Consolidated Street Railway made what is probably the first installation of Boyerized (case-hardened) pins and bushings on the door fixtures of a car. The accompanying cut shows the exterior of a door casting and hinge, with operating rod running toward conductor's stand at the left. The operating rod is ½-in. extra-heavy wrought-iron pipe with a cold-rolled steel eye driven into the pipe at the right-hand end. A Boyerized pin with a shank ⅜ in. in diameter and 1⅞ in. long and with a head ¼ in. thick and ¾ in. in diameter receives a driving fit into the door bracket casting, and a Boyerized bushing of ⅜-in. inside diameter and ⅝-in. outside diameter and 13/16 in. long surrounds the pin, the pin and bushing forming a running fit. The bushing is carried in the steel eye at the end of the rod. All the wear is on the bushing and pin. Up to the present time the wear has been negligible, compared with a life of less than three months in the case of the ordinary cold-rolled steel pin without a bushing. This combination also is noiseless. A ⅛-in. cotter keyhole is provided near the bottom of the pin to prevent turning against a boss on the under side of the bracket casting. Twenty-six cars on this road have now been equipped in the above way, and it is planned to equip a total of eighty-two.


VIEW SHOWING CASE-HARDENED PIN INSTALLED ON WORCESTER CAR


ROOF OF TEMPORARY SUBSTATION SHOWING INCOMING FEEDERS AND HORN-GAP LIGHTNING ARRESTERS

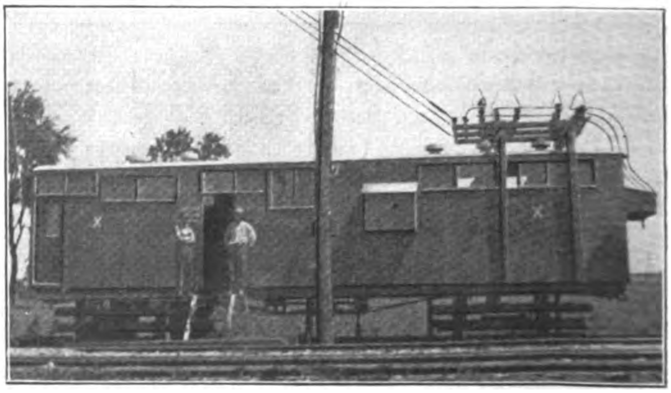
Army Camp Gets Emergency Service

Louisville Railway Makes Temporary Substation to Serve Camp Zachary Taylor

A portable substation has been placed by the Louisville Railway near Camp Zachary Taylor, the federal army cantonment near Louisville, which the company is serving. The camp is located 2 miles from the city limits on an interurban line and the only new track construction consisted in converting the 2 miles of single-track work into double-track construction, and the building of about 4000 ft. of new double track, most of it on government property. This new trackage lies about equidistant between one of the power plants of the railway and a permanent substation, and it was found that a portable substation would be more economical than permanent construction, particularly in view of the uncertainty as to how long the camp might be in use.

The company already had a three-phase, 13,200-volt transmission line paralleling the existing interurban line passing the cantonment site, so it was not necessary to construct a transmission line. Frank H. Miller, superintendent of motive power, accordingly determined on the substation, fixed the location and prepared the plans which were carried out by the shop department.

A regulation flat car was built in the shops and then taken to one of the city substations, where a 500-kw. rotary with the necessary auxiliary apparatus was borrowed and loaded on the car. The next stop was the company's shops where the wiring was installed and the apparatus housed by the construction of tempo-

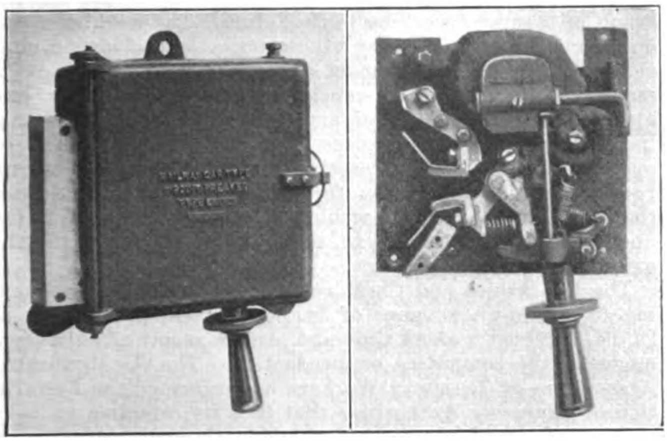

LOUISVILLE RAILWAY'S TEMPORARY SUBSTATION FOR CAMP ZACHARY TAYLOR. BLOCK PIERS WERE USED WHILE CONCRETE FOUNDATIONS WERE BEING BUILT

rary sides and roof, giving the appearance of a box car. It was then moved to a temporary siding built for the purpose at about the center of the new load. Here the trucks were removed, and concrete piers were constructed under the car to prevent excessive vibration. The illustrations show a general view of the substation and a near view of the roof on which the incoming feeders are protected by Burke horn-gap lightning arresters.

Circuit Breakers for Cars Having Small Motor Equipment

To meet the demand for a light-weight circuit breaker for use with one-man cars and other railway equipment employing small motors, the Westinghouse Electric & Manufacturing Company has developed the breaker shown in the illustration. The construction of this breaker is such that the complete working elements can be removed from the inclosing box by removing the calibrating button and the four screws which secure the elements to the box. It is, therefore, not necessary to remove the box from the car. The arc chute is composed of asbestos lumber and molded arcing blocks and it is also easily removed from the outside of the breaker by releasing a sliding catch.

This type of circuit breaker has a continuous rating based on the capacity of the blowout coil used—the smaller the capacity the greater the number of turns in the coil and vice versa. It is, therefore, recommended that in using this breaker, one having as small a continuous rating as possible should be selected, as this breaker will have the maximum blowout effect. Of course, no hand-operated platform breaker can safely be relied upon to open dead grounds. The magnitude of the current which will flow in the event of such a short-circuit is dependent upon the generator capacity, feeder resistance, the speed and setting of the station breakers, etc. However, this circuit breaker is built to operate satisfactorily under average conditions.

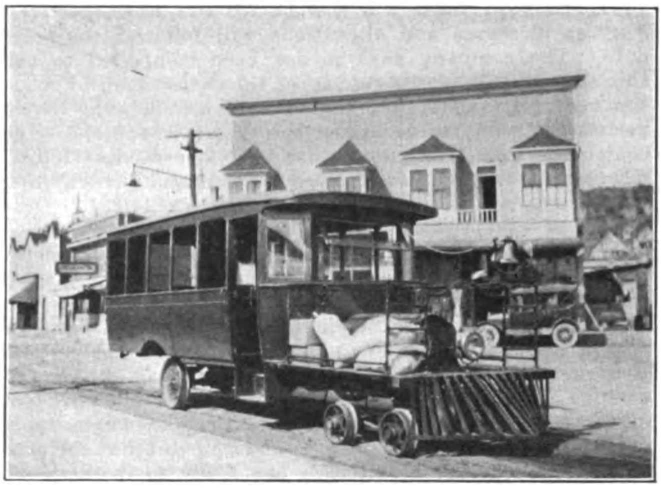


EXTERNAL AND INTERNAL VIEWS OF CIRCUIT BREAKER FOR LIGHT-WEIGHT CARS

An analysis of nearly 6000 accidents occurring to employees of public utility companies located in several states shows that a larger per cent of accidents occurred to linemen than to those in any of the other classes of work.

Combination Express and Passenger Car Made from Auto Truck

Starting with a White automobile truck the Cowlitz, Chehalis & Cascade Railway, operating between Chehalis and Onalaska, Wash., has constructed and is using daily the combination freight and express car shown in the illustration. The car has a passenger body seating twenty-one persons and an express platform. It is equipped with flanged wheels for operation on standard-gage track.



AUTOMOBILE TRUCK CONVERTED INTO COMBINATION FREIGHT AND PASSENGER CAR

During the month of June, 1917, the car covered 4560 miles and hauled 3620 passengers. On five days of the week the average mileage is 150, but on Saturdays and Sundays the car makes 210 miles. The operating expenses during June were 7.5 cents per mile, this figure covering gasoline, oil, repairs, maintenance, overhead percentage, etc., but it does not include depreciation or interest on investment.

First Ten of 200 Safety Cars With Ball Bearings Go to Tacoma

In the review of equipment for light-weight safety cars, published in the "More Service at Less Cost" issue of Sept. 22, reference should have been made to the important part which the ball bearings of the Gurney Ball Bearing Company, Jamestown, N. Y., is playing in this development, as evidenced by their application to 200 of these cars. Of this number, 141 are going on Stone & Webster properties. Rapid progress is being made in the equipping of the cars, ten of which have recently gone to Tacoma from the American Car Company.

The bearings for the main journals are of the Gurney Radio-Thrust type. The peculiar feature of these bearings is their ability to carry both radial and thrust loads. This enables them to carry easily the heavy thrust loads due to rounding sharp curves. In the GE-258 motors for these cars, bearings of the plain radial type were used. These were also furnished by the Gurney Ball Bearing Company.

The application of ball bearings to both motors and journals of such a large number of new cars marks a decided advance in the application of anti-friction bearings in railway service.

London Letter

Edinburgh to Increase Fares—London Underground Fares Up 25 Per Cent—Report on Traffic Congestion in Manchester

(*From Our Regular Correspondent*)

The Edinburgh & District Tramways, the Edinburgh Corporation lessee, has decided to raise its fares. The 1½d. and 2½d. fares will now be 2d. and 3d. respectively. Further increases and alterations will follow at an early date. The company says it has been compelled to take this step in view of the refusal of the corporation to reduce the rent. It points out that the dividends paid over a period of twenty-three and a half years average 7.63 per cent. The total sum paid in dividends represents £165,875, whereas the corporation received for rent and owners' rates, taxes and insurance to June 30 last £1,818,281. Other causes of the present advance are the enormous increase in the cost of materials, increased wages, and the depletion of the car service. The company states that it may be compelled to withdraw some of its concessions, which include reduced fares to soldiers, school children, etc., and season tickets to the public and to members of the corporation and public officials. Since the outbreak of war the company has paid £16,000 in war allowances to dependents of former employees. The recent increase in wages represents £12,000 a year. This is in addition to other increases since 1914. Costs of materials are likely to increase still further. Just one item—cable—has shown an increase of 73 per cent since 1914. It is estimated that the increase in expenditure for the year ended June 30, 1918, will be £75,000, as compared with 1913.

Announcing an increase in Underground railway fares, the London Electric Railway states that when in January the steam railroads increased all their fares by 50 per cent the railways in the central London area still retained their original fares. This caused many anomalies, but it was felt that an all-round increase of 50 per cent would be unreasonable, having regard to the largely business character of the traffic. The question of adjustment in the fares has, however, now been considered on a basis which would cause the least hardship, and certain local and through fares have been revised. The revisions will affect the District, Metropolitan, London Electric, Central London, and City & South London Railways, and the Great Northern & City and East London lines. No revision, however, will take place where the present 50 per cent increase is already effective. It is stated that generally the increase will be an average under 25 per cent of the present fares. The London General Omnibus Company has already increased the fares on a number of its bus routes. This has given rise to many complaints, and it is hoped that, after a trial, certain modifications will be introduced.

An inquiry, begun nearly six years ago, into the best means of relieving traffic congestion in the streets of Manchester has been brought to a close by the presentation of the report of the traffic congestion special committee. Separate investigations and reports had previously been made by the tramways, the watch and the improvement committees. The tramways committee sent a deputation to study American and Continental methods of dealing with urban street traffic, and the watch committee, following the same method of study, also dispatched representatives to Continental cities. In course of time these committees presented reports, and the traffic congestion special committee was then appointed to consider the independent findings and make final recommendations to the City Council. The tramway committee in its report pointed to the rapid growth of the population served by the Manchester and Salford tramway systems, and the special committee insisted upon the need for new trunk routes and additional tramway terminals, and indorsed the watch committee's suggestion that Parliamentary powers should be obtained to enable the police more effectively to regulate street traffic. As regards the site of the old infirmary in Piccadilly, the special committee suggested that it was the duty of the royal infirmary old site special committee to prepare a complete scheme for dealing with this site.

The committee which is considering the interconnection of the Lancashire & Cheshire electricity supply systems has issued a further report which states that the committee has come to the conclusion that the interconnection of the several supply undertakings is but the first step to be taken in the reorganization of the existing interests with a view to securing an adequate, cheap and reliable supply of electrical energy for industrial and all other purposes. The opinion is expressed, however, that the practice of making profits for the purpose of handing over substantial grants in aid of local rates is detrimental to the interests of an adequate and economical supply of electricity, particularly for industrial purposes. On the other hand, the committee would lay stress on the necessity of making adequate provision for depreciation and obsolescence.

Not the least interesting among the innovations which the scarcity of petrol has produced is the arrival of the coal-gas-driven passenger-carrying charabanc. A trip in one of these new vehicles is now a regular feature of holiday life at Eastbourne. Not only do visitors take pleasure rides in the novel cars while they are at the seaside, but they also make the initial journey from London to the South Coast in them, thus avoiding the discomforts of overcrowded railway trains. In South London a charabanc with a large gas bag on its roof arriving full of passengers and taking up a new and similar load is a familiar sight. The claim is made that while the 124 miles round trip between Eastbourne and London performed on petrol at its present price would be £2 14s., the cost on coal gas is under £1. There are now nine of these vehicles in use, and between them they carry 400 people a day and travel some 2500 miles a week.

In presenting the accounts for the year ended March 31 last at a recent meeting of the tramways committee of the Newcastle Corporation, the chairman said it was satisfactory to note, in view of the heavy expenditure which will be required in the future, that there was now practically £106,000 in the reserve and renewal fund. The cost of renewals for some years to come would be considerably heavier than in pre-war times, and it would be advisable to appropriate the whole of the year's surplus to that purpose. He added that it was difficult to forecast what would be the result of tramway working in the future. The working costs on tramway systems all over the country had advanced considerably and the problem of fares would for years be a matter requiring special consideration. Many towns had already increased their ordinary fares to meet the abnormal increase in working expenses. Every endeavor would be made to carry on the Newcastle undertaking without having recourse to increasing the fares, and it was to be hoped that the traffic returns would be such as to avoid the undesirability of having to make any alteration to the existing fares and stages.

The Lancashire and Cheshire tramway workers are seeking to obtain an advance of 7s. 6d. a week, in addition to 2s. 6d. received a short time ago, as the result of an award made by the committee on production. The Amalgamated Association of Tramway Workers has informed the Federation of Tramway Authorities that it is its intention to take up the matter of bonuses separately with each tramway instead of through the Federation. The Federation has replied that it will consent only to joint action. As a result the tramway workers concerned have given twenty-one days' notice to each of the nineteen authorities to grant their application or refer it to arbitration.

Since the beginning of the current financial year the receipts of the Leeds city tramways have shown an increase of more than £1,000 a week, as compared with a year ago. In the last financial year the income, for the first time in the history of the undertaking, exceeded £500,000. It is highly probable that this record will be passed before March 31. The main causes of the greater use of the tramways may be looked for in the restriction of train services, the higher cost of that means of traveling and the development of munition works. Many people have spent holidays at home, getting a change of scene by visiting country places served by the trams. New early morning services have been introduced to enable thousands of munition workers to catch the special trains which run to factories in the district. Apart from this, however, the ordinary traffic returns are steadily rising.

A. C. S.

News of Electric Railways

Traffic and Transportation

Financial and Corporate Personal Mention Construction News

Dallas Franchises Accepted

Messrs. Strickland and Hobson, After Long Negotiations, Take Over Dallas Railway and Lighting Properties Under New Grants

The service-at-cost franchises for electric railway and lighting privileges in the city of Dallas, Tex., were accepted by J. F. Strickland and C. W. Hobson on Sept. 27. The acceptance came after extended negotiations. At one time it appeared that the franchises would likely be rejected, but the City Commission made certain concessions in the form of extensions of time within which certain contract features of the franchises calling for extensions and new interurban lines are to be complied with. Mr. Hobson pleaded that the war situation and the fact that the mills were at work on war orders made it impossible to get steel with which to construct certain of the new lines. He was willing that the provision for an expenditure of $1,000,000 within eighteen months in betterments to the city system should stand, and that the provision for two additional interurban lines into Dallas, each to be at least 30 miles in length, should be included in the grant, but he requested more time in which to build these lines. The commission was impressed with the soundness of these claims.

NEW COMPANIES INCORPORATED

Charters for the two new companies that have taken over the lighting and traction properties have already been filed in the office of the Secretary of State at Austin, and the formal transfer of the properties was made at midnight on Sept. 29. The traction company, to be headed by Mr. Hobson, is chartered as the Dallas Railway Company. It is capitalized at $100,000. The incorporators are Charles W. Hobson, James C. Duke and Herbert M. Hughes. The principal stockholder is Harry M. Durning, New York. It is explained that Mr. Durning is merely an intermediary between the Hobson and Strickland interests and the securities company that is financing the reorganization of the Dallas properties. The lighting company is incorporated as the Dallas Power & Light Company. It is capitalized at $150,000. The incorporators are J. F. Strickland, W. B. Head and C. E. Calder. Harry M. Durning, New York, is also named as principal stockholder of this corporation. Officers of the Dallas Railway Company have been announced as follows: C. W. Hobson, president; H. M. Hughes, vice-president; Henry Lange, Jr., secretary-treasurer. The members of the board of directors are: J. C. Duke, H. A. Olmsted, W. A. Green, W. R. Ellis, John H. McDonald, Judge M. L. Morris, J. K. Hexter, H. M. Hughes, H. E. Hobson, and C. W. Hobson.

In filing his acceptance of the franchise, Mr. Hobson did so with the written understanding that he is to carry out immediately one of the three demands of the franchise—to spend $1,000,000 in altering, reconstructing, rearranging and improving the street railway properties and in making additions and betterments. The other two provisions—the building of two interurban lines, the first within six months after operations under the new franchise are begun and the second within six months from the time the gross earnings from the traction properties east of the Trinity River, or within the city of Dallas proper, or the gross earnings per mile of those properties, reach certain sums stipulated in the franchise—Mr. Hobson deemed impossible to accept because of the war, or "other causes which could not be reasonably anticipated" when the franchises were framed. He declined to accept unless the city agreed that the delay was covered by the clause in the franchises reading "unless prevented by war, strikes, riots, acts of God, casualty or other causes which could not reasonably have been anticipated."

ORDINANCE REPASSED

Prior to the acceptance of the grants the City Commission repassed the ordinance confirming and re-enacting the ordinance granting a franchise to the Northern Texas Traction Company, passed on Jan. 8, 1917, which is the execution of a lease of its property in Oak Cliff by the Northern Texas Traction Company (a Stone & Webster property) to the Dallas Railway Company, and the execution of an interurban operating contract with the Dallas Railway Company under the direction of the city. The re-enactment of this ordinance was required by Stone & Webster. A second ordinance giving the city the right to grant leases over all lines in Dallas was also passed as an emergency.

A statement was also filed showing that charter proceedings have been had that form the Dallas Railway Company out of the Dallas Consolidated Electric Street Railway, Metropolitan Street Railway, Rapid Transit Company and the Dallas Interurban Terminal Association.

OFFICIAL STATEMENT BY MESSRS. HOBSON AND STRICKLAND

Relative to acceptance of the lighting and traction franchises, Messrs. Hobson and Strickland gave out the following statement:

"The filing of the acceptance of the railway and lighting franchises, we trust, is the final act in the solution of street railway and lighting problems of the city of Dallas. We realized, at the time the Mayor, in April, 1916, suggested that we organize local companies to take over these properties and operate them under the 'service-at-cost plan' of franchises, that the undertaking was a very large one, but we consented to try to bring about an equitable solution to all concerned, and from that day to this we have been busy to that end.

"A few days after the election last April at which the franchises were ratified by the people of Dallas, thereby making it possible for us to take over the properties, the United States entered the war against Germany. This declaration of war greatly upset the entire financial status of the nation, thus making it exceedingly difficult to raise the large sums of money called for in the franchises. The obstacles and delays have been numerous, but one by one we have surmounted them, and our acceptance of the franchises means that we are prepared to carry out every commitment in them."

NEW CONDITIONS AFFECTING INTERURBAN CONSTRUCTION

The new agreement with reference to the building of the interurbans is as follows:

"To build an interurban not less than 30 miles in length, from some outside point into Dallas, work to be begun within six months from the time of operation under the ordinance passed, the interurban to be put in service within eighteen months from that date, unless prevented by war, strikes, riots, acts of God or casualty or other cause which could not have been reasonably anticipated, the city to receive $200,000 as liquidated damages if this agreement is not carried out.

"To begin an interurban not less than 30 miles in length from some outside point into Dallas, work to begin within six months from the time when the gross earnings of the lines east of the Trinity River exclusive of the interurbans shall bear the same proportion to the then property value as the gross earnings for the calendar year of 1913, the city to receive $350,000 as liquidated damages for failure to comply with the agreement."

This agreement also is required:

"To expend the sum of $1,000,000 in altering, reconstructing, rearranging and improving the properties originally put in operation by the new company, the city to receive $200,000 as liquidated damages for failure to comply with the agreement."

Concurrently with the final passage of the ordinance granting an electric light and power franchise, J. F. Strickland in writing agrees to expend the sum of $2,000,000 in altering, reconstructing and rearranging and improving the distributing system, power plants and properties and in making additions and extensions, and the city shall receive $250,000 damages for failure to comply with the agreement.

The appointment of a supervisor by the Mayor and Commission is made mandatory "on or before" the date upon which Messrs. Strickland and Hobson shall commence to operate under the new franchises. The duties of the supervisor are broad. The City Commission may at any time remove him and if found dishonest the board must remove him from his duties.

PROVISIONS REGARDING FARES

The rates of fares on the electric railways which become effective as soon as the franchises become operative are on a graduated scale and are as follows:

"Sec. 21. The maximum rate of fare for a single continuous ride within the present limits of the city of Dallas, in one direction, over any route of said company, shall be 5 cents cash fare, universal free transfer, and including said maximum rate the following schedule or scale of fares is hereby established:

"(a) Five-cent cash fare; universal free transfer.

"(b) Five-cent cash fare, six tickets for 25 cents; universal free transfer.

"(c) Four-cent cash fare, 1-cent transfer, no rebate.

"(d) Four-cent cash fare, 1-cent transfer, 1-cent rebate.

"(e) Three-cent cash fare, 1-cent transfer, no rebate.

"(f) Three-cent cash fare, 1-cent transfer, 1-cent rebate.

"(g) Three-cent cash fare, 2 tickets for 5 cents, 1 transfer, no rebate.

"(h) Three-cent cash fare, 2 tickets for 5 cents, 1-cent transfer, 1-cent rebate.

"(i) Two-cent cash fare, 1-cent transfer, no rebate.

"(j) Two-cent cash fare, 1-cent transfer, 1-cent rebate.

"Each of the foregoing rates of fares when in force shall be the rate of fare for a continuous single ride within the present limits of the city of Dallas in one direction, over any route of said company, whether enumerated in Sec. 1 hereof or not; and when any of the foregoing rates of fare is in force with regard to which a ticket rate is provided the company shall sell, on all of its cars, at all times, reissuable tickets at the rate provided, each of which tickets shall entitle the holder to one such ride.

"The company shall furnish free transportation to the policemen and firemen of the city of Dallas to the extent now permitted by law. Children of twelve years of age or less and students of not more than seventeen years of age shall be carried on the company's lines for one-half of the regular fare collected for transportation of adult persons as now required by law."

The conditions under which local Dallas interests were to take over the properties in that city were summarized in the ELECTRIC RAILWAY JOURNAL of Oct. 21, 1916, page 903.

City Purchase Talk in San Francisco

Supervisors Take Steps Looking Toward Purchase of United Railroads by the City

Definite steps have been taken looking toward the purchase of the United Railroads, San Francisco, Cal., by the city. Some time ago the Board of Supervisors adopted a resolution favoring the purchase by the city on fair terms. Following that there was much discussion of the subject and citizens representing nearly every occupation called upon the Mayor and expressed the hope that some such purchase might be effected. As a result of this expression of opinion the Mayor informally assembled a number of representative citizens in his office to discuss some method of placing the matter before the public. It was the consensus of opinion at this meeting that circumstances demanded immediate action.

Representatives of these citizens were then asked by the Mayor to inquire of the members of the committee having charge of the reorganization of the United Railroads whether they thought the owners of the properties were willing to entertain overtures for the sale of the properties. It was reported back to the Mayor that the reorganization committee was of the opinion that it would be appropriate for the company to sell to the city and that the committee would use its influence to bring about that result.

MEETING IN MAYOR'S OFFICE STARTS THINGS

On the receipt of this communication the Mayor invited the members of the reorganization committee to meet a representative committee in his office to see whether the matter could be brought to a point sufficiently definite to justify him in sending a communication to the Board of Supervisors. The Mayor was satisfied after hearing the discussion of the representatives of all elements that it was advisable that the purchase of the properties be made and that the Board of Supervisors proceed with plans and negotiations for the purchase. A communication on the matter sent by the Mayor to the Supervisors was referred by the board to its committee on public relations. Subsequently this committee adopted the following resolution:

"Resolved, that it is for the best interests of the people of the city and county of San Francisco that the city and county acquire all of the properties of the United Railroads if said properties can be purchased upon equitable terms.

"Resolved, further, that the city engineer be and is hereby authorized to confer at once with a representative of the United Railroads for the purpose of arriving at a basis of valuation and that he report at an early date to this board."

At the meeting at which this resolution was passed it was decided to recommend that City Engineer O'Shaughnessy be authorized to enter into negotiations with the United Railroads for the purpose of arriving at a basis of valuation.

MACHINERY SET IN MOTION

In explanation of what is proposed by the resolution, Mayor Rolph in an address said:

"We have in mind the fact that the charter of the city provides for the acquisition of all public utilities by the municipality. We have also had in mind the fact that the Board of Supervisors has unanimously passed a resolution requesting that negotiations be entered into with the United Railroads for the acquisition of its properties by the city.

"This resolution will set the machinery in motion. We want to give the city engineer the necessary authority to confer with representatives of the United Railroads for the purpose of agreeing upon a basis. Discussion of matters in advance of this is premature. We want to proceed step by step until we see what can be developed and when this is done the matter will be laid before the people for their approval or disapproval."

Up to Sept. 29 Mr. Lilienthal had not announced the name of the company's engineer who will confer with Mr. O'Shaughnessy, representing the city. It was expected, however, that he would name a representative of the company within the next few days.

In a letter addressed to H. T. Jones, superintendent of the United Railroads, Mr. Lilienthal said:

"In response to your inquiry whether it is true that pending negotiations by the city for the purchase of the company's property there is to be any change in the operating conditions of the company, I beg to say that no such change is to occur.

"It is impossible for the city to acquire the properties short of nine months, and the period may be prolonged as much as fifteen months. In the meantime the railroads will be managed by the owners as heretofore."

As stated previously in the ELECTRIC RAILWAY JOURNAL, the proposal which has been made for the purchase of the property is that the railroad should be appraised now and an offer made by the city to purchase on the installment plan. The city and the United Railroads will agree on a year that would represent a fair measure of the net earnings of the railroad or take a year that will be an average of five years and agree on that as the price to be paid by the city for every year of its franchise, payable yearly.

Results of Toledo Primary

Present Mayor, Author of Community Traction Plan, Defeated—Mr. Schreiber, Former City Solicitor Under Brand Whitlock, Will Run

Charles M. Milroy was defeated as a candidate for a second term as Mayor of Toledo, Ohio, at the primary election on Sept. 11. He received only 2055 votes. Cornell Schreiber stood highest in the list of candidates with 7918 votes. George A. Murphy, former chief of police, who was ousted from office when Carl H. Keller was Mayor, and Robert T. Haworth, Socialist and pacifist, were the other primary nominees.

Now that Mayor Milroy is not to succeed himself the question being asked is: What will become of the Milroy street railway commission and its community plan for taking over the street railway property of the Toledo Railways & Light Company? The Milroy plan has not yet been completed and in all probability will remain pretty much as it is until the change of administration takes place. It is not known what the policies are of any of the three candidates for the mayoralty, but some of them may differ from those of Mayor Milroy. From the fact, however, that Mr. Schreiber, the leading candidate at the primary, is a pupil of former Mayor Brand Whitlock, it may be surmised that he will be in favor of the community-ownership plan.

Mr. Schreiber was city solicitor under Mr. Whitlock. In that office he had valuable experience in street railway matters. If he should be elected, the experience thus gained would serve Mr. Schreiber well in handling the present situation. Mr. Schreiber's vote was 2327 greater than his nearest competitor. If this indicates anything, he may be successful at the polls.

AMENDMENT TO BOND ISSUE LAW DEFEATED

The proposed amendment to the city charter relating to the issuance of bonds for the purchase of public utilities was defeated on Sept. 11 by a vote of 14,126 to 6,923. The proposed amendment gave the city broad powers in regard to issuing bonds which were to be backed by the city's taxing power. It was aimed at doing away with the present Ohio law which permits cities to issue bonds for acquiring public utilities, but provides that the bonds may act only as a lien against the utility acquired. By the defeat of the proposed amendment the law remains unchanged.

The defeat of the amendment does not in any way affect the negotiations now pending between the city and the Toledo Railways & Light Company for the purchase of the street railway lines, because the negotiations contemplate a method different from either the old law or the proposed amendment. The importance of the election is that it disposed of any plan for municipal ownership of the electric or gas properties of the Toledo Railways & Light Company.

B. R. T. Wooden Subway Cars to Go

The elimination of the wooden cars from operation in the Centre Street loop subway in New York may begin early in December. This was the effect of testimony by W. S. Menden, chief engineer of the Brooklyn Rapid Transit system, before the Public Service Commission on Oct. 1, at the hearings now being held to consider the elimination of the wooden cars from the loop and other questions of service.

Mr. Menden testified that certain reconstruction work is still necessary at the Wyckoff Avenue station on the Broadway-Myrtle Avenue elevated line before the heavy steel cars can be operated past that station to Fresh Pond Road. He thought this work would be completed about Dec. 1. The steel cars will be placed in operation at various intervals, and until the full complement of steel cars is in service it will be necessary to operate a certain number of the present wooden cars, gradually eliminating these as the steel cars are received. Changes are necessary to the platforms of the wooden cars for extensions to reach the platforms in the loop subway station. The material for these platform extensions has been ordered and delivery is promised by Nov. 1, at which time the work will begin.

J. P. H. DeWindt, chief of the transit bureau of the commission, testified that he had made investigations of the situation and felt sure that operation of the steel cars could be had at a relatively early date. Mr. DeWindt also testified that his investigation showed that the company would have on or about Dec. 1 approximately 100 steel cars which could be placed in the Broadway-Myrtle Avenue-Centre Street loop service. He advocated that at the earliest possible moment steel cars, rather than wooden cars, be stored in the loop subway between rush hours.

The commission adjourned the hearing until Dec. 3, when further reports will be made as to the progress toward operation of the steel cars.

Chattanooga Strike Developments

Company Insists on Contract That Shall Legally Bind Both Sides

F. W. Hoover, vice-president of the Chattanooga Railway & Light Company, Chattanooga, Tenn., replied on Sept. 18 to the proposal of arbitration made to the company by John B. Colpoys, federal mediator, looking toward the settlement of the strike in Chattanooga. As stated in the ELECTRIC RAILWAY JOURNAL for Sept. 22 Mr. Colpoys suggested recognition of the union, the reinstatement of the men who are now out and arbitration of the question of whether or not the thirty or forty men against whom the company had a special grievance should be reinstated or discharged. Mr. Hoover said:

"I acknowledge your favor of the 12th inst., in which you propose that we 'resume relations with our former employees,' and that 'all matter in dispute be submitted to arbitration.'

"We are entirely willing to enter into 'contractual relations' with such of our employees as have not been guilty of acts of violence during the recent strike.

"There is no matter in dispute between our former employees and ourselves as to hours of work or wages. There are, however, differences between us in the following particulars:

"First—We insist that if 'contractual relations are to be resumed' the contract in question must be one that legally binds both parties. If we are to be responsible to each employee, so also must each employee be responsible to us. This can only be accomplished by having each employee sign his own contract.

"Second—We insist that each employee shall agree to render faithful and efficient service, and if for any reason he becomes dissatisfied and wants to quit, do so in peace and let us alone. In other words, that he will not go on a strike and destroy our property or encourage others to do so.

"We are not willing to arbitrate any of the above matters."

Members of the union of employees of the company voted on Sept. 22 to reject the individual contract proposition submitted to them by Mr. Hoover. The contract was presented to the men for consideration by Mr. Colpoys. On the previous day the Mayor had written to Mr. Hoover and the union suggesting that the questions in dispute be submitted to a board of citizens, two to be selected by company officials, two by the union and the fifth to be selected by these four. To this Mr. Hoover replied in part:

"We will be glad at all times to meet any committee of citizens selected by yourself, and outline to them our position in this controversy. We must, however, respectfully decline to name any committee to represent this company, as we feel there are no matters between the car men and that company that can be arbitrated.

"The facts in connection with this controversy have been pretty thoroughly aired through the local press, but I should be glad to enlighten anyone seeking further information on this subject."

On Sept. 23 there was a parade of strikers in Chattanooga. It was attended by much disorder. During one mêlée a citizen was shot to death and a soldier was severely wounded. Following this outbreak the city commissioners held a long conference with Mr. Hoover, at which it is understood a new proposition made by Mr. Colpoys was considered. The terms of this proposal were not made public pending formal reply from Mr. Hoover.

Commission Approves One-Man Cars

Massachusetts Board Approves Use of One-Man Cars by Bay State Street Railway—Commission Order Refers to Treatment of One-Man Cars in the Electric Railway Journal

In an order of ten pages issued under date of Oct. 3, the Bay State Street Railway, Boston, Mass., is authorized by the Public Service Commission of Massachusetts to install and operate one-man cars on certain routes in Revere, Salem, Beverly, Danvers, North Reading, Haverhill, Quincy, Randolph, Weymouth, Dedham, Hyde Park, Milton and Taunton, with the regulations that when the car is running the operator shall transact no business relative to fare collection or transfer issue, and that when leaving the car the operator shall remove and retain in his possession the reverse handle of the controller. The commission favors the purchase by the company of new cars of the one-man type, giving permission for but one remodeled car to be tried out in this class of service.

REVIEW OF FITNESS OF ONE-MAN CARS

The order includes a comprehensive review of the general fitness of the one-man car for economical operation on non-congested lines, with references to recent treatment of this topic in "Electric Railway Transportation" (Blake and Jackson), by A. Stuart Pratt of the Stone & Webster Management Association at a hearing before the board, and also in the special "More Service at Less Cost" issue of the ELECTRIC RAILWAY JOURNAL (Sept. 22, 1917). The commission is favorably impressed with the automatic safety devices now employed on such cars. The two types of one-man cars proposed by the Bay State company each seat twenty-nine persons. One is a light, strong steel car weighing 15,440 lb., the other being remodeled and of wood, weighing 21,540 lb. In the former type the wheels are 24 in. in diameter, with an 8-ft. wheel base and cross seats. The reconstructed car has longitudinal seats, 33-in. wheels and a 6 ft. 6 in. wheel base.

PUBLIC DESIRE TRIAL OF ONE-MAN CARS

The commission believes that the public served by the company desires a thorough trial of one-man car operation. At the hearings the employees of the company opposed the introduction of the new cars, but in the opinion of the commission "this attitude is contrary to their own best interests." The board says:

"The Bay State company has a number of country lines with very low earnings which are in serious danger of being abandoned unless expense can be decreased, and it also has short-haul lines of the type already mentioned where it ought to be possible to increase both service and patronage by the use of one-man cars, and to meet jitney competition to much better advantage. The company has recognized the principle that a higher rate of wages ought to be paid the man who combines the functions of motorman and conductor, and if these cars will accomplish the results anticipated, they will improve a situation which is as threatening to the employees as it is to the company itself."

The commission points out that while there may be economy in initial investment in the adaptation of existing cars for one-man operation, this is offset by loss in operating efficiency. The reconstructed car will consume materially more power than the new car and it is very likely to attract less traffic. The commission prefers to compare the working of the two types before authorizing any more of the remodeled units.

CARS ALL ON SHORT LINES

The routes specified in the petition are all short with light traffic. They range from about 4.5 to less than 0.5 mile in length. The importance of utilizing the one-man car to develop additional traffic and not merely as a means of economy is strongly emphasized in the finding. The decision says in part:

"The management . . . intends to put one-man cars to the use so strongly emphasized in this journal of the trade (ELECTRIC RAILWAY JOURNAL); but this intention ought to be made unmistakably clear to the public, and ought to be carried into practice at the earliest possible moment. If the two cars now in the possession of the company can be used on some short city line to increase a thirty-minute to a fifteen-minute headway, or better still, a twenty-minute to a ten-minute headway, they ought to be put into use at once, and to facilitate such action the order entered below, approving certain routes for one-man operation, has been so drawn that it may readily be extended from time to time to include additional routes. If, however, a satisfactory application of the theory of increasing service cannot be obtained with two cars only, the company ought to use its best endeavors to secure a sufficient number of cars for this purpose at an early date and in the meantime inform the public fully as to the plans which it intends to carry into effect."

Seattle Arbitration Completed

Decision Expected by Nov. 1 from Board Which Has Been Hearing Seattle and Tacoma Wage Evidence

Public hearings in the arbitration of the demands of the employees of the Puget Sound Traction, Light & Power Company, Seattle, and the Tacoma Railway & Power Company, Tacoma, closed on Sept. 25 with a final session at Tacoma and one at Seattle. The attorneys for the company and those for the employees were to submit briefs to the arbitration board by Sept. 29. Dr. Henry Suzzallo, chairman of the board, stated at the conclusion of the hearing that three weeks or a month will be required for a thorough study of the evidence. To assure unquestionable facts regarding the prevailing standard and cost of living, Dr. Suzzallo stated he will employ nine expert economists and three experts in home economics, members of the faculty of the University of Washington, to obtain for the board impartial testimony to be considered in arriving at the findings. The final testimony at Tacoma concerned mainly the wage differentials between Seattle and Tacoma.

Seattle Extension Bill Passed

Council Plans to Extend the Municipal Electric Railway

The City Council of Seattle, Wash., on Sept. 24 passed a bill adopting a plan for an extension of the municipal electric railway by connecting up the lines of Division C and Division A. The plan proposes the construction of an elevated railway on Washington Street, Railroad Avenue, Whatcom Avenue and Spokane Street, and extending from First Avenue south to the West Waterway. The estimated cost of the line is placed at $350,000, to be paid for by the sale of utility bonds, interest and principal payable from the revenues of the electric railway system. In order to connect the lines, it is proposed to utilize track of the Seattle & Rainier Valley line by a common user agreement. This would extend Division A, which has its present terminus at Third Avenue and Pine Street, to the west waterway.

Mayor H. C. Gill said on Sept. 22 that he will veto the bill adopting a plan for the extension, saying that the proposed elevated line would compete with lines of the Puget Sound Traction, Light & Power Company without materially improving the transportation facilities. Mayor Gill has, however, approved the bills providing for the proposed extension of Division A of the municipal railway into Ballard, saying that he believed the extension into Ballard would be the means of increasing the revenues so that the municipal line might be made self-sustaining. This plan, which it was proposed to carry into effect with funds borrowed from the city light depreciation fund, may have to be abandoned, for Walter F. Meier, assistant corporation counsel, in an opinion addressed to the finance committee of the Council, holds that such transfers of funds are illegal in the event that the electric railway fund is insolvent. The charge of insolvency was made by Councilman Will H. Hanna, chairman of the finance committee, in requesting the opinion.

On Sept. 27 Councilman Erickson introduced a bill in Council appropriating $12,000 from the general fund for the extension of Division A into Ballard. The appropriation, which will require the vote of seven members of the Council and the approval of the Mayor, will be a charge against the 1919 tax levy, for the reason that no provision was made in the tax levies for this or next year for such an expenditure. This bill takes the place of a bill now pending in the Council appropriating $12,000 from the light depreciation fund to the street railway fund, a transfer held by Mr. Meier to be illegal, as noted previously.

No Expert for St. Louis at Present

The public utilities committee of the Board of Aldermen of St. Louis, Mo., has abandoned for the present its plan of employing an outside expert to draft a third United Railways' settlement ordinance, and will hold frequent sessions to shape up a new ordinance, based upon the terms of the pending bill known as the second plan, which does not involve a partnership between the company and the city. Alderman Schwartz, chairman of the committee, states that the committee is trying to provide a better plan of obtaining extension of lines than the proposed method. The question of the $60,000,000 earning value which the pending bills allow the company has not yet been discussed.

The committee of the Chamber of Commerce which has had the proposed United Railways' compromise ordinance under consideration has decided that it will not employ Delos F. Wilcox, consulting public utilities expert of New York, to make a survey of the local street railway situation.

Boston Men Seek Wage Conference

The wage committee of the Boston (Mass.) Elevated Railway car men's union recently addressed a communication to the executive officers of the company requesting a conference relative to a further increase in wages, on the ground that the increased cost of living necessitates steps toward meeting the present situation at least temporarily. The men and the company are now working under an agreement which does not expire until May 1, 1919. The committee stated that it is not the intention of the men to break the existing contract, but that wage increases are greatly desired. At a conference on the afternoon of Oct. 4 neither side evinced any disposition to depart from the terms of the agreement. Whether any further increases can be granted at this time, pending legislation relieving the company's financial status, is understood to be an open question. Well-informed opinion outside the company expreses considerable doubt as to the feasibility of an increase at this time.

Rockford Strike Settled.—The strike has been settled which caused a partial tie-up of city and interurban service on the Rockford & Interurban Railway, Rockford, Ill., during the week ended Sept. 29. The attempt of the Amalgamated Association to organize the property failed. All of the older employees of the company have returned to work. They are satisfied with the wages and working conditions. The local police made it known promptly that it would not tolerate any attempt at disorder.

Increase in Wages on New York State Railways.—The New York State Railways, Syracuse and Utica, has granted its trainmen an increase in wages of 1 cent an hour retroactive to Sept. 1. A provision in the agreement between the company and the men calling for an advance on May 1 next of 1 cent is thus anticipated. The advance gives the men on the city lines 27, 29 and 31 cents an hour, according to the length of service. For interurban work the men will now receive 33 cents and on the Oneida line 36½ cents.

New Offices for Rhode Island Company.—The Rhode Island Company's separation from the New Haven Railroad was further accentuated a few days ago when the executive and administrative offices were removed from the New Haven office building and established at 100 Fountain Street, Providence, R. I. The Palmer block, in which the headquarters of the electric railway are now established, was remodeled and extended for the new tenants, under contract. The company occupies the four top floors of the structure. All of its offices will now be under one roof.

New York Public Utilities and the Loan.—The full support of all the public utility corporations operating in the New York Federal Reserve District will be thrown into the second Liberty Loan campaign through a special committee, headed by George B. Cortelyou, president of the Consolidated Gas Company. Some of the national organizations which will assist in the campaign are the National Electric Light Association, the American Gas Institute, the Natural Gas Association, the National Commercial Gas Association and the American Electric Railway Association.

Syracuse Lines in New Offices.—As the result of an agreement between the newly-organized Rochester & Syracuse Electric Railway the offices and shops of the concern will soon be removed from the Lakeland plant to Newark. Previous to the receivership the offices of the old company were located in the Electric Terminal Building, Syracuse. Subsequent to the appointment of the receivers, some $11,000 or $12,000 was expended in fitting up new offices at Lakeland. These new offices will now be occupied exclusively by the Empire State Railroad, which is to comprise the Syracuse, Lake Shore & Northern and Auburn & Northern lines of the former Empire United Railways, Inc.

Providing for Coal Supply at Lexington.—A satisfactory solution of the difficulties of the Kentucky Traction & Terminal Company in obtaining sufficient supplies of coal for its power plant at Lexington, Ky., depends on the action of the fuel administration at Washington. Under consideration at this time is an enforced resumption of mining operations in the Southeastern Kentucky-Tennessee field, which has been closed since the early part of August on account of a strike. Supplies from that territory have failed the Lexington company. Some relief has been obtained from the Chesapeake & Ohio Railroad, which at the expense of consumers in the Lake territory, to which the bulk of its shipments are consigned, has been providing the company at Lexington with sufficient coal to keep operating.

Increase in Wages Sought in Trenton.—The trainmen in the employ of the Trenton & Mercer County Traction Corporation, Trenton, N. J., are seeking an increase in wages to a flat rate of 32 cents an hour. On July 1, 1916, the men signed an agreement for three years under which the rate of pay was fixed at 29 cents an hour. The men are bound by the agreement to live up to its terms, but say that conditions have become so difficult for them that unless the wage scale is revised it is more than likely that many of them will accept employment in other lines of industry where wages are higher than those that the men are now receiving in railway work. The national organizer for the men has informed the men that they must live up to the terms of their agreement with the company unless the company sees fit to grant an increase.

Another Paving Suit in Seattle.—The second suit to be brought by the city of Seattle, Wash., against the Puget Sound Traction, Light & Power Company to compel that company to pave between its tracks on certain lines was started on Sept. 28 in the King County Superior Court. The complaint was prepared by Hugh M. Caldwell, Corporation Counsel, and signed by Mayor Hiram C. Gill. The first suit was brought by the city on March 26, and late in June was dismissed by Judge Kenneth Mackintosh, who ruled that he could not pass on the case until the State Public Service Commission had acted on the petition of the Puget Sound Traction, Light & Power Company to be relieved of its franchise obligations, which include paving between its tracks, payment of two per cent of gross income, etc. The petition of the company for relief from these obligations has been in the hands of the Public Service Commission for nearly two years.

Program of Association Meeting

Central Electric Association

At a meeting of the executive committee of the Central Electric Railway Association held on Sept. 13, it was decided to cancel the November meeting of the association on account of war conditions. It is the intention of the executive committee to carry on its work as heretofore, giving the members the benefit of everything that is available.

Financial and Corporate

Annual Reports

Glasgow Corporation Tramways

The comparative income statement of the Glasgow (Scotland) Corporation Tramways for the years ended May 31, 1916 and 1917, follows:

	1917	1916
Traffic receipts	£1,245,507	£1,149,264
Sundry receipts	14,607	8,072
Total revenue	£1,260,114	£1,157,336
Traffic expenses	£395,736	£350,186
General expenses	137,816	144,297
Maintenance and repairs	143,758	133,659
Power expenses	67,231	64,346
Clydebank bridges	879	516
	£745,420	£693,004
European War	92,645	80,438
Total expenditure	£838,065	£773,442
Balance carried to net revenue account	£422,049	£383,894
Interest on investments	78,637	81,203
Total	£500,686	£465,097
Deductions	339,702	421,549
Surplus to common good	£160,984	£43,548

In the financial year ended May 31, 1917, the Glasgow Corporation Tramways broke all records. The surplus to be handed over to the common good, which is the sum remaining after the payment of all charges and reserves, and may be regarded as the net profit, amounted to no less than £160,984, as compared with £43,548 in the previous year.

This result was obtained in spite of the fact that the payments to dependents of the men on active service and supplementary allowances increased from £80,438 to £92,645. The traffic receipts showed the very large expansion of £96,243; but against this there was an increase in expenses of £64,623. A notable item in the accounts was the income tax, which rose from £39,853 to £64,622, an increase of £24,769. The deductions included £114,377 for the sinking fund, £34,049 for depreciation and £39,255 for the permanent way renewals fund.

The following are the traffic statistics for 1916-17: Average track mileage open (single), 196¼; car mileage, 25,786,047; increase, 822,738; traffic receipts per car-mile, 11.592d.; increase, 0.543d.; traffic receipts per passenger, 0.769d.; increase, 0.008d.; passengers, 388,294,876; increase, 25,923,412; passengers per car-mile, 15.059; increase, 0.543.

The Glasgow tramways department has in the last twenty years paid off out of revenue the capital cost of the undertaking. The tramways, with all their buildings and plant, stand in the books of the corporation at nothing, and their earning power remains as a substantial civic asset. Upon the strength of this asset the Glasgow corporation recently raised more than two millions from the Scotch banks and put them into the war loan, undertaking to pay off the debt within eight years.

American Public Utilities Company

The income statement of the subsidiaries of the American Public Utilities Company, Grand Rapids, Mich., for the twelve months ended June 30, 1917, follows:

Gross earnings from operation	$3,819,820
Operating expenses	2,151,001
Net earnings from operation	$1,668,819
Miscellaneous income	100,354
Gross income	$1,769,173
Expenses	80,764
Interest	1,217,471
Net income	$470,937
Dividend on preferred stock	255,897
Balance	$215,040

The gross earnings from operation showed an increase of 15 per cent in business during the last fiscal year. The net earnings increased 11.8 per cent in the same period. The company entered the current year with a larger earning power than ever before enjoyed.

The business of the subsidiary Wisconsin-Minnesota Light & Power Company, which operates the street railway system in Eau Claire and an interurban line out of this city, has more than doubled during the period of its control by the American Public Utilities Company. The earnings for 1917 were $1,532,347 as compared to $1,226,650 in 1916, a gain of $305,697 or about 25 per cent.

The unfavorable conditions in the territory of the subsidiary Jackson Light & Traction Company, Jackson, Miss., noted in the 1916 report, have changed for the better. The city has taken on a new activity, and there has been a substantial growth in gas, electric, power and railway business. The gross earnings in 1917 totaled $314,280 as compared to $288,043 in 1916, an increase of $26,237 or almost 10 per cent.

Showing of New York Lines for Quarter

Total Revenues Increase $1,110,091, but Net Corporate Income Decreases $899,837

Electric railway companies operating in the city of New York reported to the Public Service Commission for the First District for the quarter ended March 31 financial results as shown in the following table:

Total operating revenue	$25,682,603	Inc.	$1,110,991
Total operating expenses	14,869,316	Inc.	1,514,818
Net corporate income	2,186,798	Dec.	899,837

Operating revenues of the Brooklyn Rapid Transit companies for the quarter ended March 31 amounted to $7,117,038, an increase of $443,702; net corporate income $240,779, a decrease of $10,978. Manhattan surface roads, including the New York Railways, the Third Avenue Railway and other lines, operating revenue $4,899,838, a decrease of $395,922; deficit $404,095, a decrease of $726,990. Bronx surface roads, including the Yonkers and Westchester lines, operating revenue $1,206,692, an increase of $17,775; deficit $98,836, a decrease of $97,921. Queens surface roads, operating revenue $553,871, a decrease of $13,105; deficit $227,964, a decrease of $69,545. Hudson & Manhattan Railroad, operating revenue $1,121,896, an increase of $98,828; net corporate income $221,888, an increase of $31,256. Interborough Rapid Transit Company, operating revenue $10,553,367, an increase of $927,588; net corporate income $2,477,956, a decrease of $25,915.

Legal Bonds Certified in Massachusetts

The Massachusetts Public Service Commission has certified to the bank commissioner that saving banks may be permitted to invest in the bonds of the following electric railway companies:

Boston & Revere Street Railway, controlled by the Bay State Street Railway; East Middlesex Street Railway, also controlled by the Bay State Street Railway; Fitchburg & Leominster Street Railway, Holyoke Street Railway, Springfield Street Railway, Union Street Railway, West End Street Railway and Worcester Consolidated Street Railway.

Each of these companies has complied with the statute requiring that they pay without impairment of capital dividends of at least 5 per cent in each of the five preceding years.

The commissioners have also certified that banks may invest in the bonds of the Boston Elevated Railway and the Milford & Uxbridge Street Railway. These companies have omitted dividends in recent years, but previously had paid the required dividends for a period extending over at least five years.

Tax Commissioner Trefry has decided that the rate for the corporate franchise tax this year will be $19.47, an increase of 33 cents over last year's rate. The rate for this tax is determined by the tax commissioner by computing the average rate at which property is taxed locally throughout the commonwealth.

New Haven Favors Preferred Stock

The annual meeting of the stockholders of the New York, New Haven & Hartford Railroad will be held on Oct. 24. On the same date there will be held a special meeting at which the shareholders will be asked to authorize an issue of $45,000,000 of preferred stock. The plan to issue preferred stock has been approved by the board of directors and notices have been sent to the stockholders reviewing the affairs of the company at length. It is proposed from the proceeds of the issue of preferred stock to pay off $45,000,000 of floating debt represented by one-year notes maturing on April 1, 1918.

It is the belief of the board that some plan of financing other than the renewal of the notes must be adopted to eliminate the process of renewing the notes each year and to give the company sufficient time to sell securities now in its treasury, which will enable it to realize more satisfactory returns than any that could now be obtained in the war securities market.

In their letter reviewing the affairs of the company the directors refer to plans being made to ask the authorities for permission to charge 2¾ cents per mile for local tickets and 2½ cents per mile for mileage tickets, which increase if granted will mean about $3,000,000 of additional new revenue a year. It is explained that there is also a movement to increase fares on the electric railways controlled by the company and that if this increase is granted it will materially improve the value of the electric railways.

It is explained that more than $12,000,000 of floating debt has been paid off by the New Haven in the last four years and that during that time about $17,000,000 has been spent on improvements, betterments and equipment.

New Financing in September

According to compilations made by the *Journal of Commerce*, New York, borrowing by industrial and railroad corporations in September totaled $80,800,000, which compares with $186,000,000 for the month of August and $95,600,000 in September, 1916. The falling off in new financing has been due to the general disposition of banking and corporate interests to leave the investment market clear for the government loan. The total for bonds, stocks, and notes of industrial and railroad and public utility corporations issued in the nine months ended Sept. 30, 1917, is $1,348,707,000, compared with $1,712,826,000 for the corresponding period last year, or a decrease of $364,000,000.

Stock to Employees and Patrons

West Penn Railways Announces Plan Under Which Its Employees and Patrons May Share in the Company's Profits

The West Penn Railways, Pittsburgh, Pa., is offering its 6 per cent cumulative preferred stock to employees and patrons. A statement to its employees made by the company through the medium of the *West Penn Bulletin* follows in part:

"The West Penn System is a great property. It serves the greatest industrial district in the world, wherein business possibilities are almost limitless. Demand for its products—light, power and transportation—is steadily expanding and needs much new construction to keep pace with requirements of its customers. This is a situation that promises well for the securities of such properties, and West Penn Railway preferred stock, therefore, appears as the one security for employees of the system for the following reasons:

"1. The stock is safe and is recommended by conservative and experienced business men, long affiliated with successful and profitable enterprises.

"2. West Penn Railways preferred dividends have been paid regularly every quarter since February, 1906.

"3. The stock is listed on the Pittsburgh stock exchange and a ready market is usually obtainable.

"4. The stock is offered at $82 per share, which nets 7.32 per cent per annum on the money actually invested and at which price it promises probability of ultimately higher prices.

"5. Employees paying on the installment plan, after final payment, will receive a check representing the difference between interest charged and dividends credited, which, for the forty-month period, will be for more than $11 per share, thus bringing the actual cost of the stock down to about $71.

"6. Employees buying the stock are really 'betting upon themselves,' as they are largely responsible for the success of the company. If the stock is a good paying proposition for officers and directors it must be equally good for the employees, whatever their position.

"When a company pays its dividends without intermission during the severest financial and business depression the country has ever known and through other lean periods in eleven and one-half years, the record justifies the confidence that has been placed in the stock. Where can one obtain the same class of security which will net 7.32 per cent, free of Pennsylvania State tax and the normal federal income tax"?

Auburn & Syracuse Electric Railroad, Syracuse, N. Y.—The Auburn & Syracuse Electric Railroad has petitioned the New York Public Service Commission, Second District, for permission to issue, *nunc pro tunc*, $115,000 in first and refunding mortgage 5 per cent gold bonds, and for authority to issue $282,000 in first and refunding mortgage 5 per cent gold bonds.

Buffalo Southern Railway, Buffalo, N. Y.—The Buffalo Southern Railway, which has been in the hands of a receiver for four years, will be sold. Bondholders of the property have refused to improve the service and equipment and mortgage foreclosure proceedings will be started by John W. Ryan, attorney for Nathan A. Bundy, receiver. This decision was reached at a hearing before Public Service Commissioner Barhite in Buffalo. The commission recently directed the bondholders to make necessary improvements in service and equipment or dispose of the property. Some of the bondholders have pledged their securities to reorganize the road, but others oppose the plan. The Buffalo Southern Railway operates between the Buffalo city line at Seneca Street and Hamburg, Orchard Park, Ebenezer, Gardenville and other nearby towns. The Fidelity Trust Company, Buffalo, is trustee under a mortgage on the property for $2,000,000 under which $600,000 of bonds have been issued. In speaking on the prospects of disposing of the property, J. W. Ryan, attorney for the receiver, said that the Lancaster Light & Power Company, Lancaster, N. Y., has been negotiating for the property with the idea of extending the line to East Aurora, but that the sum offered by this company was less than that tendered by men who wanted to junk the line. The International Railway, Buffalo, N. Y., is also understood to have considered buying the property, but it is said that no agreement on price could be reached.

California Railway & Power Company, San Francisco, Cal.—At the annual meeting of the California Railway & Power Company the retiring directors were re-elected. Lyman T. Hammond of Bonbright & Company, New York, N. Y., was also elected a director, thus increasing the board membership to twelve.

Catskill (N. Y.) Traction Company.—The property of the Catskill Traction Company will be sold at public auction at Catskill on Oct. 23 by Referee Orliff T. Heath. The road is 5.5 miles long and runs from the Point Landing at the Hudson River to Leeds. The affairs of the company were referred to in the ELECTRIC RAILWAY JOURNAL of Sept. 22, page 550.

Cleveland (Ohio) Railway.—L. C. Hanna, Jr., member of the firm of M. A. Hanna & Company, has been elected a director of the Cleveland Railway to succeed Benedict Crowell, member of the Council of National Defense, who resigned to give all his time to the needs of the country.

Commonwealth Power, Railway & Light Company, Grand Rapids, Mich.—The Consumers' Power Company, a subsidiary of the Commonwealth Power, Railway & Light Company, has sold an additional block of $1,500,000 of two year

6 per cent secured gold notes due July 1, 1919, to Harris, Forbes & Company, Hodenpyl, Hardy & Company, E. W. Clarke & Company and Coffin & Burr, who are offering them at 98¾, yielding 6¾ per cent.

Fort Wayne & Northern Indiana Traction Company, Fort Wayne, Ind.—Official notice has been issued of the formation of a protective committee to represent the holders of the first consolidated mortgage bonds of the Fort Wayne & Wabash Valley Traction Company, assumed by the Fort Wayne & Northern Indiana Traction Company. The addition of three members to the committee as originally announced makes the personnel as follows: P. M. Chandler, chairman; E. W. Clark, Cyrus S. Gray, A. A. Jackson, John H. Mason, C. S. W. Packard, R. Lancaster Williams, with J. K. Trimble, secretary. The committee invites the deposit of bonds with the Commercial Trust Company, Philadelphia, Pa., or the Fidelity Title & Trust Company, Pittsburgh, Pa., by Nov. 15.

Jersey Central Traction Company, Keyport, N. J.—The Fidelity Trust Company, Newark, N. J., recently announced that all of the outstanding bonds of the Jersey Central Traction Company, dated Dec. 1, 1904, had been called for payment on Oct. 1.

Mansfield Public Service & Utility Company, Mansfield, Ohio.—The Mansfield *Shield* said recently: "After negotiations covering several months, the passing of the entire system of the Mansfield Public Service & Utility Company into the possession of Henry L. Doherty & Company, New York, N. Y., has been consummated. The adjustment of all differences with the stockholders of the utilities company have been completed, and the entire holdings have been transferred to the New York company."

Maryland Electric Railway, Annapolis, Md.—John P. Baer, of Hambleton & Company, Baltimore, Md., has been elected a director of the Maryland Electric Railway to succeed C. I. Iglehart.

Middle West Utilities Company, Chicago, Ill.—Halsey, Stuart & Company, Chicago, Ill., are offering on a 7 per cent basis an issue of $1,000,000 of three-year 6 per cent collateral gold notes, series "B," dated Sept. 1, 1917, of the Middle West Utilities Company. The notes are due Sept. 1, 1920, and are secured by deposit of interest-bearing securities in the aggregate principal amount of 120 per cent of all notes outstanding.

Providence & Fall River Street Railway, Swansea Center, Mass.—It is practically settled that the Providence & Fall River Street Railway, recently sold at auction to Karl Andren Company, Boston, Mass., will be taken over by a group of Swansea residents now forming, and that it will be continued in operation. The option which Swansea people had on the railway expired on Sept. 29, but it was renewed for one week and $81,000 of the $90,000 necessary to complete the transaction had been subscribed by Oct. 3. Mr. Andren bought the entire property at foreclosure for $68,000 about three weeks ago.

Orleans-Kenner Electric Railway, New Orleans, La.—There were no bidders when the Orleans-Kenner Electric Railway was offered for sale recently by William Defour, special master in bankruptcy, appointed by the federal court and acting under its authority. The upset price was $400,000.

Rochester Railway & Light Company, Rochester, N. Y.—The Rochester Railway & Light Company has increased its common stock by $750,000, which it is authorized to sell to the Mohawk Valley Company to fund the proposed merger with the Canandaigua Gas Light Company, the Dispatch Heat, Light & Power Company, the Eastern Monroe Electric Light & Gas Company and the Ontario Light & Traction Company. The Mohawk Valley Company owns a majority of the capital stock of the Rochester Company and is controlled, in turn, by the New York Central Railroad.

Tampa (Fla.) Electric Company.—The Tampa Electric Company, which controls the entire electric railway and the electric light and power service in Tampa, is offering $216,800 of new capital stock to its stockholders of record of Sept. 15, 1917, to the extent of one full share for each ten shares held. The stock is offered at par, $100 a share.

United Gas & Electric Corporation, New York, N. Y.—The United Gas & Electric Corporation has declared a dividend of 1 per cent on the first preferred stock, payable on Oct. 1 to stock of record of Sept. 22. This is a reduction of three-quarters of 1 per cent. The stock is 7 per cent cumulative. A statement issued by the directors says: "The full dividend was not declared in view of the uncertainty as to the full amount of the federal revenue taxes to be met and the abnormal conditions existing in the security markets. During the past year the increase in gross earnings of the subsidiary companies was more than $1,300,000, while during the same period the cost of coal, coke, oil and other materials, as well as of labor and local taxes, increased more than $1,100,000; and an additional amount of over $180,000 was charged for maintenance, renewals and replacements to the fund set up for this purpose for the preceding twelve months. In other words, the entire increase due to abnormal operating conditions was absorbed by the increase in gross earnings and a small increase shown in net." There is now 9 per cent in back dividends due on the first preferred stock. The item in the issue of Sept. 22, in regard to a 1 per cent common stock dividend, was based on current newspaper financial reports which proved to be incorrect.

Electric Railway Monthly Earnings

CAPE BRETON ELECTRIC COMPANY, LTD., SYDNEY, N. S.

Period	Operating Revenue	Operating Expenses	Operating Income	Fixed Charges	Net Income
1m., July, '17	$40,500	*$25,293	$15,207	$6,552	$8,655
1 " " '16	32,858	*19,171	13,687	6,559	7,128
12 " " '17	433,185	*259,179	174,006	78,734	95,272
12 " " '16	383,240	*224,907	158,333	78,568	79,765

CITIES SERVICE COMPANY, NEW YORK, N. Y.

1m., Aug., '17	$1,366,659	$30,809	$1,335,850	$226	$1,335,624
1 " " '16	628,823	24,501	604,322	720	603,602
12 " " '17	17,296,942	320,588	16,976,354	3 265	16 973,089
12 " " '16	7,149,948	219,437	6,930,511	421,003	6,509,508

EASTERN TEXAS ELECTRIC COMPANY, BEAUMONT, TEX.

1m., July, '17	$84,332	*$45,682	$38,650	$10,358	‡$30,025
1 " " '16	72,309	*38,992	33,317	8,762	24,554
12 " " '17	907,336	*491 431	415,905	111,611	‡310,991
12 " " '16	797,879	*418,704	379,175	106,119	273,056

EL PASO (TEX.) ELECTRIC COMPANY

1m., July, '17	$103,171	*$66,712	$36,459	$4,940	$31,519
1 " " '16	76,173	*74,148	2,025	4,892	†2,867
12 " " '17	1,243,515	*767 016	476,499	60,494	416,005
12 " " '16	1,045,317	*567,785	477,532	54,167	423,365

HUDSON & MANHATTAN RAILROAD, NEW YORK, N. Y.

1m., Aug., '17	$487,659	*$248,792	$238,867	$217,745	$21,122
1 " " '16	445,555	*206,622	238,933	215,051	23,882
2 " " '17	976,360	*485,177	491,183	435,098	56,084
2 " " '16	894,650	*410,393	484,257	429,349	54,908

JACKSONVILLE (FLA.) TRACTION COMPANY

1m., July, '17	$54,322	*$36,387	$17 935	$15,730	$2,205
1 " " '16	50,981	*35,285	15,696	15,408	288
12 " " '17	659,770	*442,501	217,269	187,078	30,191
12 " " '16	616,065	*420,410	195,655	180,084	15,571

LEHIGH VALLEY TRANSIT COMPANY, ALLENTOWN, PA.

1m., Aug., '17	$279,077	*$177,671	$101,406	$50,871	‡$62,535
1 " " '16	229,704	*135,043	94,661	51,269	‡53,692
12 " " '17	2,760,031	*1,833,032	926,999	624,152	‡454,919
12 " " '16	2,403,603	*1,443,429	960,174	628,488	‡461,134

PENSACOLA (FLA.) ELECTRIC COMPANY

1m., July, '17	$32,947	*$18,274	$14,673	$7,806	$6,867
1 " " '16	20,964	*12,076	8,888	7,712	1,176
12 " " '17	309,397	*178,785	130,612	93,102	37,510
12 " " '16	276,272	*153,426	122,846	89,311	33,535

PHILADELPHIA (PA.) RAPID TRANSIT COMPANY

1m., Aug., '17	$2,436,680	$1,404,966	$1,031,714	$812,440	$219,274
1 " " '16	2,149,836	1,223,473	926,363	815,011	111,352
2 " " '17	4,874,074	2,834,441	2,039,633	1,623,771	415,862
2 " " '16	4,364,765	2,444,948	1,919,817	1,630,279	289,538

REPUBLIC RAILWAY & LIGHT COMPANY,
YOUNGSTOWN, OHIO

1m., Aug., '17	$426,115	*$274,715	$151,400	$85,282	‡$73,167
1 " " '16	335,758	*183,147	152,431	69,033	‡85,930
12 " " '17	4,444,721	*2,847,949	1,596,772	939,530	‡701,590
12 " " '16	3,748,882	*2,190,485	1,558,397	778,986	‡794,180

TWIN CITY RAPID TRANSIT COMPANY,
MINNEAPOLIS, MINN.

1m., Aug., '17	$848,477	$572,426	$276,051	$162,411	$113,639
1 " " '16	849,966	525,187	324,779	144,734	180,045
8 " " '17	6,882,599	4,548,104	2,334,495	1,189,095	1,145,400
8 " " '16	6,740,241	4,187,967	2,552,274	1,143,167	1,409,107

UNITED LIGHT & RAILWAYS COMPANY,
GRAND RAPIDS, MICH.

12 m., Aug., '17	$2,016,845	*$164,112	$1,852,733	$655,943	$1,196,790
12 " " '16	1,850,434	*140,901	1,709,533	565,005	1,144,528

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*Includes taxes. ‡Includes non-operating income.

Traffic and Transportation

Six-Cent Fare in Effect in Connecticut

Connecticut Company Agrees to Refund in Event that Its Increase Is Not Sustained

The increase in unit fares from 5 cents to 6 cents on the lines of the Connecticut Company, operating 178 miles of electric railway in the principal cities of Connecticut, went into effect on Oct. 1. Announcement of the proposed increase was made on Sept. 20. Discussion of the matter was begun at once by city officials in the various municipalities and the advisability was considered of their acting in unison against the raise. Bridgeport was one of the first cities to consider the matter. There City Attorney Comley was instructed to make a study of the 6-cent fare matter and prepare to take whatever legal steps he regarded as most feasible. On Sept. 28 he asked Judge Curtis of the Superior Court for an *ex parte* hearing on a temporary injunction. Meanwhile L. S. Storrs, president of the Connecticut Company, appeared before a special committee of the Aldermen of New Haven at which the fare increase was discussed. Mr. Storrs reviewed the needs of the company and said that the directors were opposed to any postponement of the date of putting the increase into effect.

APPLICATION MADE FOR RESTRAINING ORDER

Formal application for an injunction was made to the Superior Court before Judge Curtis of Bridgeport on Sept. 28. The court was inclined to refuse an injunction unless the city would file a bond to protect the company in case the fare increase was found to be reasonable. City Attorney Comley doubted whether the city had the right to put up such a bond. Judge Curtis then announced that an order would be issued against the company unless it agreed to print on all the books of seventeen tickets for $1 that the excess of 15 cents for such tickets over the straight 5-cent fare would be refunded if the new rate was found to be excessive: The company promptly ordered such a refund note to be published and made it apply to all of its lines in the various cities throughout the State. The ruling of Judge Curtis follows in part:

"On Sept. 28 the parties appeared and were heard and now upon due consideration it appears and it is ordered that a temporary injunction ought to issue with a bond the sum of which is to be hereafter fixed by the court, until a final adjudication that the 6-cent fare is not unreasonable unless the Connecticut Company shall issue and sell on and after Oct. 1 at its local offices seventeen tickets for $1 in book form with cover to any person demanding the same with the following provision printed, stamped or written thereon, to wit:

"*Bridgeport Division.*—This cover good for refund of 15 cents at any office of this company in the event of a final adjudication that the 6-cent fare upon the division in which this book was sold is unreasonable and excessive, in which case no injunction shall issue."

STATEMENT BY COMPANY

The company issued a statement quoting from the decision. It concluded its announcement as follows:

"This order applies only to the Bridgeport division, but the company has decided to extend its application to all of its divisions. The order requires the company to sell these tickets at its local offices, but for the greater convenience of the public the tickets can be obtained from the starters and inspectors on the streets and an effort is now being made to have them on sale at local points throughout the territory, which points will be announced as soon as decided upon."

The traffic committee of the City Council of Bridgeport met on Oct. 1 to take up the question of protesting against the 6-cent fare and to consider the preparation of an appeal to the Public Utilities Commission. After a short discussion consideration of the matter was put over to another date not fixed.

Public Support Electric Railways

Threatened Curtailment or Suspension of Service May Be Averted Through Legislative Action in Massachusetts

The public hearings now being held by the street railway investigating commission, composed of members of the Senate and House of Representatives of the Massachusetts Legislature of 1917, have already developed the fact that the public in various communities is not only keenly alive to the seriousness of the electric railway situation, but is anxious to lend its support to any measure that will avert suspension of the service and tend to improve it.

At Fall River during the week ended Sept. 29 many prominent bankers, lawyers, manufacturers and representatives of merchants concurred in the belief that the person who makes the electric railway service possible by furnishing the money for the construction and maintenance of the utility is entitled to a fair return for the use of the money he loans. It was said that the railways must get relief, regardless of claims of mismanagement or anything else.

CLAIM OF MISMANAGEMENT REFUTED

As to claims of mismanagement, Frederick A. Fisher, president of the Lowell Institute of Savings, speaking before the Commission at Lawrence stated:

"Regarding the claim of poor management or mismanagement of electric railways, no one who is fair minded can attribute the present situation to such a cause. The very fact that all or nearly all public utility companies over the State are in a bad way is in itself a refutation of the claim of poor management. One or two corporations might be mismanaged, but it is absurd to think that all of them have been mismanaged.

"As for the 5-cent fare—it was an accident. If there had been a 6-cent piece instead of a nickel piece, the fare would have been 6 cents from the start. It was not necessary to charge more than 5 cents years ago. Perhaps it wasn't necessary to charge that much, but there isn't any doubt that 5 cents will not suffice to pay for a street car ride to-day. I hold that Americans believe in paying for what they get."

RURAL LINES ARE NECESSARY

In some instances at these public hearings the representatives of certain towns and cities have taken the stand that the electric railways operate at a profit within the city limits, and that it is not the concern of such cities that the suburban lines be maintained. This view, however, was shown to be narrow and undemocratic by Cornelius Mahoney, an attorney of North Andover, speaking before the commission at Lawrence. Mr. Mahoney said:

"The rural electric railway is the salvation of any city. Within almost a stone's throw of where I now stand there are tenements housing twenty-four families, terribly crowded, unsanitary, breeding places for tuberculosis. The rural electric railway makes it possible for some people to escape this sort of thing, and it is a shortsighted and narrow and unAmerican policy to think only of the interests of a few people in a limited area like the 7¼ square miles of Lawrence in discussing a situation of this sort."

City Solicitor Tracy of Taunton, speaking before the commission said:

"All interurban and suburban electric railways should be a unit whenever connected. The scrapping of the Snake Line (between Fall River and Providence) or the threatened scrapping of the Taunton and Pawtucket line should not be possible. The electric railway is the conveyance for the poor people, many of whom have established homes along rural non-paying lines. It is a matter of general public welfare that as many people live in the country as possible. Any situation which threatens to make it difficult for people to live in the country must be met with a big public spirit. Any measure that will keep people in the country and tend to get more people into the country deserves the support of every patriotic citizen."

Michael O'Brien, a labor leader in the city of Lawrence, surprised the members of the commission by stating that the working classes, when they understood the situation, were not opposed to increased fares. Mr. O'Brien stated:

"We workers are interested in the prosperity of employers and in corporations because we realize that prosperity can not come to them without coming to us also. No self-respecting workman wants to ride on an electric railway without paying a just return for the service. No workman wants something for nothing, because we workmen realize that the reverse is so often true, that people get nothing for something. The trouble is there are a lot of people who think they do not want an electric railway until the last car has gone."

Hearing on Philadelphia & Western Fares

The Public Service Commission of Pennsylvania held a hearing at Philadelphia on Sept. 28 to consider the protests against the increase in rates put into effect by the Philadelphia & Western Railway on July 5. The principal protestants were represented by counsel. Thomas A. Newhall, president of the company, was called to testify as to the financial condition of the railway. Another hearing will probably be held on Oct. 25.

Late on Sept. 28 the company issued the following statement in defense of its position:

"The railway company bases its application for an increase of fares largely on the tremendous increase in the cost of materials and labor required in its operation. Material prices have increased since 1915 from 40 to 400 per cent. Even if the increases are granted, the resulting increases in earnings will not add more than 10 per cent to the company's earnings."

In a letter sent out to the Norristown patrons of the Philadelphia & Western Railway the company, in justification of the increase in fare to Sixty-ninth Street, Philadelphia, from 25 cents to 30 cents, says that "it cost the company $4,845.53 more to give the same train service in the month of August, 1917, than it did in the month of August, 1916." The letter says further:

"The amount we collected in August over and above our old rates was just about sufficient to pay the increase in our coal bill alone, to say nothing of the additional cost of labor and other materials. We regret the necessity of making the increase in rates of which complaint has been made. We should have increased the rates six months ago, but waited, hoping that the conditions making the increases necessary would change for the better, instead of which they have steadily become more acute."

Liberty Loan Pay Envelopes

With a view to bringing the Second Liberty Loan to the attention of workingmen at the psychological moment, the publicity department of the Liberty Loan committee at New York has ordered 500,000 pay envelopes bearing a printed appeal for subscriptions to the loan. These envelopes will be distributed free to firms employing more than 500 men. For concerns which prefer to use the envelopes they have in stock, printed slips for insertion in pay envelopes have been prepared, and where this would be too great a demand on the clerical force, rubber stamps for printing a facsimile of the appeal on standard envelopes have been ordered.

Envelopes and inserts bear a medallion of the Statue of Liberty in red, while above is inscribed:

"There is a war!
We're in it!
Wars cost money!
We've got to pay for it!
'We' means Labor as well as Capital!"

Across the medallion is a brief statement of the purposes of the loan, its value as an investment and an appeal for the purchase of the bonds on the installment plan.

Khaki Uniforms for Trainmen.—The trainmen of the Lehigh Traction Company and the Wilkes-Barre & Hazleton Railway, Hazleton, Pa., will soon appear in khaki uniforms on account of the present high cost of the cloth used previously in the uniforms.

Vermont Company Seeks Fare Increase.—Application has been made to the Public Service Commission of Vermont by the Rutland Railway, Light & Power Company for permission to increase its fare unit from 5 cents to 6 cents, effective on Oct. 15. F. S. Nicholson, general manager of the company, states that the increase is made necessary by decreased revenue due to the added cost of both material and labor.

Pacific Electric to Operate Bus Service.—The Pacific Electric Railway, Los Angeles, Cal., has been authorized by the Railroad Commission of California to operate auto bus service between San Bernardino, Patton, Highland and intermediate points, San Bernardino County. The company has purchased the Highland Transportation Line and proposes to use three trailer type buses with a capacity of seventeen passengers each.

Fare Case Under Advisement.—An application of the Kansas City-Western Railway for a higher schedule of fares between Kansas City and Leavenworth and intermediate points was heard at Leavenworth on Sept. 18 by the Public Utilities Commission of Kansas. The proposed change will affect persons working in Kansas City who live along the interurban line and use commutation tickets. The matter was taken under advisement by the commission.

Commission Considers Bridgeton Fare Case.—The Board of Public Utility Commission of New Jersey has reserved decision on the application of the Bridgeton & Millville Traction Company to abolish its six-for-a-quarter tickets and those sold at the rate of fifty for $2. A hearing on the question was held recently at Camden, N. J. The company wanted the new schedule to become effective some time ago, but the board ruled that no alteration could be made until Nov. 6.

Hearing on Higher Fares Postponed.—Without taking definite action on the matter of increased fares as proposed by the Scranton Railway, the members' council of the Scranton Board of Trade has tabled the proposition until Oct. 24. The Public Service Commission of Pennsylvania has set Oct. 15 to hear protests against the proposed 6-cent schedule. Some weeks ago a special committee approved the increase. The report was referred to the board of directors, who passed it on to the members' council for definite action.

Increased Tariff Opposed as Excessive.—A. R. Myers, general manager of the Buffalo & Lake Erie Traction Company, Buffalo, N. Y., entered a denial recently at Erie, Pa., that it violated its franchises at Harborcreek, North East Township and North East Borough, by doubling its tariff, and also denied that the freight tariff had been raised. Robert J. Firman, retained as counsel for the district affected, announced that he proposed to conduct an investigation into conditions of the company to prove that the increase is illegal.

Hearing on Salt Lake Fares.—Hearings were held before the Public Utilities Commission of Utah on Sept. 19 and 20 on the petition of the Utah Light & Traction Company for permission to increase the fares between Salt Lake and suburban towns, to abandon the sale of fifty-trip books for $2 and to charge 1 cent extra for transfers. H. F. Dicke, general manager of the company, said that the mobilization of soldiers at Fort Douglas had increased the revenue of the company, but that the increase in operating expenses this year over those of last year had more than offset the increase in traffic.

Higher Fares for Reading Suburban Lines.—The Reading Transit & Light Company has filed with the Public Service Commission of Pennsylvania a new schedule for an increase of from 5 to 6 cents on the suburban lines of Reading, Norristown and Lebanon to go into effect on Nov. 1. There will be no increase within the city limits of the three towns and no curtailment of service. In speaking of the new schedules an official of the company stated that the increase has been applied only to the suburban lines where the cost of operation is proportionately greater than in the city while the revenue is proportionately less.

Bus Service by Railway.—The Glendale & Montrose Railway has filed an application with the Railroad Commission of California for authority to establish jitney service for passengers and packages between Eagle Rock and Pasadena, Los Angeles County. The line is to afford quick service between Glendale and Eagle Rock. The company proposes to charge $3 for a thirty-ride family book and $3.50 for a forty-six-ride school ticket for the calendar month, and to operate a ten-passenger Ford automobile every half hour from Eagle Rock from 6.30 a.m. to 10 p.m., and hourly from Pasadena from 7 a.m. to 11 p.m.

Unprofitable Service May Be Suspended.—In the case of the Lewisburg & Ronceverte Electric Railway, Lewisburg, W. Va., the Supreme Court of West Virginia on Sept. 18 decided that a public service corporation is under no obligation to continue its service longer than the public interests demand such service. The court held that whenever the returns were insufficient to pay the expenses of the service there ceased to be a public demand for it. Efforts had been made to compel the company to continue in operation between Lewisburg and Ronceverte in the face of the fact that the returns were less than the expenses.

Skip Stop Plan in Baltimore.—A hearing was held recently before the Public Service Commission of Maryland on protests to the skip stop plan which was inaugurated on two of the lines of the United Railways & Electric Company, Baltimore, last spring. While the plan was commended by many of the patrons of these lines, there was considerable opposition from persons at whose corners the cars did not stop. It has now been decided, with the sanction of the Public Service Commission, to try the staggered form of skip stop, which provides for the stopping of cars going in one direction at every corner skipped by cars going in the opposite direction.

Skip-Stop Plan Considered in Washington.—A hearing was recently held before the Public Utilities Commission of the District of Columbia on the proposal to inaugurate the skip-stop system on the Chevy Chase line of the Capital Traction Company between Rock Creek loop and Chevy Chase circle. Opinion favored the "staggered" or alternate system under which cars going in one direction would stop at every other corner and those traveling in the opposite direction would stop at the alternate corners. John H. Hanna, vice-president of the Capital Traction Company, stated that the plan, which is tentative, had been worked out at conferences of the officers of the company and representatives of two citizens' associations. The representatives of the citizens prepared the list of the streets proposed to be eliminated from the present schedule of stops.

Higher Rates in Chambersburg.—The Chambersburg & Shippensburg Railway, Chambersburg, Pa., proposes to increase its fare unit from 5 cents to 7 cents in its different fare zones. The new schedule of tariffs has been filed with the Public Service Commission of Pennsylvania. It affects express and baggage rates as well as passenger fares. The passenger fares proposed are all increases over the fares now in effect, with the exception of the one-way fare of 5 cents within the borough limits of Chambersburg. All other fares are on the basis of 7 cents per zone. In all instances the round-trip fares are double the one-way fares. Transfers will be issued to passengers within the borough limits of Chambersburg when transferring to the Chambersburg, Greencastle & Waynesboro Street Railway good for transportation within the borough limits only. The express, baggage and milk rates are increased about 5 cents per zone for the second, third and fourth zones.

Bus Proposed to Replace Non-Paying Line.—Ansel M. Easton has filed with the Railroad Commission of California an application for authority to abandon the Burlingame Railway, a single track line, 2 miles long, operating one storage battery car. The application states the railway has never paid the expense of operating it and has been a constant source of loss to the owner. Mr. Easton says if permitted to discontinue the railway he will take up the track and pave and repair the streets occupied by it to the satisfaction of the city. In another application filed with the commission Mr. Easton asks for authority to operate a 40-hp., fifteen-passenger Studebaker bus from Broadway Station, Burlingame, to Alvarado Avenue, in the Easton Addition, just outside the southwesterly limits of Burlingame. He proposes charging a 5-cent fare and making about fifteen round trips daily. This bus is to take the place of the railway he wishes to abandon.

Legal Notes

CHARTERS, FRANCHISES, ORDINANCES

FEDERAL COURTS.—*Service on Foreign Corporation Cannot Be Made on Mortgagee.*

The property of a foreign corporation cannot be said to have been transferred, metaphysically speaking, from the state of its incorporation to the State of New York, to be used as the basis of jurisdiction in the latter State in a suit upon the company's mortgage bonds, merely because the trustee under the mortgage was a New York corporation, in which the title to the mortgaged property for the purpose of the trust was vested. (Toledo (Ohio) Railways and Light Company v. Walter L. Hill and Ralph L. Spotts, 37 Supreme Court Rep., 591.)

NEW JERSEY.—*Commission Jurisdiction Over Fares—Effect of Fare Agreements on Leased Lines.*

The Public Utility Commission has jurisdiction under P. L. 1911, p. 380, art. 17h, to forbid street railways to put into effect proposed withdrawal of sale of six tickets for 25 cents, increasing rate to 5 cents. An ordinance as to street car fares, passed by agreement between city and company, is binding also as to lines of companies under long-term leases to party to agreement. (Trenton & Mercer County Traction Corp., v. Inhabitants of City of Trenton et al., 101 Atlantic Rep., 562.

LIABILITY FOR ACCIDENT

ILLINOIS.—*Accident from Baggage in the Aisle.*

Where a woman carrying a small baby was injured by a sudden jerk of a street car, causing her to stumble and fall over baggage in the aisle, she was not guilty of contributory negligence as a matter of law in not seeing such baggage, since she was boarding the car in the ordinary manner, and could not be expected to anticipate a sudden jerk of the car nor then be expected to control her movements. (Heineke v. Chicago Railways, 116 Northeastern Rep., 761.)

INDIANA.—*Limitations to the Rule of "Last Clear Chance."*

Instruction that, if plaintiff negligently exposed himself to injury, yet if defendant, after discovering the exposed situation, inflicted the injury on him through a failure to exercise ordinary care, plaintiff may recover is bad, in not excluding a recovery if plaintiff, by the exercise of ordinary care after defendant had discovered his peril, might have been able to extricate himself from the dangerous position to which he had negligently exposed himself, as in such case his failure to extricate himself would be negligence proximately causing his injury. (Union Traction Company of Indiana v. Elmore, 116 Northeastern Rep., 837.)

NEW YORK.—*Collision with Bracket Poles in Center of Street.*

Where a street railway changed from horse to electric power pursuant to Laws of 1884, Chap. 252, and the municipality did not designate the location of its poles, it could place them as it chose in the highway, but if it chose a position so dangerous that the choice was unreasonable, the company and the city were chargeable with liability for injuries resulting therefrom, the road being liable because the poles were a nuisance. In an action against the railway and others for injuries when an automobile collided with a pole in the center of the street, the question of whether this location, with the changes in the conditions of travel since the poles were installed, had become a menace to travel was held to be for the jury. (Stern v. International Railway et al., 115 Northeastern Rep., 759.)

WISCONSIN.—*Employment Held To Be Not Under Workmen's Compensation Act.*

Although an employee was required to be within call while off duty, injury sustained while procuring a money order for personal use was not suffered while engaged in "services growing out of and incidental to his employment," entitling him to relief under the workmen's compensation act. (Brienen v. Wisconsin Public Service Co., 163 Northwestern Rep., 182.)

Personal Mention

George W. Hark has resigned as general manager of the Reno (Nev.) Traction Company.

W. I. Saffell has resigned as general manager of the Kankakee & Urbana Traction Company, Urbana, Ill.

Allen Blanchard has resigned as master mechanic of the Boston & Worcester Street Railway at Framingham, Mass.

George E. Pellissier, consulting engineer, Springfield, has been appointed assistant general manager of the Holyoke (Mass.) Street Railway.

John F. Trumbull, chief engineer of the Public Utilities Commission of Connecticut, has been commissioned captain in the engineering corps, United States National Army.

M. S. Sloan, vice-president and general manager of the New Orleans Railway & Light Company, New Orleans, La., has resigned. No successor to Mr. Sloan has been announced.

J. R. Horton, heretofore employed as conductor on the Southern division of the Michigan Railway, has been made trainmaster of the Southern and Northern interurban divisions.

L. E. Custer, who has heretofore acted in the capacity of inspector of Jackson for the Michigan Railway, has been promoted to the position of superintendent of transportation of the Jackson city lines.

William H. Jennings, formerly chief lineman for the Indianapolis, Columbus & Southern Traction Company, Columbus, Ind., has succeeded N. S. Anderson as superintendent of way and structures.

A. G. Snell has resigned as superintendent of transportation of the Rockford (Ill.) City Traction Company. Mr. Snell was formerly with the Indianapolis Traction & Terminal Company for many years.

Dion Martinez of Philadelphia has been appointed assistant engineer in the department of city transit. Mr. Martinez will have charge of all engineering plans in connection with the new subway and elevated lines in Philadelphia.

J. M. Allen, assistant treasurer of the Middlesex & Boston Street Railway, Newtonville, Mass., has resigned, effective Oct. 15. Mr. Allen will assume a position with the Dennison Manufacturing Company at Framingham.

George Buttrick, formerly superintendent of overhead for the Bridgeport division of the Connecticut Company, has resigned to accept the position of superintendent of line construction with the Republic Railway & Light Company, Youngstown, Ohio.

Charles B. Hart, formerly head of new business in the light and power departments of the Fort Wayne & Northern Indiana Traction Company, Fort Wayne, Ind., has been appointed electrical engineer to succeed E. S. Meyers. Mr. Hart has been associated with the company for fifteen years.

A. G. Simcox has been named superintendent of the Rockford (Ill.) City Traction Company to succeed A. G. Snell, resigned. Mr. Simcox has been associated with traction interests in that locality for a number of years. Until recently he has been assistant superintendent of transportation of the Rockford City Traction Company.

M. C. McElligott, formerly superintendent of transportation of the railway system of the Mahoning & Shenango Railway & Light Company, Youngstown, Ohio, has been made superintendent of employment of all departments of the company. Mr. McElligott has been with that company for several years. He was previously inspector and division superintendent.

J. C. Rockwell, manager of the railway department of the Manila Electric Railroad & Light Company, Manila, P. I., is visiting the United States on a vacation, with Mrs. Rockwell and their son. Mr. Rockwell's headquarters while here will be at the offices of The J. G. White Management Corporation, New York City, which is operating manager of the Manila company.

Henry L. Doherty, president of the Doherty Operating Company, New York, N. Y., is the subject of a biographical sketch in the October number of the *American Magazine*. The article reviews Mr. Doherty's life from the time he was an obscure newsboy until he became a man of nationwide prominence. Many of his experiences are related and several quotations given to describe his character and personality, which are held largely responsible for his unusual success.

E. Irvine Rudd of Glenbrook, Conn., has been appointed engineer of the Public Utilities Commission of Connecticut during the absence of John F. Trumbull. Mr. Rudd was born in Cairo, Ill., in 1879. He was educated in Mississippi and at the Rensselaer Polytechnic Institute, Troy, N. Y. He has been engaged in railroad, electric railway and contracting work for about sixteen years, for the last four years as assistant engineer with the Central Railroad of New Jersey.

Wilford Phillips, general manager of the Winnipeg (Man.) Electric Railway, has resigned his active duties on account of failing health. He will continue to act in an advisory capacity. Mr. Phillips was formerly connected with the Niagara Gorge Railway. He has been with the Winnipeg Electric Railway for about seventeen years and to him is attributed very largely the growth of the company in all its branches. He had asked about a year ago to be relieved of the management of the railway on account of his health. Last February he received leave of absence and spent four months in California, returning much improved. Mr. Phillips will remain in Winnipeg for a few weeks after his successor, A. W. McLimont, assumes charge. He will then leave for the winter months.

E. S. Myers, formerly electrical engineer of the Fort Wayne & Northern Indiana Traction Company, Fort Wayne, Ind., as reported recently in the ELECTRIC RAILWAY JOURNAL, has been made general manager of the Vicksburg Light & Traction Company, Vicksburg, Miss. Mr. Myers was graduated from Purdue University in 1905. He was employed for two years in the testing department of the General Electric Company, Schenectady, N. Y., and was then transferred to the commercial engineering department in the factory. Later he entered the sales organization in the Chicago office of the company where he remained two years. His next connection was with the Fort Wayne & Northern Indiana Traction Company as electrical engineer in charge of the light and power department, including the power stations and substations and the lighting and power business in Fort Wayne and fourteen surrounding towns.

R. C. LEEPER

R. C. Leeper has been appointed general manager of the Reno (Nev.) Traction Company to succeed George W. Hark, who resigned. Mr. Leeper has been connected with the Reno Traction Company for about ten years. He spent the greater part of his early life in the harness and saddlery business. In the year 1897 he was elected constable of the city of Reno and remained in that office for six years, when he was appointed chief of police. In December, 1907, four years later, he resigned to become connected with the transportation department of the Reno Traction Company. He has been employed in the office of the company in various capacities since 1913, assisting in the management of the property, until his recent appointment to succeed Mr. Hark as general manager. Mr. Leeper's long connection with the company in so many different branches of its work, his intimate knowledge of the city and its needs through his long residence there and his previous service as an official of the city are all experiences that should help him materially in solving the problems with which he will be confronted in his new position of general manager.

Charles F. Hewitt, whose resignation as general manager of the United Traction Company, Albany, N. Y., took effect on Oct. 1, will take a short vacation and then expects to take another operating position, about which an announcement will be made later. Previous to his Albany connection Mr. Hewitt was vice-president and general manager of the Des Moines (Iowa) City Railway.

Joseph F. Porter, as noted recently in this paper, has been elected president of the Kansas City Light & Power Company, Kansas City, Mo. Mr. Porter's career dates from June, 1885, when he entered electrical work with the Des Moines (Iowa) Edison Company, which he served for six months. This was followed by service for the same length of time with the Appleton (Wis.) Edison Company and later by short connections with the Western Edison Light Company, Chicago, and the Abilene Water & Electric Light Company, Abilene, Kan. In 1887 he was employed by the Western Electric Construction Company, St. Louis, and later in the same year, when that company moved to Kansas City, he entered construction work for himself. Two years later he sold his business and entered the railway supply business with J. G. White & Company, New York. In 1893 he went to Alton, Ill., to assume the presidency of the Railway, Gas & Electric Company and other companies building and operating railway and other properties in that district. Under his direction the organization of practically all of the electric railway, lighting and gas properties in Alton and adjoining towns was effected. In 1906 he was elected president of the Tri-City Railway & Light Company, and subsidiaries, Davenport, Iowa, which he has operated until the present time.

Talmadge C. Cherry, who was recently elected vice-president and general manager of the Rochester & Syracuse Railroad, Inc., has been made a vice-president of Allen & Peck, Inc., electric railway managers and engineers. Mr. Cherry has been associated with that firm for a number of years. He was elected vice-president and general manager of the Auburn & Syracuse Electric Railroad, Syracuse, N. Y., in April, 1916. Upon the resignation of Ernest Gonzenbach as general manager of the Empire United Railways, Syracuse, under the co-receivers, C. Loomis Allen and Hendrick S. Holden, Mr. Cherry was made operating manager of the Empire United system. Recently the co-receivership was dissolved, Mr. Allen remaining as receiver of the Rochester, Syracuse & Eastern Railroad, and Mr. Holden taking the receivership of the Syracuse, Lake Shore & Northern Railroad, preceding the sale of the two properties separately. Since then Mr. Cherry has been general manager of the Rochester, Syracuse & Eastern Railroad, the Syracuse, Lake Shore & Northern Railroad passing into the operating management of Ford, Bacon & Davis under its separate reorganization plan. When the Rochester, Syracuse & Eastern recently was reorganized into the Rochester & Syracuse Railroad, Mr. Cherry was made vice-president and general manager. Mr. Cherry entered railway work as timekeeper on construction and track work and as rodman with the engineers of the Syracuse Rapid Transit Railway. Subsequently, in 1900, he became superintendent of construction of line and track for the Lorain (Ohio) Street Railway and was general manager of that road from 1901 to 1903. He has also been connected in managerial capacities with the Saginaw Valley Traction, Light & Gas Company, the Ohio Central Traction Company, the Buffalo & Lake Erie Traction Company, the Utica & Mohawk Valley Railway, the Schenectady (N. Y.) Railway and the Maryland Electric Railways. He has been active in the work of the New York Electric Railway Association, during his connection with roads in that State, and also of the American Electric Railway Transportation & Traffic Association.

T. C. CHERRY

A. W. McLimont has been appointed to succeed Wilford Phillips in charge of the active management of the Winnipeg (Man.) Electric Railway, effective Oct. 1. Mr. McLimont was vice-president and general manager of the Michigan United Railways, Jackson, Mich., from 1910 to 1912. In January, 1914, he was elected vice-president and general manager of the San Francisco-Oakland Terminal Railways, Oakland, Cal. In 1885 he was employed by the New England Telephone & Telegraph Company. He later became connected with the Thomson-Houston Electric Company, Boston, Mass., which he served until 1903. During that period he assisted in building, organizing and operating railway properties and installing electric light plants in the following cities: Dallas, Houston, St. Joseph, Cedar Rapids, Rockford, Springfield, Marquette, Nashville, Chicago and New Orleans. Subsequently he became general manager and resident engineer of the Dubuque Light & Traction Company, Dubuque, Iowa, and in 1905 resigned to supervise the construction of 70 miles of overhead work in New Orleans. Upon its completion he entered the foreign department of the General Electric Company and designed, built and operated two monocycle electric light and power plants in Costa Rica, Central America. He next supervised the construction of a long-distance transmission line and hydro-electric plant at Cordova, Argentina, after which he returned to the United States to take charge of the high-tension transmission line construction work for the Hudson River Power Transmission Company. His next work was building and operating electric light plants for the Guanajuato (Mexico) state government. This was followed by work in street railway electrification at Monterey, Mexico, after which he spent about two years in building and operating electric railways at Lima, Peru. Returning again to the United States Mr. McLimont became electrical and operating engineer of the Public Service Commission for the First District of New York. In March, 1909, he resigned to become general manager of the Chicago & Milwaukee Electric Railroad, Chicago, Ill., and the following year he was appointed vice-president and general manager of the Michigan United Railways. Mr. McLimont is a Canadian by birth.

A. W. MCLIMONT

Obituary

Royal Canfield Peabody, president of the Combustion Engineering Corporation, New York, N. Y., died recently.

James Sager, superintendent of track and line of the People's Railway, Dayton, Ohio, died recently from an attack of appendicitis.

Artemus S. Raymond, promoter of the first electric railway between Dedham and Forest Hills, Mass., which later became a part of the Bay State Street Railway system, died on Sept. 30 at East Dedham. Mr. Raymond was born in Pawtucket, R. I., seventy-five years ago. He was a founder and vice-president of the Hyde Park Trust Company.

William J. Wood, a member of the Public Service Commission of Indiana and formerly special examiner for the Interstate Commerce Commission, died at his home in Indianapolis on Oct. 3. Mr. Wood was appointed a member of the Railroad Commission of Indiana upon its creation in 1905. He was made chairman to succeed Union B. Hunt and was reappointed to the commission in 1909. Mr. Wood championed the safety-first movement on the railroads in Indiana and was instrumental in having the law modified to give the Railroad Commission power to require the installation of block signals. He was at one time vice-president of the Louisville & Nashville Railroad in charge of its legal department.

Construction News

Construction News Notes are classified under each heading alphabetically by States.

An asterisk (*) indicates a project not previously reported.

RECENT INCORPORATIONS

***Dallas (Tex.) Railway.**—Incorporated in Texas to own, maintain and operate electric railways in Dallas under the new franchise noted on page 635 of this issue. Capital stock, $100,000, being 1000 shares of a par value of $100 each. Incorporators: Charles W. Hobson, James C. Duke and Herbert M. Hughes, all of Dallas.

FRANCHISES

Montgomery, Ala.—To complete a link in the double-track electric railway service that is being planned by the Montgomery Light & Traction Company to and from Camp Sheridan, the City Commission of Montgomery has granted the company a franchise to remove its present switch at the intersection of Madison Avenue and Monroe Street to the corner of Madison Avenue and Ripley Street and to lay and maintain a track on North Ripley Street from Madison Avenue north to the city limits. The granting of this franchise affords a belt line to and from Camp Sheridan. The new track will be laid out on North Ripley Street and will parallel the present track from the intersection of Pollard and Ripley Streets.

Long Beach, Cal.—The Pacific Electric Railway has asked the Railroad Commission of California for permission to abandon its line between Twentieth Place and Miramer Avenue, Long Beach.

Peoria, Ill.—The City Council of Peoria has refused to grant the St. Louis, Springfield & Peoria Railroad, a subsidiary of the Illinois Traction System, new franchise rights on South Washington Street.

Rockford, Ill.—The Rockford City Traction Company has received permission from the City Council to extend its track on East State Street 110 ft. east from Rome Avenue to permit the laying of a Y on a lot purchased for this purpose.

West Brookfield, Mass.—The Worcester & Warren Street Railway has asked the Board of Selectmen for permission to make a physical connection between the tracks of the Worcester & Warren Street Railway and the Ware & Brookfield Street Railway in West Brookfield. This connection will make it possible for through service between Ware and Spencer.

Walkerville, Mich.—At a recent election in Walkerville a by-law was passed giving the Sandwich, Windsor & Amherstburg Street Railway a franchise to construct an extension on Ottawa Street from Walker Road to Lincoln Road.

Buffalo, N. Y.—The International Railway has been granted permission by the City Council to lay a loop track around the Soldiers' and Sailors' Monument in Lafayette Square. This change was advocated by Inspector Barnes of the Public Service Commission in its recent report on local traffic conditions. The loop will be used to relieve the congestion on Washington Street in the retail shopping district. Cars from several east side lines will be routed around the square instead of operating them down Washington Street to a switch. The Council has decided that the tracks will be used as a siding so it will not be necessary to submit the franchise to a vote at the next municipal election. Construction work will be begun at once.

Dayton, Ohio.—The City Railway has asked the Board of County Commissioners for permission to construct an extension of its Kammer Avenue division from Kammer Avenue west to Westwood, thence north to Hoover, thence two blocks to a terminus and a loop, which the railway proposes to construct on private property.

McAlester, Okla.—The Pittsburgh County Railway has made application to the City Commission for permits to construct passing switches on three car lines in that city.

TRACK AND ROADWAY

Los Angeles (Cal.) Railway Corporation.—The public utilities committee of the City Council of Los Angeles has recommended to the City Council the extension of the West Jefferson Street line of the Los Angeles Railway Corporation from its present terminus at Fourth Avenue to Ninth Avenue, and an extension of the South Park Avenue line from Slauson to Manchester Avenue.

Pacific Electric Railway, Los Angeles, Cal.—This company will contribute $7,000 towards the building of a new bridge across the Santiago Creek, the old structure having been pronounced unsafe.

Jacksonville (Fla.) Traction Company.—This company is considering the construction of an extension to the quartermaster's camp at Black Point.

Miami (Fla.) Traction Company.—This company is extending its track north along Biscayne Drive and within a short time will have its tracks laid to Buena Vista.

Galesburg & Kewanee Electric Railway, Kewanee, Ill.—This company is laying new steel rails on East Third Street, Kewanee, preparatory to paving.

***Pikeville, Ky.**—A company is being organized to construct an electric railway in Pikeville and a line between Pikeville and Williamson, W. Va. It is said that construction will begin about the first of the year. A. Stryck is interested.

Shelbyville & Frankfort Interurban Railroad, Shelbyville, Ky.—This company will construct five short bridges in connection with its proposed railway from Shelbyville to Frankfort. J. W. Gudgell, Shelbyville, secretary. [Aug. 4, '17.]

Detroit (Mich.) United Railway.—In connection with the double-tracking of the Detroit United Railway between Mount Clemens and Detroit, it was originally proposed to connect the Brady and Gosling switches. The Brady switch extends from a point nearly 2 miles south of Mount Clemens for approximately 1 mile. The Gosling switch, which is to be connected with Brady, is a distance of 0.63 mile south. The original plan has now been changed to include double-tracking between the Brady switch and the Clinton River, giving double track practically between Mount Clemens and Roseville. This is a material increase in the track extension plans and is one that should materially improve service on the line. In addition to this work the Linwood and Roseville switches will be connected and the Hooker switch will be extended.

Hannibal Railway & Electric Company, Hannibal, Mo.—It is reported that the Hannibal Railway & Electric Company will construct three extensions to its lines.

Kansas City (Mo.) Railways.—The board of control of the Kansas City Railways, after making an examination of the Ninth Street elevated track and a thorough survey of the reports of the engineers, decided the structure is safe and that the service will be continued. Minor repairs will be made immediately.

Brooklyn (N. Y.) Rapid Transit Company.—Operation has been begun by the Brooklyn Rapid Transit Company on its Metropolitan Avenue line from Middle Village to Jamaica.

New York Municipal Railway, Brooklyn, N. Y.—The Public Service Commission for the First District of New York has awarded a contract to I. J. Stander & Company, Inc., at $64,149, for the construction of Shaft No. 2 near First Avenue, Manhattan, in connection with the Queensboro Subway.

Public Service Railway, Newark, N. J.—The City Commission of Trenton has adopted an ordinance requesting the Public Service Railway and the Riverside Traction Company to relocate 125 poles along the Newark and Elizabeth branch along Liberty Street. Both companies are now maintaining poles on that thoroughfare and property owners object.

New York State Railways, Rochester, N. Y.—Plans are being made by the New York State Railways to reconstruct before winter tracks in Andrews Street from Front to Water Street; Jefferson Avenue, between Bronson Avenue and Cady Street, and in Main Street East, between Prince and Goodman Streets.

Youngstown & Niles Railway, Youngstown, Ohio.—Announcement has been made by the Mahoning & Shenango Railway & Light Company that work will be suspended on the construction of the Youngstown & Niles Railway, a subsidiary, owing to the financial conditions which have arisen as a consequence of the war. [Sept. 29, '17.]

Henryetta-Dewar-Kusa Traction Company, Henryetta, Okla.—Work will begin at once on this company's proposed line from Henryetta to Dewar and Kusa. A large part of the material has been ordered and much of it delivered, having been taken over from the defunct Henryetta Traction Company. Practically all of the ties to be used in the construction of the road are being made in Henryetta. J. J. Harrison will have charge of the survey work. [Sept. 8, '17.]

West Penn Railways, Pittsburgh, Pa.—It is reported that the West Penn Railways has purchased the Market Street bridge leading from Steubenville, Ohio, into West Virginia from the Steubenville Bridge Company at $500,000.

Chattanooga Railway & Light Company, Chattanooga, Tenn.—Operation has been begun by the Chattanooga Railway & Light Company on its new extension to Fort Oglethorpe.

Texas Electric Railway, Dallas, Tex.—Announcement has been made by the Texas Electric Railway that it would join with the Commissioners of Dallas County and the city government of Lancaster in paying for the paving on that portion of the Dallas-Waco Highway that lies within the city limits of Lancaster. This highway parallels the tracks of the Texas Electric Railway.

Northern Texas Traction Company, Fort Worth, Tex.—This company has completed its downtown loop, extending from Throckmorton and Seventh Streets on Throckmorton to Eighth, thence to Commerce, and up Commerce to Seventh and out Seventh. The Summit Avenue, Arlington Heights and Camp Bowie street cars use this loop, which was installed by the company to avoid congestion of traffic in the downtown section.

Galveston, Tex.—According to a supplemental contract which has just been entered into between the Larkin & Sangster Company and the Gulf, Colorado & Santa Fé Railroad, the Galveston, Henderson & Houston Railroad, the Galveston, Harrisburg & San Antonio Railroad and the Galveston-Houston Electric Railway, the steam railroads named are to bear 45 per cent of the cost of constructing the destroyed portions of the causeway which spans Galveston Bay, the Galveston-Houston Electric Railway 22 per cent and the county of Galveston the remaining 33 per cent. The total cost of the proposed work will be about $1,500,000.

Big Bend Transit Electric Railway, Spokane, Wash.—According to a report from Miles, the Big Bend Transit Electric Railway, which proposes to build an electric road from Spokane to Miles, on the Columbia River, is making active progress. The company proposes to construct a line from Spokane along the Spokane River, Long Lake, Little Falls, Old Fort Spokane and down to Miles. The company is engaged in taking over the grants and deeds for overflow lands on the former Spokane Indian reservation above the company power site at Old Fort Spokane. [April 10, '15.]

Tacoma (Wash.) Municipal Railway.—Shortage of timbers and lumber needed for the construction of the trestle over the Milwaukee Railway tracks will delay the opening of tideflats carline of the Tacoma Municipal Railway until the middle of October, or two weeks beyond the date originally set for the completion of the line. Laying of tracks across the hill beyond the trestle is proceeding rapidly. Erection of the poles to carry the trolley wire has been completed. That the Tacoma Railway & Power Company will make a strong bid for the contract to operate the tideflats line upon its completion was evidenced recently by the receipt of a letter addressed to the Council from Louis H. Bean, general manager, stating that the company would submit its terms at an early date. Mayor Fawcett and the commissioners agreed, when the line was first contemplated, to allow the Tacoma Railway & Power Company to enter a bid on the operation of the line, and if it was found that the private company could operate cheaper than the city, the bid would be given favorable consideration.

SHOPS AND BUILDINGS

Valdosta (Ga.) Street Railway.—Work has been begun by the Valdosta Street Railway on the construction of a new carhouse at West and Floyd Streets. The new building will be of ample size to house the rolling stock of the company and make such repairs as are necessary.

Fort Wayne & Decatur Traction Company, Decatur, Ind.—This company is building a new station at Jackson and Second Streets, Decatur.

Kansas City, Mo.—For a second time Mayor Edwards of Kansas City has vetoed the ordinance passed by both houses of the City Council locating the proposed union station for the use of the interurban railways at Tenth and McGee Streets.

New York Municipal Railway, Brooklyn, N. Y.—The Public Service Commission for the First District of New York has awarded a contract to the P. J. Carlin Construction Company, New York, the lowest bidder, for the construction of station finish for Sections 1 and 2 on the Culver line in Brooklyn. The amount of the contract was $731,124.

Cleveland (Ohio) Railway.—The street railway committee of the City Council has approved the purchase by the Cleveland Railway of twelve acres of land at Lorain Avenue and West 117th Street, on which a new carhouse is to be erected. It is expected that a crosstown line will be built near there and the new carhouse and yards will thus take care of two lines. The cost of the land was $22,500.

Reading Transit & Light Company, Reading, Pa.—Plans are being considered by this company for the construction of a new station in Boyertown.

POWER HOUSES AND SUBSTATIONS

Augusta & Aiken Railway, Augusta, Ga.—This company will construct a new electric transmission line through Druid Park Avenue to connect its lines at Summerville and Monte Sano.

Bay State Street Railway, Boston, Mass.—This company has received a new turbo-generator which will be installed by it in an addition which has recently been completed to the Quincy power house. It is expected to have the unit in operation about Nov. 1, at which time the Bay State Street Railway expects to furnish about 3000 hp. to the Fore River Ship Building Corporation, to be used in building government war vessels, the Legislature having given the Bay State Street Railway a special permit to furnish this power during the construction of these vessels.

Point Pleasant (N. J.) Traction Company.—This company reports that it expects to place a contract during the next few weeks for one new 100-hp. motor generator set.

International Railway, Buffalo, N. Y.—Plans have been filed by the International Railway for the erection of a new substation at 285 Military Road, to cost about $7,000.

Interborough Rapid Transit Company, New York, N. Y.—The property at 2633 Jerome Avenue, about 100 ft. x 113 ft., has been acquired by the Interborough Rapid Transit Company, at a price of about $26,000, for the erection of a new transformer station.

Southern Public Utilities Company, Charlotte, N. C.—The City Commissioners of Reidsville have accepted the $30,000 offer of the Southern Public Utilities Company for the Reidsville electric light and power plant and ordered an election to be held in October to permit the people to vote on the proposition.

Pittsburgh (Pa.) Railways.—This company plans to construct a new sub-station at Island Avenue and Boquet Street, McKee's Rocks.

Virginia Railway & Power Company, Richmond, Va.—Plans are being made by the Virginia Railway & Power Company to construct a one-story brick and concrete substation, to cost about $2,500.

Appalachian Power Company, Bluefield, W. Va.—A contract has been awarded by the Appalachian Power Company to C. W. Hancock & Son, Lynchburg, Va., for the construction of a new electric generating station on the New River, to cost about $900,000. The plant will be steam-driven and will have a capacity of 100,000 kw.

Manufactures and Markets

Discussions of Market and Trade Conditions for the Manufacturer, Salesman and Purchasing Agent

Rolling Stock Purchases Market Quotations Business Announcements

Railway Trade Conditions in New England

Largest Activity Found in Products Designed to Give More Service at Less Cost—Situation Generally Encouraging

To a large extent, country-wide conditions are reflected in the New England street railway field as this month opens. Directly and indirectly, the influence of the war is paramount. Lines in urban and manufacturing districts are handling a heavy traffic, but net earnings are far from satisfactory, with very few exceptions indeed. So far as materials and supplies are concerned, the opinion is widely held, both in manufacturing and operating circles, that the top has been reached in prices. Government fixing of copper, steel and iron prices, it is thought, will stabilize markets in the long pull, although at present the purchaser finds little opportunity to obtain products at anything like substantial reductions from prevailing high levels. The prediction has been voiced, however, that in the near future some of the jobbers will shade existing prices in order to anticipate the effect of the government price reduction program, and it is felt that this action may lead to more advantageous charges on steel, from the purchaser's viewpoint.

Deliveries show little improvement. Stationary motors of small size, say 25 hp. or below, can be obtained in many cases on fair shipment dates, but railway motors are far behind on deliveries. In the wire and cable field, Government work is absorbing certainly half the output of local plants. The amount of new construction work at present under way on New England traction lines is negligible and the financial situation is unfavorable to the strengthening of distribution circuits except in cases where strict necessity determines such a policy. Labor-saving devices are being sought, especially where the initial cost is moderate.

In the car manufacturing field, two recent developments are of interest. The Wason plant of the Brill company, at Brightwood, Mass., is about to give attention to the manufacture of aeroplanes. It is learned on excellent authority, but not officially confirmed, that the Osgood-Bradley Car Company of Worcester, Mass., has received an order to manufacture a million dollars' worth of gun carriages. In response to an inquiry by this journal, it was learned that the regular business of the company will in any event be continued and that the plant will not be taken over by the government.

Manufacturers and dealers supplying street railway repair shops are at present indirectly affected, at least, by the difficulties such operating companies are experiencing in procuring and retaining skilled labor for maintenance work. The attractions of war service, especially in connection with the naval construction program and with the corresponding intensified building of merchant vessels. Wages at both government and private shipyards are very high, and the large amount of overtime now required is an additional incentive to employment, despite the increased wage scale of the larger street railways. The platform labor supply appears to be fairly adequate, although the draft has taken away many men of suitable qualifications for this work, and in southern New England, at least, a real scarcity of platform labor is turning the thoughts of electric railway managers to the question of using women conductors. So far as can be learned, only one important road in New England, the Boston & Worcester Street Railway, is at present engaged in wages arbitration proceedings. At this writing, too, relations with organized labor are in general better than for some time.

The coal situation at present leaves much to be desired. Withdrawal of bottoms from the coastal trade is throwing serious and anxious burdens upon power plant owners all over eastern New England. Most companies appear fairly well supplied with coal for immediate requirements, but for many the future holds disquieting uncertainties. The opinion is advanced that if the neutral vessels at present held up by the embargo on exports of dubious destination can be utilized in the coal-carrying trade, the situation will be immensely relieved. Companies in central New England which are purchasers of hydroelectric energy are in a relatively fortunate position with respect to the fuel situation. The demand for such energy is at present tremendous, and the two largest companies of mid-New England, the New England Power Company and the Turners Falls Power & Electric Company, are doing everything possible to add to their generating facilities to meet the increased business which is now being offered to them from railway and industrial sources.

Manufacturers of electric railway specialties appear to be unusually busy, so far as products are concerned which may be keyed under the terms "More Service at Less Cost." A factory producing case-hardened material for miscellaneous service reports that it is four months behind on orders; and a district agency handling fibrous insulating material in place of slate or marble points to an enormous demand for its products, the government being a very heavy purchaser. The ease with which such material can be machined and its lightness in handling are unquestionably a factor in its fitness for street railway service under present conditions. Special trackwork is difficult to obtain on satisfactory deliveries, the shortage of material here representing a real burden to the manufacturer. In the chilled wheel field, production conditions are improving due to the return of labor to the wheel foundries after the usual summer reduction. Deliveries are accordingly better in this branch. Wheel interests in close touch with the electric railways report that credits are fairly good at present.

Some encouragement can be found in the fare situation on New England street railways, and in Massachusetts various plans for securing more adequate revenue are being given a trial. A hopeful sign is the willingness of the public in many cases to concede higher rates in preference to further curtailment or abandonment of service under private ownership. The needs of the companies are being forced upon the public by the war conditions, and a great opportunity is accordingly present and in part being utilized in this section to give the electric railway situation effective publicity.

Active Second-Hand Market

Demand for Electrical Equipment Greater than Ever—Delay in Delivery of New Apparatus Holds Up Release of Used Material

Conditions in the second-hand market are fully as good as six months ago. The failure, or rather the delay, in delivering new goods is strongly affecting tne movement of second-hand apparatus. That is to say, quite a lot of machinery of the latter description has already been bought, but cannot be released or displaced until equipment is ordered and installed

Prices cannot be altogether stable, as they must be adjusted to meet varying conditions and circumstances. The owners of apparatus are fully alive to market needs, and there is a steady, if not insistent, demand for everything available, and of all sizes, power and capacity. As second-hand dealers usually buy on a cash basis, payments in resale transactions are subject to the same terms, hence collections are satisfactory.

One drawback, complained of generally, is probably inherent to the business. When an inquiry for second-hand apparatus is afloat, in some manner or other after thirty or more persons seem somehow involved in the proceedings. The regular houses are pestered with applications from known and unknown sources. The belief that the number of inquiries represents an equal number of individual orders is at times misleading. As a matter of fact, only one concern is in the market, and others are purely supposititious.

Generators furnish a good example of the situation in most lines of electrical equipment. The demand for them has been stimulated and maintained by the corresponding scarcity in new goods, deliveries just now being made for orders placed at the first of the year.

Supply parts are also far behind in delivery arrangements, and the immediate future is disclosing no daylight in this respect. The government or official buying price on copper is not affecting the sale of finished goods. A recent purchase of ribbon wire—bare copper—was made at 50 cents a pound, and the buyer was quite pleased to have it placed at his disposal at this quotation. The second-hand trade is not figuring on any cut in price for specialties or supplies in which copper is a component part.

Government Curtails Sheet Steel Deliveries

Shortage of Steel Necessitates Certain Manufacturers Resorting to Wooden Cars Excepting on Light-Weight Types

During the spring—or in April to be exact—the federal government, under a statute enacted by the existing Congress, requisitioned all the sheet-steel rolling plants of the country for various purposes, but particularly to roll tin plate to meet the demand for food containers required in enormous quantities by the military service. Manufacturers of all kinds who employ sheet, especially in a large way, were thereupon notified that the supply in the future would be curtailed at least 20 per cent for an indefinite period and that they should govern their operations accordingly. Considering the stocks in hand, the shortage was not immediately felt, but now the curtailment is very much in evidence. Car builders and electrical manufacturers were particularly hard hit by this action.

The leading manufacturers were not long in taking action, and buyers of machinery and all equipment of which sheet steel was an important constituent were notified that their requirements would be proportionately reduced. The output of sheet steel has since been distributed from the mills under governmental regulations and supervision. What remains after official needs are satisfied is distributed on an allotment basis. The mills accepted all orders as usual, but deliveries cannot and will not be guaranteed; hence manufacturers of finished products are in turn obliged to adopt the same tactics toward their respective customers.

In some instances the curtailment of the sheet-steel supply exceeds 20 per cent, ranging from 25 to even 50 per cent in some descriptions of apparatus, as the government decides. This is especially true of transformers. There is neither appeal nor recourse, and no attempt is made to mitigate the rigor of the federal order. Public service customers as well as private ones have accepted the restriction in like spirit. The apportionment has not proved vexatious or embarrassing as yet, but the buying trade is not infrequently "up in the air" when making estimates for large units. The manufacturers are equally perplexed when the question of deliveries is reached. The shipments of sheet steel from the mills vary so greatly or are strung along in such a manner that by the time notification is given that the last lot is ready or on the cars an indifference as to its receipt in connection with some particular order is plainly apparent. In deference to this state of mind, as expressed by one of the leading apparatus makers, the order may as well be canceled.

Owing to the fact that the government is commandeering practically all the heavy gage sheet steel and the heavier sections of structural material for shipbuilding purposes, certain of the car builders are now forced to quote exclusively on wooden cars when the heavier types are demanded.

Fortunately, builders generally of the light-weight, one-man car in their far-sighted anticipation of an increasing demand for this type of equipment placed large orders for the lighter sections and sheets required for their manufacture. They now, so far as could be learned, have sufficient stocks of these materials on hand and have enough on order to dispel apprehension as to the immediate future.

For the heavier cars, however, stocks in car builder's yards, it developed on inquiry among manufacturers, are practically exhausted and to get the material on orders placed at this time it is stated is almost without exception out of the question.

Of the light-weight, one-man cars, between 600 and 700 are understood now to be under construction. Practically all of these are being built against orders already placed. The materials on hand and ordered, it is reported, are sufficient for the production of a similar number of cars of this type, at least.

Crossing Signal Business Looking Up

Increasing Volume of Traffic with Attendant Accidents Propelling Roads Into Market for Additional Protection

While conditions in the market for various types of automatic crossing signals have been rather quiet for some time, there seems to be a general feeling over the country indicative of favorable business prospects for the coming months. As the amount of traffic is increasing upon the railways, generally, there is also an increased number of crossing accidents. The railroads are naturally very anxious to avoid this destruction of life and property and also to do everything in their power to reduce their liability in damage suits. The automatic crossing signal is recognized as offering a substantial aid in this direction, and there are evidences of plans for purchase of additional crossing protection during the next few months.

NEW YORK METAL MARKET PRICES

	Sept. 26	Oct. 3
Prime Lake, cents per lb.	23½	23½
Electrolytic, cents per lb.	23½	23½
Copper wire base, cents per lb.	36	35
Lead cents per lb.	8	8
Nickel, cents per lb.	50	50
Spelter, cents per lb.	8½	8⅜
Tin, Straits, cents per lb.	62	60½
Aluminum, 98 to 99 per cent, cents per lb.	41½	39

OLD METAL PRICES—NEW YORK

	Sept. 26	Oct. 3
Heavy copper, cents per lb.	23¼	23½
Light copper, cents per lb.	20½	20½
Red brass, cents per lb.	19	19
Yellow brass, cents per lb.	16¼	16¼
Lead, heavy, cents per lb.	7	7
Zinc, cents per lb.	6	6
Steel car axles, Chicago, per net ton	$42.00	$41.00
Old car wheels, Chicago, per gross ton	$31.00	$25.00
Steel rails (scrap), Chicago, per gross ton	$35.00	$30.00
Steel rails (relaying), Chicago, per gross ton	$55.00	$55.00
Machine shop turnings, Chicago, per net ton	$17.00	$16.00

RAILWAY MATERIALS

	Sept. 26	Oct. 3
Rubber-covered wire base, New York, cents per lb.	36	35
Rails, heavy, Bessemer, Pittsburgh	$38.00	$38.00
Rails, heavy, O. H. Pittsburgh per gross ton	$40.00	$40.00
Wire nails, Pittsburgh, per 100 lb.	$4.00	$4.00
Railroad spikes, 9/16 in., Pittsburgh, per 100 lb.	$7.00	$7.00
Steel bars, Pittsburgh, per 100 lb.	$4.50	$4.50
Sheet iron, black (24 gage), Pittsburgh, per 100 lb.	$8.85	$8.85
Sheet iron, galvanized (24 gage), Pittsburgh, per 100 lb.	$9.55	$9.55
Galvanized barbed wire, Pittsburgh, cents per lb.	4.85	4.85
Galvanized wire, ordinary, Pittsburgh, cents per lb.	4.65	4.65
Cement (carload lots), New York, per bbl.	$2.22	$2.22
Cement (carload lots), Chicago, per bbl.	$2.31	$2.31
Cement (carload lots), Seattle, per bbl.	$2.65	$2.65
Linseed oil (raw, 5 bbl. lots), New York, per gal.	$1.20	$1.22
Linseed oil (boiled, 5 bbl. lots), New York, per gal.	$1.21	$1.23
White lead (100 lb. keg), New York, cents per gal.	11	11
Turpentine (bbl. lots), New York, cents per gal.	44	47

ROLLING STOCK

Portland, Thomaston & Camden Street Railway, Rockland, Me., will purchase a snow plow.

Pittsburgh County Railway, McAlester, Okla., has placed an order for several pay-as-you-enter cars.

Point Pleasant (N. J.) Traction Company is in the market for one light-weight single-truck open car.

Harrisburg (Pa.) Railways has ordered from The J. G. Brill Company five double-truck semi-convertible cars, to be mounted on 27-in. M.C.B. trucks. The cars are for March, 1918, delivery, and are duplicates of cars now being operated by the Harrisburg company and built by The J. G. Brill Company.

Brooklyn (N. Y.) Rapid Transit System has sent out specifications for bids to be opened on Oct. 15, for 250 center-entrance motor or trail cars of steel or semi-steel and of dimensions, design and equipment substantially the same as the 101 center-entrance motor cars now in service. Bids are also called for to cover the complete installation of all operating equipment on each of the types bid upon. Two 40-hp. motors are specified in the case of motor cars with control of multiple-unit type or modified K. Couplers, draft, gear, etc., are specified to permit train operation. The pneumatically-operated door mechanisms are to be controlled through electro-pneumatic push buttons and are to be so interlocked with the control circuit that a car cannot start until the doors are closed nor the doors opened until the car has come to a full stop. The lighting fixtures may be similar to those in the New York Municipal cars instead of using bare lamps.

TRADE NOTES

Poole Engineering & Machine Company, Baltimore, Md., has recently opened branch offices in Minneapolis, Minn., and Pittsburgh, Pa. The Minneapolis office is at 716 McKnight Building, in charge of R. L. Lunt, and the Pittsburgh office at 433 Union Arcade, in charge of J. P. Flippen.

Holden & White, Inc., Chicago, have received an order from the Inter Urban Railway, Des Moines, Iowa, for thirteen Wasson air-retrieving trolley bases. These bases are for a complete equipment of the cars. An order has also been received by this company from the Chicago, North Shore & Milwaukee Railroad for twenty-two car equipments of Reliance air sanders.

Multi-Refillable Fuse Company, Chicago, has opened a branch office at 120 Liberty Street, New York City, with James W. Morey in charge as Eastern sales manager. A liberal stock of both refillable and non-refillable fuses will be carried at this branch. Mr. Morey has been actively engaged in the electrical supply business for the last ten or twelve years and is widely acquainted in the Eastern territory.

American Car & Foundry Company is now removing its purchasing and auditing departments from St. Louis, Mo., to New York City, where they will be located in the Hudson Terminal Building, 30 Church Street. Location in the Hudson Terminal Building is made necessary by lack of room in the Investment City Building, 165 Broadway, where the chief executive offices are quartered. The company will not be ready for business at its new address before Nov. 1. This will leave in St. Louis only the operating department, under the management of J. M. Buick, vice-president.

John E. Woods, formerly manager of sales of the Carnegie Steel Company, Illinois Steel Company and the Tennessee Coal, Iron & Railroad Company, Cincinnati, Ohio, has been appointed assistant general manager of sales with offices in the Carnegie Building, Pittsburgh, Pa., in succession to John W. Dix, who died on April 28. The appointment was effective Sept. 15. The advertising and statistical work of the Carnegie Steel Company has, however, been separated from the sales work proper, and, effective Oct. 1, R. B. Woodworth was appointed advertising manager and sales statistician.

Sanford Riley Stoker Company, Ltd., Worcester, Mass., has arranged for additional manufacturing facilities in Detroit, Mich., at the plant of the Murphy Iron Works. No change in the management or policy of the latter will be made, but they will continue the manufacture of the Murphy automatic furnace, increasing their facilities as required for the production of Riley stokers. R. Sanford Riley of Worcester has been elected president of the Murphy Works. The B. F. Sturtevant Company of Hyde Park, Mass., will continue to manufacture and act as selling agents for the Sanford Riley Stoker Company.

Worthington Pump & Machinery Corporation, New York, N. Y., announces the opening of a new branch sales office in the American Trust and Savings Bank Building, Birmingham, Ala., to take care of a portion of the very large territory hitherto controlled by the Atlanta office. Edward Stauverman, formerly with the Atlanta office, will be in charge of the Birmingham office as manager. The territory controlled by the Birmingham office will be most of Alabama and Florida and part of Georgia. North and South Carolina and that portion of Georgia north of the Seaboard Air Line will continue to be served by the Atlanta office under the management of A. W. Jones.

Union Carbide & Carbon Corporation, New York, N. Y., organized in New York, with 3,000,000 shares of no nominal par value, will acquire the following companies: Union Carbide Company, National Carbon Company, Inc., Prest-O-Lite Company, Inc., and Linde Air Products Company. Myron T. Herrick will be chairman of the board of directors and George O. Knapp president. In addition to these two, the board of directors will consist of C. K. G. Billings, Charles A. Coffin, Jesse J. Ricks, Andrew Squire, Nicholas F. Brady, G. W. Davison, Conrad Hubert, James Parmelee, Roger C. Sullivan, F. C. Walcott and James N. Wallace. Other officers will be Edgar F. Price, Giles W. Mead, M. J. Carney and J. S. Crider, vice-presidents; H. E. Hackenbery, secretary, and Giles W. Mead, treasurer. In the exchange of securities Union Carbide Company stockholders will receive two and one-half new shares for each present share. Prest-O-Lite Company stockholders will be given two shares of new stock for each old share. Linde Air Products Company holders will have three and one-quarter new shares for each existing share. Stockholders are asked to send stock for exchange to the Central Trust Company, New York, up to Oct. 31. The Air Reduction Company, which it had been reported would be part of the combination, was not mentioned in the announcements issued this week.

NEW ADVERTISING LITERATURE

Link Belt Company, Chicago, Ill.: Book No. 342, describing "Casings for Link-Belt Silent Chain Drive," has been mailed the trade.

Du Pont Company, Wilmington, Del.: A "Handbook of Explosives" containing full instructions as to "how" to handle and use explosives.

"Automatic" Sprinkler Company of America, New York, N. Y.: A booklet entitled "The Present Safety," which goes into the method of fire control.

Walter A. Zelnicker Supply Company, St. Louis, Mo.: Bulletin No. 220, now ready for the trade, furnishes a revised list of the lines of apparatus, machinery, supplies, etc., in which they specialize.

Reliance Electric and Engineering Company, Cleveland, Ohio: Bulletin 1014 describing the Reliance adjustable speed motors, armature shifting design for direct current. The principles of operation and mechanical construction are treated in detail.

American Abrasive Metals Company, New York, N. Y.: Reprint of "The Common Cause and Prevention of Industrial Casualty," an address recently delivered before the American Society of Safety Engineers by H. W. Mowery. The subject is adequately discussed from essential angles.

Westinghouse, Church, Kerr & Company, New York, N. Y.: "Teeing Up with a Suction Bridge" is a color-illustrated folder, describing the converting of a stretch of marsh land at Long Beach, L. I., N. Y., into an eighteen-hole golf links, protecting it from the inroads of the ocean. The work was done by the Westinghouse company as engineers for the Lido Corporation. The accomplishment of the proposition is in purpose one of the most unique things ever done by the company.

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High Spots in the Conference Discussion

TUESDAY'S conference of the American Electric Railway Association in New York will produce an immediate and far-reaching effect if the many excellent suggestions made by the speakers are carried out. The papers and discussion are given at length in this issue of the ELECTRIC RAILWAY JOURNAL in order that the industry as a whole may understand the tenor of the suggestions and that the contagion of the spirit of the meeting may spread as it ought to spread. We suggest that all other duties be laid aside until this report has been studied carefully and until the reader feels the virus at work in his system. "Do something and do it now" was the general sentiment. In fact, one speaker went so far as to claim that unless the virus "took" within twenty-four hours the expense involved in attending the meeting would have been incurred in vain. This hyperbole is perhaps over strong but at any rate it suggests vigorous action. Our industry confronts a condition, not a theory, and is entering upon an era which promises to test its ability to hold that public confidence which is the ultimate source of income and capital. The New York discussion showed a realization of the fact that the big job is the holding and augmentation of this confidence, everything else being secondary and incidental.

Information, Concentration, Co-operation Are Words to Conjure With

AT the conference the industry seemed to be shaking itself preparatory to a general advance as a whole, to a capitalizing of the study and discussion which has been going on for years. Just as we as a nation are in the great war primarily to preserve the independence won in 1776, so as an industry we are warring against popular misconception of the electric railway business. The struggle is not against the public, for the industry exists alone for and by this same public. The railway is an integral part of the public which owns its securities, taxes it liberally and pays what it must for transportation service. The task is so to bring about a general realization of the whole truth that the community will be as proud of a successful utility in its midst as it is of a prosperous soap factory or machine shop. To this end the railways must first have full information themselves, they must have this for the general good and, if necessary taking to heart the experience of other industries, present a solid front to misconception, ignorance and prejudiced opposition. While the attendance at the New York conference was not large numerically compared with the total number at an Atlantic City convention, it was very representative and the attendance at the sessions compared very favorably with that at any meeting forming a part of a normal convention. The concentration of interest and purpose was of a high order. We believe that the conference will prove to have been a real benefit to the industry.

Publicity as a Means to Secure Higher Fares

PRESIDENT STORRS declared in the latter part of his presidential address at the conference that he is an optimist on the electric railway situation, that he believes that the public is awakening to an understanding of the present situation as regards the electric railways and that out of the present misunderstanding will arise relations which will establish electric railway investment on a basis of stability and soundness and will give to the public service commensurate with its needs. We believe he is right. It is inconceivable that the public through its representatives, the public service commissions, will not grant the needed relief, once the railways put their case properly before both the commissions and the public, but the railways must prove the need of increased fares to both.

The plea that the railways should tell their story to the public is not a new one. It has been urged at conventions and in this paper for many years past. Some work along this line has been done, but much more remains to be accomplished. The experience of the Bay State Street Railway as related by Mr. Sullivan shows its effectiveness and that the public is disposed to be fair when it has the facts.

It is our positive belief that if electric railway companies in general had been frankly telling their story to the public for the past ten years, they would not be in their present position. When they found they could not properly maintain their properties and pay a fair return on the investment, they should have said so publicly. But a number of companies have not done so until within the last year. A still larger number have done nothing as yet to explain their real condition. The situation now is such, however, that action cannot be delayed. The address of President Storrs shows that it is practically impossible now for railway companies to sell new issues of stock. Bonds can be disposed of only at ruinous rates. If action is not taken soon, it will be too late.

Another thought and a most important one brought out at the conference was that the future of the industry depends not only on individual work but on co-operative effort. This means that the responsibility of the association for the improvement of present conditions is greater now than ever before. Publicity plans have been drafted previously by the association, but they have either not been carried out or have been directed along ineffective channels. The association now has an unexampled opportunity to prove its usefulness to the industry. It should forget its past mistaken efforts and set itself to the task of real publicity along approved lines.

Keep the Big Idea to the Front in Your Mind

WE are going to be like a college debater we once knew. We shall not waste time proving that the electric railway industry needs additional revenues. We admit it. Unlike our college friend, however, we are safe in our major premise, for electric railway managers know positively that the industry is today in a critical financial condition. Nor will they question our minor premise—*i.e.*, that additional revenues can be secured through a higher flat rate of fare, a charge for transfers or the installation of a zone system. But this premise involves alternatives, and we are not now prepared, nor do we think the industry is, to draw the conclusion that any one method is best for all conditions.

The speakers at the conference this week brought out interesting points in regard to the various methods of increasing fares. For example, the railways in New York State, outside of the metropolitan district, recently asked for a 6-cent fare because it was felt that the simple question of a 1-cent increase offered the easiest means of confirming the present plenary power of the commission to raise rates regardless of the old railroad law or franchise stipulations. As for the transfer charge, the New York Railways feel that this is justified by the additional service given to transfer passengers, by the unprofitable operation of crosstown lines to carry passengers to closely situated longitudinal lines, and by the effect of such a charge in further reducing transfer abuses. But the zone system, in Mr. Gruhl's opinion, offers particular attractions by reason of its indirect and therefore least unpopular characteristics, its recognition of the principle of paying operation for all classes of traffic, its lack of a diminishing effect upon short-haul traffic and its greater flexibility to meet future needs. Each of these three methods, it might be said, is in use and is practicable as regards collection and other possibly mooted points—on the Bay State Street Railway, in Cleveland and in Milwaukee respectively.

The discussion of the relative merits of the three plans raises questions that are vital to electric railway development, but in considering them electric railway managers should be careful not to lose to view the one big point involved in any method of increasing fares—that is, the getting rid of the idea of a rate fixed only by tradition. Railway men are coming to realize that the nickel must be abandoned, but in bringing this about it is desirable for them to understand clearly that abandonment means the substitution of a rate based on the cost of service for a rate determined by custom. The nickel rate of the olden days was a combination of chance and the all-the-traffic-will-bear rule. The rate of the future will be one based on reason and determined in fairness to all parties.

This is a radical readjustment, and it is even more necessary for the public to understand it than the railway men themselves. At the present time the legal processes for securing increased fares are too slow, as we have remarked at other times. If the consent of the public to a speeding up of rate regulation is to be obtained, however, it must be made to see how the new rate-making fundamental is infinitely more in its interest, both in the way of a scientifically determined fare and in the latter's effect upon railway development and consequently upon community prosperity. Hence, no matter how many debates may be held as to the superiority of any method of increasing fares, let us never forget the all-important task of putting the big idea across to the public.

The Whole Fare Question Needs to Be Scientifically Studied

IN fact, the electric railway industry is not now ready, as we said above, to say that this or that method of increasing fares is to be preferred for general use. It is not inconceivable that in the fullness of time the idea of introducing the distance factor into rate-making may be widely adopted. But now the whole matter of fare increases is in an experimental stage. It is not to be expected that after the long years of stagnation with a fixed fare the best basis of charge for all circumstances can be immediately determined.

Local conditions vary, and the various methods of increasing fares will probably all be tried out by individual companies. All of the experiments will not be equally successful. But the failure of 6-cent fares, for example, to increase considerably the revenues of a single corporation should not lead to the condemnation of this method. Nor should a similar isolated experience with the zone system or charging for transfers lead to sweeping generalizations. It may be that each of these methods of increasing revenue will be found to have a definite place in the electric railway industry of the future.

The present task is very similar to that which has confronted the medical profession on many occasions. The reaction of each remedy must be carefully studied. Symptoms must be diagnosed and the condition of the patient closely analyzed. It is only in this fashion that science has been able to conquer disease. The electric railway industry needs to work similarly. There are certain principles which govern the results secured by each method of increasing revenue. Each case must be minutely studied to ascertain the reasons for the dissimilarity of results as between several properties adopting the same remedy. In this fashion fundamental principles will be discovered, and the limitations of each method clearly defined. It will then be possible for a corporation entitled to larger revenues to determine accurately what method of fare revision should be adopted, after a careful analysis has been made of its local operating and traffic conditions.

The point of the whole matter is that the fare situation needs a careful, exhaustive and scientific investigation, and no more important suggestions have been made to the American Electric Railway Association than those by President Storrs and Mr. Choate for the use of committees and even a bureau in this work. The task should not be left to individual companies, voluntary investigators or the commissions. The problem now confronting the electric railway industry is very similar to that which some years ago confronted the electric lighting utilities. The introduction of a power load and the development of off-peak uses completely changed the technical and financial aspects of this industry. A careful research was undertaken by individual companies and the National Electric Light Association, with the result that a scientific basis of rate-making was evolved. In the same fashion, the solution of the electric railway fare question must be worked out in co-operation by the electric railway corporations, if a permament solution is to be secured without delay.

This work can best be done by a central organization with the assistance of a trained expert, working under the direction of an energetic committee of executives. This is what was done in 1913-15 by the committee on cost of passenger transportation service. The association could do no better at this time than to revive the Bureau of Fare Research established by this committee and to extend the study begun by the bureau under Mr. Doolittle to cover this question of a proper basis for urban fares.

Women and "War Bonuses" in Electric Railway Service

TWO aspects of the labor situation were presented in the papers by Messrs. Brooks and Connette, the former discussing the possibility of the wider use of women in railway service and the latter the question of the so-called war bonus for employees. Briefly, Mr. Connette's views on the latter subject were, first, that labor would be scarce for a number of years after the war and, second, that with conditions as they are at present railways cannot afford to pay a war bonus. In these circumstances the two alternatives are the more extended use of female labor and the use of less platform labor, as with the one-man car.

Although, unfortunately, there was no formal discussion of Mr. Brooks's paper, the thought was expressed by several managers both before and after the meeting that women could serve in many more positions than they now do in electric railway operation. Indeed, most companies are employing them now to a far greater extent than ever before, although not on the cars themselves, as in car cleaning and in the shops.

Of course, women have long been extensively employed in electric railway shops in the manufacture of coils and in armature repair, but the experience abroad in ammunition work shows a much wider range of opportunity in the shops than this. Thus, in Europe, they have shown their ability to operate machine tools, and in such work their delicacy of touch and pride in their work gives them some advantages over men. All-in-all, there seems to be no reason why they could not be employed to a greater extent in electric railway repair shops than at present.

It is, however, on the platform that the largest field is open because of the large percentage which platform labor bears to all labor employed on an electric railway. Here, we believe, at least as far as conductors are concerned, much of the supposed prejudice on the part of the public in this sphere would be found not to exist on actual trial. It is only because the experiment has not been undertaken that it seems to offer serious difficulties. But with the draft on our man-power which the war demands, we believe that America could well follow the lead of the European warring nations in this regard.

If a beginning is made, it would be appropriate to give employment so far as that could be done to women in the family of those employees who have joined the military forces. These women probably would be more familiar with many of the rules than any selected at random, and would also probably be more acceptable to the other employees. The history of this war has shown that many women have taken up the work of their male relatives who have gone to the front, more examples being found, of course, abroad than in this country. There seems to be no reason why the same principle should not be extended to railway service.

Are They Beginning To Feel Their Responsibility?

COMING as it does from a man intimately concerned, the statement of Charles A. Prouty, quoted elsewhere this week, throws an interesting light upon the federal valuation system. It does not matter so much that the valuation act is now said not to require the fixing of ultimate values. To be sure, Congress and the public at large understood that final figures of value were to be the great result of the act, but legislative blunders have occurred before. The present deficiency, if the public so desires, can easily be made up by Congress without wasting much of its valuable time. But what does matter, and very much, is the fact that the division of valuation of the Interstate Commerce Commission is just beginning to appreciate the problem ahead of it. Mr. Prouty, as head of the division, while insisting that ultimate values should be ascertained, naïvely remarks that "it may be doubted that any such final value can be safely stated until the tribunal making it has before it a sufficient number and variety of properties so that the full effect of whatever rule is adopted can be clearly apprehended." Is not this an amusing commentary upon the legislators and the experts of a few years ago, who looked upon the federal valuation as mere child's play?

The Problems of the Electric Railways*

The Higher Cost of Labor and Materials Necessitates Higher Fares or Reduced Burdens of Taxation, or Both. It Is the Duty of Every Railway to Explain These Matters to the Public

By L. S. Storrs
President American Electric Railway Association, and President Connecticut Company, New Haven, Conn.

We have met at a time when the structure of our government is being put to a test. As during the Civil War the principles laid down by our fathers in the Constitution were subjected to rack and strain from the stress of internal affairs, so now are they called upon to withstand a storm that menaces nearly all that there is of civilization in the world. Under our beneficent and easy-fitted code of law and manners, freedom of thought, of action and of conscience has been developed to a degree reached by no other nation. Of many types, of many ancestries, of many minds, of many tongues, of many inherited ideas of government, our citizens have sought to work out their own beliefs with little reference to those principles which earlier Americans regarded as necessary to a republican form of government. The consequence has been a maze of theories, as well as a freedom of thought and action which has amounted to virtual license and which has gone on unchecked because, in the main, the interest of the individual has seemingly been but little affected and because the business of counteracting the evil was every one's and consequently no one's business.

That condition has changed. The winning of this war, in which we are so justly engaged, touches intimately every citizen. We must show that this republic under the form of government bequeathed it by our fathers is as efficient in times of war as in times of peace, or for us there will be no times of peace; and to be efficient in either peace or war it must be prepared to face facts, to build its policy upon facts and to confront situations as they arise.

I have said this much because it has a direct bearing upon the very problems that you are gathered together to discuss. We are in point of magnitude the seventh industry of the country. The work that we do is a necessity to other industries and to practically every man, woman or child who resides within our borders. Without the system of transportation which we represent our present civic development would have been an impossibility. This industry has also a very important part to play in the winning of the war; I am not referring to the direct task that we are performing in the movement of men and supplies for the army, or to the possibilities of usefulness disclosed by the study of railway conditions made for the War Department by the association, for which we are rapidly preparing. I am rather pointing to the task before us in properly serving those industries upon which our army, our navy and, indeed, our people as a whole depend.

The people of the United States, if they are properly to solve the problems which must be solved in order that their country shall emerge stronger, abler and better from the present crisis, must face facts in regard to *our* industry as they must face facts relating to their other affairs; they must recognize the call of necessity; they can no longer temporize with a situation that has become acute; they can no longer indulge in the luxury of speculation when action is a prime requisite.

It is hardly necessary to sketch the tremendous strides of urban transportation during the last score of years. In this period the demand upon transportation agencies has constantly increased for better and better facilities, a lengthening of the distance of the ride for a single fare, a more positively assured continuance of service and a safer transportation. All of these have been for the benefit of the community in lessening tenement congestion and the like, but all of them have been at the cost of the transportation agency and have been shown in constantly declining surplus earnings. At the same time the cost of performing street car service has been increasing, until with the alarming increase in the cost of all units comprising operation and upkeep of the properties the income of practically all transportation agencies is not sufficient to meet the needs and obligations of the companies and to supply sufficient funds to enable their officers to finance the growing requirements.

As has so clearly been stated by the Public Service Commission of Massachusetts in a rate case decision, "it should never be forgotten that our public utility companies are not finished. They are in progress, they are constantly calling for new capital and of recent years in increasing amounts."

Cost of Labor Increasing and Supply Decreasing

As has been shown in the proceedings of every wage arbitration within the past few years, the cost of living of all classes of operatives has been increasing rapidly. These increases have, as a natural sequence, resulted in a higher rate of wages, all to be paid from the 5-cent piece that had for so long been found to be the absolute minimum at which transportation could be sold. Nor is this the only labor problem with which the operators of our properties are confronted. In many localities it is now impossible to obtain a sufficient number of operatives properly to conduct the service which should be given. At the same time the draft is calling great numbers of our operatives for national service. Thus the depletion of our ranks is constantly accumulating and the shortage in the supply of efficient operatives calls for the greatest ingenuity on the part of the managers to keep even a moderate measure of service in operation. In many instances we are, at the present time, equipped with even less labor than under normal conditions, and this at a time when the needs of the community are for increased service.

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*Abstract of address presented at conference of American Electric Railway Association, New York, Oct. 9, 1917.

SIMILAR CONDITION EXISTS WITH MATERIALS

The alarming increase in the cost of all material, fuel and supplies is so well known as to warrant but little discussion. With increases in cost of from 50 to 250 per cent there has been, in many cases, a decrease in the character of various materials supplied, and we are further confronted with a delivery of from one year to two years on materials that in normal times would be delivered within as many months. The absolute necessity for an adjustment of some of the prices has been recognized by the government in the appointment of a fuel administrator to supervise the production, distribution and cost of fuel and also by the attempt of other governmental agencies at so-called price-fixing of other materials which make up a large portion of the supplies required by the industry. With these facts so clearly patent it takes no prophet to indicate the ultimate outcome.

Every device that the most ingenious engineers, managers and executives can conceive has been adopted in the production of power, operation of service, maintenance of cars and type of equipment to stem the constantly increasing cost of performing service and, if possible, to keep this increased cost within the bounds of the increased revenue under the old basis of rates, but all to no effect. There has for a long time been this constant decrease in the margin between income and outgo with a gradual loss in the item of surplus available for interest and dividends, until in the case of many companies surplus applicable to a fair rate of return upon the value of the property devoted to the public service has so far sunk that the item "dividends" in the income statement is a thing of the past, to which managers could point with pride, but which even the most optimistic cannot anticipate for the future as we are now going.

When one of the largest transportation companies in the country, most ably officered, most efficiently operated and with a record of dividend payments running back over its entire history, is compelled to refinance an expiring issue of mortgage bonds with an issue bearing 7 per cent interest at a time when all other industrial concerns find a free market for their securities on a 5 per cent basis, it is clearly evident that there is not the money available to supply the absolute needs of this industry for additions and betterments of physical property, to say nothing of funds for new ventures. Investors have abandoned this formerly popular type of security and it is our affair to rehabilitate the industry in financial quarters.

The needs of a typical American city, one located in New England, clearly evidence the situation.

This city has always been known as one of the most prosperous industrial communities and had gradually grown to a population of 140,000, upon which basis all civic needs had been established—its agencies of transportation, its thoroughfares, its policing and all public utilities. With the constant increase in the demand for war supplies, its industrial population increased to a point that would represent a city of 200,000, and with this increase came a great congestion of all facilities, both those of the city itself and of the utilities serving the city, with the natural result of inadequacy of facilities and absolute requirements for large investments to meet the tremendous needs. These demands upon the part of the transportation utility are clearly shown and thoroughly known to all people in authority and to the great body of the public. By reason of the shortage of facilities the cost of performing service has so rapidly advanced that there is no longer a net revenue, no longer an ability to present a balance sheet sufficiently attractive to investment bankers to obtain funds for the necessary expansions, and there is but one solution—an increase in revenues. Near-bankrupt companies cannot give good service. Electric railways, after all, cannot sell transportation at less than cost and keep it up, and if the companies are hurt it is the public that suffers.

Increased fares are for the public's benefit. Increases are demanded, and it is the duty of those charged with the management of this great utility to present these needs to the public served, for without increases to enable the utility to meet its requirements comes ultimate disaster. There is no ripening of custom into the right on the part of the public to necessitate our operating under a specific rate regardless of its reasonableness. The public can demand a reasonable rate. The utility can exact no more.

THE REMEDY IS OUTLINED

We all realize that there is nothing mysterious, nothing unusual in the manufacture of transportation. It has been constantly brought home to us, and it is a recognized fact that we are quasi-public servants and that the public must be made fully cognizant of our needs through the medium of either constant publicity, or through the commissions and regulating bodies, for these authorities really embody in their decisions their interpretation of public sentiment.

An enlightened public opinion expressing itself through its legislative officers can be of incalculable assistance in the passage of laws relieving this industry of burdens placed upon it in the past, for it is not in increase in revenue alone that our salvation lies. In addition, the unjust and unreasonable requirements that call for an expenditure of that revenue must be changed, and the revenues of transportation corporations must be devoted solely to the business of transportation and be not subject to unfair assessment in the interest of a portion of the public in each community. I am referring to the requirement relative to pavements in city streets, the outgrowth of old horse-car days, which is to-day but an additional tax upon an already overburdened utility. It is subject to abuse and results in unequal enjoyment of the revenue by the public. There are other matters of like nature that also require correction.

The industry is undoubtedly at the parting of the ways; there are fundamental problems to be dealt with which, unless handled in an enlightened way, will seriously undermine the whole foundation upon which the industry is based. That enlightened treatment can come only through the medium of an informed, intelligent public opinion. It is up to the railway industry to see to it that such expressions of opinion as are made are based upon facts rather than on suppositions and prejudice.

This is a work that can best be done by each company working in its own community, since the problems presented are in all cases tinged by local conditions, which require special treatment, but the association, representing the industry as a whole, can be of great assistance to us all by giving us the benefit of its facilities for the collection and compilation of information and by studying through its committees the questions presented. I believe that we should seriously consider the establishment, at once, within the association of a bureau so equipped as to afford to member companies the best possible aid along the lines I have indicated.

TIME FOR CONCERTED ACTION IS HERE

The time is here when concerted action is needed. We must all work together for a common end, and that end the rehabilitation of the industry in which we are all interested. It is no easy task that is contemplated. It involves a long hard struggle against odds, but to my mind our duty is clearly indicated. We have gone as far as economy of operation and improvement of methods can take us. We must now seek relief from those within whose power it is to grant relief. With increased revenue and freedom from unjust and unreasonable burdens—an absolute essential if the electric railway industry is to continue to perform the service demanded by its patrons—it is our duty to lay our case before the representatives of the public authorized to remedy those conditions, be they public service commissions, municipal officers or legislatures, and before the public to whose will such representatives are responsive, and to demand of both that we be given a living wage for the services we perform.

In this way we shall be doing our duty to owners of the properties whose trustees we are, and at the same time placing the responsibility for such conditions as may in the future arise to the detriment of both public and owners where it rightfully belongs.

I am optimistic as to that future. I believe that better times are ahead of the railways; I believe that the public is awakening to an understanding of their situation and that out of the present misunderstanding will arise relations which will establish electric railway investment on a basis of stability and soundness and will give to the public service commensurate with its needs.

Female Substitutes for Male Employees*

Women Can Be Used Extensively as Electric Railway Employees. Testimony from Great Britain and Italy Quoted as to Their Value in Train Service. Conditions More Favorable in Many Respects in This Country Than Abroad.

By F. W. Brooks

President Detroit (Mich.) United Railways

IN our country it has never been the practice nor has it been deemed necessary to give to girls the same mental and physical training in schools that is given to boys. It is therefore necessary to establish a method of training that will overcome prejudices and customs to the end that women may have such confidence in the new field of endeavor as will enable them to perform satisfactorily the duties that may be assigned to them.

Certainly, women show as much aptitude in certain occupations as men and perhaps possess greater pride of accomplishment. The sex problem is of course present and will occasion serious concern on the part of everybody. But I believe such concern will result largely from misapprehension and that no insurmountable problem is thereby presented. The public environment of women employed in electric railway service is in the nature of a guarantee that they may pursue their employment undisturbed by improper influences.

I shall endeavor to refer in their order to the subdivisions of the topic assigned to me and to have in mind the practice prevailing on the properties with which I am connected. In general, and for the purpose of this discussion, the work constituting electric railway operation may be classed and limited to the executive, transportation and maintenance divisions.

POSITIONS OUTSIDE THE TRAIN SERVICE

Under normal conditions, women have been employed in offices as secretaries, stenographers and clerks and, to a very limited extent, elsewhere. They have shown themselves to be apt students when intrusted with responsibility and, under proper training, are as efficient as young men clerks ordinarily are. Where our office men so employed are entering military service, we are filling their places with women, and in that branch of the service I know of no reason why they should not be employed, if necessary, in any position normally filled by men clerks. Thus, at the present time, we are employing women as cashiers in our carhouses, and they are rendering satisfactory service. We are also beginning the employment of women as car washers and station cleaners.

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*Address presented at conference of American Electric Railway Association, New York, Oct. 9, 1917.

In the mechanical, power, and track departments, women are used extensively as clerks, and it is the opinion of our department heads that they may be satisfactorily employed in other occupations, as in coil winding, controller work, upholstering, painting and glazing, as drill hands, switchboard and dynamo attendants, oilers, wipers, and in many like occupations that do not involve heavy lifting or severe out-of-door employment. There are, of course, certain positions involving contact with the public that must be filled by men, but I think it safe to say that women may comprise one-half the transportation force.

WOMEN IN TRAIN SERVICE

The question is asked as to the physical and mental work required of motormen and conductors. It is now almost the universal practice to equip cars with simplified apparatus. In fact, it is the claim of the labor union that this has been accomplished to such an extent that skill in the operation of the car is no longer required, and a man with ten days' training is as capable and efficient as the man who has operated a car for many years. Of course I emphatically disagree with that claim and only mention it to emphasize the simplicity and efficiency of the electric car equipment. Our cars in the main are of the folding door, stepless type, electrically operated. The controlling device is simplified and handled with slight physical exertion. Gongs and fenders are manipulated easily by foot pressure. Perhaps the most difficult physical undertaking in the operation of a car is to turn a switch point which is not electrically controlled and to replace a trolley. When men are accepted for this employment, they are subjected to a medical examination to determine their physical condition and their ability to move about with promptness. Also, great care is exercised in this examination to determine the condition of their eyes and hearing. If these are normal, a man is accepted without further physical examination.

It is my opinion that women can perform the work of motormen and conductors satisfactorily. It is a current opinion that they may become excitable and lose control of their vehicle when contending with congested traffic conditions. I very much doubt the correctness of that view. It is to be understood, of course, that they must be especially trained with respect to that condition, and it is my observation that under such conditions women are driving taxicabs and other motor vehicles as successfully as men are doing like work. Both motormen and conductors are permitted to remain seated while on duty outside of restricted congested areas, and certainly the employment is not more severe than that performed by women in factories and probably as clerks in stores.

I doubt if it would be practicable or profitable to undertake the employment of women for rush-hour periods only. Such an arrangement, it seems to me, would entirely unbalance the organization and would lead to unreasonable expectations. Persons employed but a few hours each day would have a limited earning capacity, and almost immediately the question would arise as to how their earnings should be supplemented so that they might have an income necessary for their support. Also, it is in the nature of the undertaking to maintain a large force of nearly idle employees. I would advise a very earnest consideration of such a plan before its adoption. In the employment of females in any considerable number, it doubtless would be necessary to make extensive and expensive dormitory arrangements for their accommodation, and such arrangements should be ample and well thought out.

The question is asked as to wage schedules and the probable attitude of labor toward the change. It is my opinion that the same wage must be paid women for like service as to men. Of course, there will be exceptions, but I take it that the problem which may confront us is to increase the available supply of labor, and if women may be made as efficient as men, they should receive the same consideration. We have been informed of the opposition of the labor union and that it will resist the employment of females for platform work unless the United States government shall have declared such employment necessary. I cannot say that I have formed a definite conclusion respecting this topic. Conditions in our country, however, may bring us squarely face to face with the problem at no distant date, and I therefore am glad to take part in any discussion that will afford us light.

BRITISH TESTIMONY FAVORABLE TO CONDUCTORS

In concluding, it may be interesting to refer to the experiences of European tramway managers. They generally unite in claiming the entire success of women as conductresses, but disagree in so far as motresses are concerned. In Great Britain they hold that on the front end of the cars women have done very good work, but doubt the advisability of the permanency of such employment in ordinary times, while in Italy entire success is claimed for women as motresses—and they are said to be equally efficient as collectors.

The clearest expression of the British view is given by James Dalrymple, Glasgow, who writes us:

"So far as conducting is concerned there is no difficulty whatever. Driving, however, is rather different and although the women manage it all right, I think that possibly the physical and mental strain would become rather too much for them. In fact, generally speaking, I do not think women are suited for this work. In driving a car they are quite cool, but when an accident occurs many of them collapse and are of no use for the remainder of the day. In conducting, however, they can manage the passengers just as well as the men could do. I think in normal times that there will be no difficulty at all in keeping women as conductors."

Pointing out the simplified method of American fare collection, Mr. Dalrymple says:

"So far as conducting is concerned, I have often thought how simple it would be for women to do this work in your country as compared with what it is here. The duties of a conductor with you would suit women admirably."

BRITISH PRACTICE—WOMAN SWITCHBOARD ATTENDANT

Mr. Dalrymple points out that American car operation with air brakes would give our companies a decided advantage with motresses, as against the prevailing hand brakes of the Glasgow and other British systems.

The Tramway & Railway World of London, however, is extremely conservative in its views on the success of women in the street railway business, stating that:

"When earlier in the war the necessity arose for employing women in the place of men as conductors we expressed the view that such a course could only be justified if it was absolutely unavoidable. Experience has confirmed that opinion. It is probably not too much to say that there is not a tramway manager in the country who will not feel a sense of relief when, on the return of peace, it becomes practicable to release every woman conductor in his employ."

The adaptability of women as drivers was discussed some two months ago before the military tribunal of Hull, England, in a hearing on the claim for exemption of three motormen. The army officials contended that women were entirely a success and cited Glasgow, Doncaster and Cardiff as proof, while the manager of the Hull Tramways pointed out that women were not used on the London Tramways as drivers; that Paisley, a neighboring city of Glasgow, strongly opposed them, and that Newcastle and Leicester had tried them, finally placing them in the discard. The secretary of the men's union testified that in his experience women could not stand the strain in cases of emergency and added that in Manchester two cases were recorded of women conductors fainting, following collisions with passing vehicles. Exemptions were granted.

TESTIMONY FROM ITALY

The tramways in Italy give every indication of approval of women both as motresses and conductresses. Marquis Cusani of Milan has furnished us very extensive views, the results of close study of the problem of female help.

"This only," he says, "is certain and sure, that in almost every Italian city, the traction concerns and the public do not desire to revert, if avoidable, to male service, as the women have shown themselves to be much more honest and kind with the public as conductors and much more attentive and safe as drivers. Our Italian trainwomen seem to manage passengers much better than their male colleagues do. Italian tram managers and the public of Rome, Florence, Pisa, Viareggio, Livorno, Palermo, Turin, Padua, Verona and many other cities lay much more stress on the fact that

LORNE SCHOOL
LORNE SCHOOL

BRITISH PRACTICE—WOMEN CAR CLEANERS

they doubt if it would be advisable after the war is over to go back to man labor for electric car driving, the motorwoman having performed generally so much better than the motorman."

The marquis points out that with women there has been a decrease in accidents and quotes the manager of the Municipal Tramways of Rome (one of five companies operating there) that the accidents in the first six months in 1917 as compared with the first six months of 1916 show a decrease of 17.3 per cent, about one-third of the drivers being women at the date of writing. The population of Rome is 550,000. There are many steep grades, some as steep as 160 ft. to the 1000, with single-track car lines on streets as narrow as 18 ft. from wall to wall, and double tracks on 27-ft. streets. Rome began the employment of women both as motresses and conductresses at about the same time as Glasgow.

Other opinions from Italian general managers are as follows:

Florence—"Our company has a female personnel very well drilled and well answering to the exceptional demands of the street car service. It has been proved that women are practically fit for tramway work, and it has also been sufficiently proved that the public prefers them to men, if for nothing else, for their greater kindness and courtesy."

Palermo—"Our car service is actually filled in a large part by feminine crews, women conductors and motorwomen, who are giving us very satisfactory results."

Livorno—"Seeing the good results which are forthcoming, we have been well satisfied with the service rendered on our cars; we really advise the employment of women for street car work."

Bologna—"The employment of women conductors has given very good results, especially owing to the greater politeness shown toward passengers."

Viareggio—"We are glad to state that our company has employed women both as conductors and motorwomen with really excellent results."

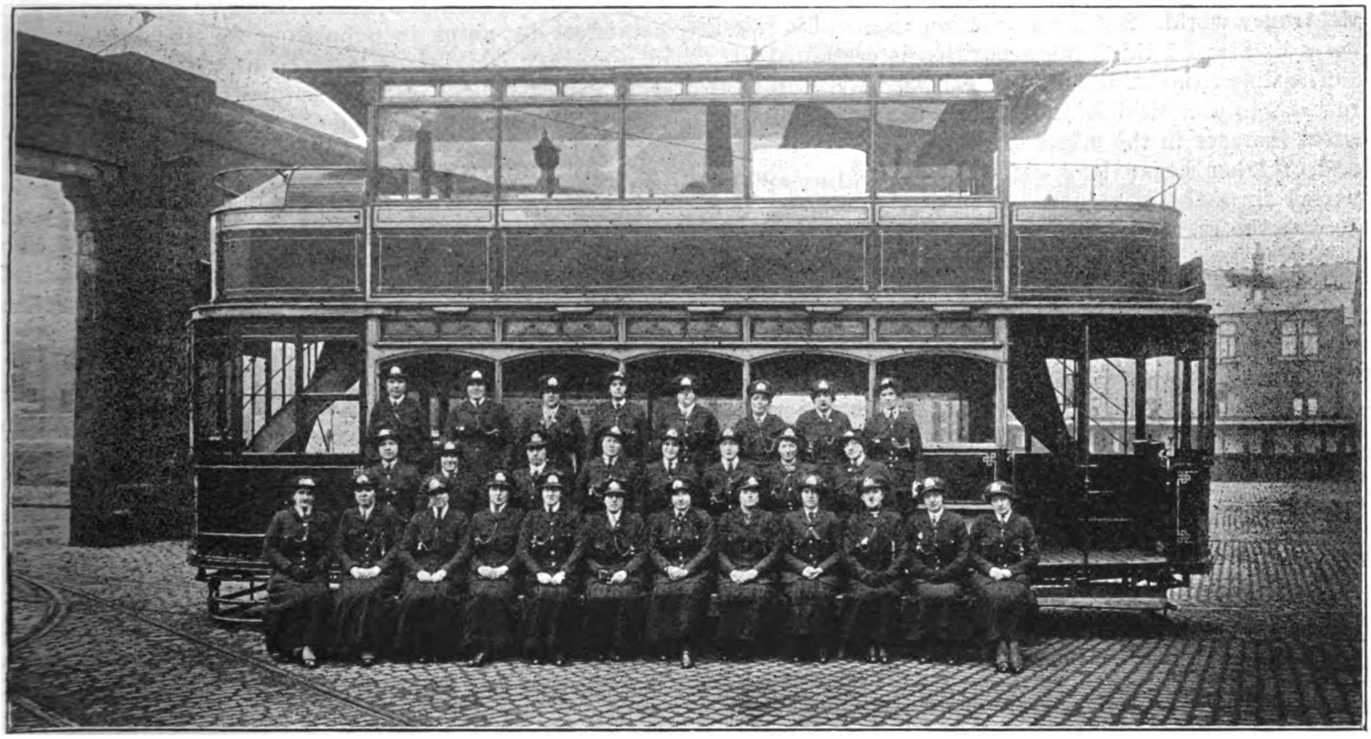
SAFETY FIRST

BRITISH PRACTICE—WOMEN DRIVER AND CONDUCTOR

OTHER INFORMATION FROM EUROPE

Our information as to France, as in the other European countries, is that women are employed in large numbers on both ends of the car, but their use on the front end is of only comparatively recent date owing to the strong opposition of the authorities. The results have generally been satisfactory.

Wages paid women in the great majority of Euro-



BRITISH PRACTICE—GROUP OF MOTORESSES

pean municipalities are the same as men, though in Great Britain the war bonuses granted women are less than those given the men. In Rome they obtain the same pay and work the same hours on both night and day shifts. On the other hand, Sheffield reports that while the pay is the same, women are more expensive by a matter of $50,000 a year, as fourteen women conductors have been necessary to accomplish the same work as eleven men.

Operation in Europe is much more complex than in this country. Hand brake operation is the rule, the power brakes being generally reserved for use on steep grades and for emergency stops. The zone collections and double-deck construction add heavily to the conductor's work when compared with the simple pay-enter system being gradually adopted on this side of the water. For instance, one company in Rome uses eighteen different kinds of tickets.

War Bonus for Electric Railways*

Prices Are Likely to Remain High for Some Time After the War, so that Railways Must Make Permanent Provision for Greater Net Income. This Might Well Be Secured by Relief from Paving, Franchise and Other Taxes.

By E. G. Connette

President United Gas & Electric Corporation, New York, N. Y.

IN considering briefly what has been done in granting a war bonus to electric railway employees, it is well to look full in the face some of the pressing financial troubles of the electric railways. It is also well to understand how our troubles arose. From one end of the country to the other come the reports of the electric street railways whose employees are asking for relief to meet the high cost of living. Everywhere the story is the same—the story of fixed fares and rising costs. True, there's a revolution in progress against the nickel, enthroned years ago as the czar of the trolley world. But the revolution against his rule is spreading, and I think his deposition is certain.

The difficulties of the electric railways were brought, in part, to a critical state by world causes. While the great increase in the prices of commodities of all kinds and of labor began long before the war, it is in the period since the war opened that these increases have become the greatest. But just as prices were going up in a period long before we entered the war, so I believe the return to the levels prevailing at that time will not be a matter of days, weeks or even months after the signing of the peace treaty. The tide of prices rose gradually over a long period, and the ebbing of the tide will carry well on beyond the termination of strife on the battlefield. The wealth of all sorts destroyed to the value of billions of dollars cannot be replaced in a brief time. The absolute removal by death and injury from the world's productive lists of many millions of workers cannot be compensated except by a filling of the ranks from the rising generation.

The lessons of history are unmistakable in this respect. 'Twas so after the Civil War; 'twas so after the Napoleonic wars. It has been so after all the great historic wars; that is to say, wars extensive enough to affect appreciably the problems of supply and demand for goods and the supply and demand for men. The English economist, Thorold Rogers, tells in "Work and Wages" of the economic effects of not only great wars, but even great plagues, as they affected European countries in the Middle Ages. The invariable phenomenon accompanying either a great war or a great plague has been a rise in wages, due to the demand for labor. He describes the sixteenth century in England as a "golden age of labor." The dearth of working men, due to plagues and war, and a consequent rise of wages were not offset by gains in population for the better part of a century. Measured in terms of the cost of living, wages were higher in that century than in any other down to the present day.

THE INFLEXIBLE FARE A MISTAKE

Interesting as these things are to the historian and to the economist, to the electric railway man they are very serious in their import. They mean a long period of high costs and high wages. The present situation all grows out of the mistake made in the days of street railway infancy, of setting a fixed fare, the nickel, to remain through all times to cling about the electric railway man's neck and choke him as a veritable Little Old Man of the Sea.

When many of the long-term or perpetual franchises under which modern electric railways are operating were adopted, the electric railway, it has been pointed out, was no further developed, if indeed so far, as the aeroplane is to-day. Would the United States government to-day make a contract for aeroplane mail carrying, for instance, at a fixed rate to cover all future time or even for twenty-five years? Would any aeroplane company do it either? Even if such a contract were fair when made, it could not always remain equitable to both.

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*Address presented at conference of American Electric Railway Association, New York, Oct. 9, 1917.

But the fact that the mistake of the fixed fare was made should not be allowed to hamper the future of our communities. For that, after all, is what insistence on a fixed fare would mean. Individuals come and go, and their fortunes are of little moment. But modern cities to be prosperous must have efficient public utilities. And without prosperity public utilities cannot be efficient. Anything done to the damage of the public utility damages the community by the harm it does to the public service.

This is the big lesson to communities of the struggle of the electric railways to get out of the web of a fixed fare. Whether the 6-cent fare is the remedy for present troubles, or the zone system or a new form of public control for electric railways, such, for instance, as the Tayler ordinance in Cleveland, or the conditions governing railways in Milwaukee or in Kansas City, or whether it be municipal or near-municipal ownership, need not be debated now. I'm not inclined to find a panacea in any one of these measures.

One of the immediate problems coming in the train of perplexities brought on by the fixed fare is that of meeting the almost universal demand for more and more wages and still more wages caused by the rising costs of living, due to the war. The company is rare indeed that has not made at least one raise in wages since, say, 1912, and many of the companies have made several. Nor have they all been forced by strikes. Numerous raises have come through direct negotiations with the men through arbitration, and many have been made by the companies voluntarily, notwithstanding the fact that the earnings of very few, if any, of the companies warranted any increase in the cost of operation, especially if proper provision had been made for taking care of maintenance and renewals.

But as the tide of living costs continues to rise, and with it the need of higher wages, the same rising tide of costs finds the poor employers—and the interests of their employees as well—chained to the stake of the fixed nickel fare. The waters even now are rising about their necks, and some indeed have been utterly submerged, while others are in the hands of the life saving crew—the receivers.

How can the demand for increase of wages or wage bonuses be met with income already too small? Some companies have endeavored to meet the emergency by a war-time bonus, holding, as seems true, that as the emergency is one of war time, it is too much to ask that a permanent wage scale be set now, that a war-time bonus, to endure only while war conditions last, is the fairer solution. Labor unions generally are opposed to a wage bonus of any kind, as the wage earner is naturally inclined to secure the highest possible wage in permanent form and not one that cannot be automatically reduced. Therefore, the question of wage bonus is a difficult one to solve. The theory of it is doubtless correct from an economic point of view, provided the company has the earnings to warrant it.

WAR BONUSES IN PRACTICE

In England the government committee on production decreed that all employees on the electric tramways more than eighteen years of age should receive an increase of 2s. 6d. (about 60 cents) a week as a bonus on the war wage now being paid, while all employees under eighteen are to get a bonus of 1s. 3d. (about 30 cents). These bonuses are regarded solely as war bonuses.

Numerous companies in Canada have announced war bonuses in a desire to meet the increased cost of living. In Vancouver, B. C., the men refused the bonus, but the arbitration board granted the increased wage demands of the men, stipulating, however, that the increase was only for the duration of the war, making it in effect a war bonus.

In America steps along this line, varying in details, I have been informed, have been taken by companies in Athens, Lexington, Topeka, Richmond, Joliet, Louisville, Duluth, Cumberland, Harrisburg, Los Angeles, Seattle, Washington, Mobile, Grand Rapids, East St. Louis, Colorado Springs, Chicago and elsewhere. But the bonus is an emergency measure, the emergency brought about by the war. It is not a cure, it is a palliative. It does not remove the cause of the disease, it treats only the symptoms. Even if a company wishes to pay a war bonus the great question still remains with most of them, "Where is the money to come from?" "Who is to pay the companies a war bonus?"

HOW CAN THE COMPANIES BE COMPENSATED?

Not one-half the companies in the State of New York are making even their fixed charges; some are not making even their operating expenses.

Electric railway men believe in the American policy of high wages and prosperous workmen, for this makes prosperous communities. But electric railway companies must pay the wages and their war bonuses out of the fares. Clearly, then, income must be more or charges against the railways, such as paving taxes, franchise taxes, etc., must be eliminated or reduced.

If indirect taxes, such as paving taxes, franchise taxes, a percentage of gross income paid to cities, etc., were eliminated with urban companies generally, it would doubtless increase the income to such an extent as to preclude the necessity for raising fares and, in some cases, would put the companies in a financial position where they would be able to provide for increase in wages or wage bonuses. It is believed that communities generally would prefer to have the indirect taxes removed from the public utility companies rather than have the rates raised.

Frankly, I am of the opinion that the 6-cent fare will by no means settle the problems that press not only upon us and our employees, but upon our communities and our public service commissions. Our legal processes of getting increased fares are at present too slow. Only a few weeks ago the Hornell Traction Company applied to the Public Service Commission for the Second District of New York for an increased fare. The commission hasn't answered that application yet, and, under the present law in New York State, cannot settle it until the opposing Mayor's conference has had its chance to cross-examine witnesses, etc., and take other steps, all of which take time. Meantime the Hornell company has gone into the hands of a receiver.

I may point out that there is a psychological factor which must be considered which goes to prevent the success of the plan of merely raising fares. The people do not want to pay higher fares even if they are warranted and necessary in order to provide efficient service and give the investor a reasonable return upon his investment, and, as I have stated hereinbefore, in some cases with urban companies the necessary earnings to take care of operating expenses, maintenance and renewals and return on investment can be obtained by the elimination of indirect taxes. The people must be educated to see that every charge against a public utility company is paid by the patrons and charges like paving taxes, franchise taxes, etc., come out of the street car rider's pocket instead of the taxpayer who now escapes it, and the riding public would much prefer to have the companies relieved of their tax burdens and retain the present unit of fare. The public must be educated along these lines.

The public must perceive, too, the inequity—or at least the impolicy—of laying on its public utilities charges that are both inequitable and unsound. Private capital has learned its lesson and has gone on a strike. It cannot be lured back to the electric railway field until it is granted full protection of its investment. Capital cannot be coerced, it must be convinced. It is certainly convinced at this time that the average electric railway is in no condition financially to increase wages or grant war bonuses to employees, unless in some manner they are able to increase their income to meet the charge. The electric railway industry does not enjoy war profits. Its rates are fixed by law. The expense of operating is constantly increasing by the increase in the price of labor and material, and the industry is not in a position to pay war bonuses.

Pending Applications for New York Fare Increases*

A Résumé of the Moves Thus Far Made to Impress the Needs of the Industry Upon the People of the Empire State. The Problem Involved Is National. Association Committee Should Investigate Fare Question.

By Joseph K. Choate

Vice-President J. G. White Management Corporation, New York, N. Y.

THE pending applications for fare increases in New York State are of interest because the issues presented are of national importance, and because an unique procedure is being followed in presenting the cases both to the commissions and to the public.

I hope to make clear below these vital points:

1. The problem is national.
2. The situation imperils the very existence of the industry.
3. While relief must be had, it is as much for the benefit of the communities involved as for the companies. Their interests are single.
4. The present crisis is, in truth, a test of the system of commission regulation of public utilities.

APPLICATIONS MADE IN NEW YORK STATE

Because of the fact that there are two commissions in New York, each having a separate and distinct territory, the move for higher fares in this State may, for purposes of discussion, be considered with regard to the geographical subdivisions.

The surface railways operating in New York City are subject to the jurisdiction of the First District Commission. These companies propose to continue the 5-cent fare but ask permission to charge 2 cents for transfers. This course is necessary because the subway is owned by the city and leased with a stipulation for a 5-cent fare. To raise the surface fares to 6 cents would drive the traffic to the subway, whose facilities are already taxed to the limit. There is no city in the country, moreover, where the use of transfers is proportionately as great as in New York, the average fare being less than in Cleveland.

Thirty-three companies of the seventy-two which are subject to the jurisdiction of the Second District Commission, outside the metropolitan section, have filed petitions for increased fares. These companies operate under a wide variety of conditions. In the number are included several interurban systems, but most of the properties involved are situated in cities and towns. The petitions filed are, in the main, identical. A majority of these petitions ask permission to charge a flat 6-cent fare. No change is to be made in present conditions as regards transfers. In one or two cases the petitioners have asked for 7-cent fares.

The effort of all these companies is of peculiar interest by reason of the fact that, for the first time in the history of the electric railway industry, a large number of companies have united to present their common case to the public and the commissions. A special committee on ways and means to obtain additional revenue was created to conduct the case, and that committee has co-operated with each individual company in the presentation of its particular situation. The result has been to focus public attention upon those facts and tendencies common to all companies and to place the experience of each company in preparing the individual case at the disposal of all the companies. We have been absolutely assured from the outset of the strength and correctness of our position, and our only problem has been to see to it that we made the facts clear to the public and regulative bodies.

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*Abstract of address presented at conference of American Electric Railway Association, New York, N. Y., Oct. 9, 1917.

The First District Commission (in New York City) has so far heard only the case of the Third Avenue Railway. By reason of the concentration of interests in this city and the long experience of the officers of the local companies, there has been no occasion for special effort by the committee on ways and means.

Before the Second District Commission, however, the committee secured permission to present, at the outset, comprehensive facts and considerations applying to the industry as a whole and to each of the companies individually. The constantly increasing cost of operation, especially within the last few months, was brought out through the testimony of witnesses possessing expert knowledge of the several phases of this subject. The declining credit of the electric railways and the reason for the disfavor into which their securities have fallen with investors, as a result of the decreasing profitableness of the business, were proved on the basis of careful, scientific and impartial investigation.

One of the knotty questions involved in many of the New York cases concerns provisions in the franchises fixing the maximum rate of fare at 5 cents. These franchises constitute contracts which were entered into in good faith by the companies and the cities. The corporations in accepting them intended, as far as possible, faithfully to observe their covenants, but the time has now come when it is impossible to operate with a 5-cent fare. We are advised by counsel that the courts of New York State have held that attempts by municipalities to fix rates of fare through franchise stipulations are *ultra vires* because the Legislature specifically reserved the right to fix rates of fares and later conferred this right upon the Public Service Commissions.

POINTS THAT HAVE BEEN PRESENTED

In presenting our case, we have attempted to look facts as squarely in the face as we have known how to do. We have been fully aware of the multitude of misconceptions and prejudices with which the public mind is obsessed concerning our industry. A large number of people believe that the street railways are prosperous. Certainly no relief for the companies can be obtained so long as that misconception prevails. We have sought in our presentation therefore to go into the fundamentals of the industry. The main points presented have been as follows:

1. Commission regulation of electric railways has now been in force in the State of New York for more than ten years. In that time security issues have been closely regulated, and therefore the assumption that the progressively less favorable showing was due to the issuance of new securities without value behind them is untenable. The financial position of the companies has become steadily worse.

2. Although operating revenues of the electric railways situated in the Second District have considerably increased in the last five years, the net income, remaining after paying operating expenses and fixed charges, has decreased from $4,231,000 to $744,000. To state the matter another way, 15 cents out of every $1 of revenue remained for the stockholders in 1911 while in 1916 only 4.7 cents out of such amount was so available.

3. The situation has been aggravated by the fact that states and municipalities have been very busy adding new burdens of taxation and paving requirements. The taxes paid by the electric railways in the Second District in New York have increased 124 per cent in the last ten years. Paving has become constantly more expensive. This requirement which was inaugurated in the horse-car days has now become an arbitrary and indefensible exaction from the electric railway, whose cars never touch the pavement and hence cause no wear on it.

SHORT-SIGHTED VIEW OF MUNICIPALITIES

One of the most discouraging features we have encountered in New York has been the insincere or short-sighted view which representatives of many of the municipalities have taken. Certain officials have opposed us, not because they believe that we are not entitled to relief, but because they believe such opposition to be politically expedient. They argue that they must make a show of opposing us.

So long as our adversaries fight fairly, we have no objection to opposition. We do, however, deplore the studied misrepresentation and clever half-truths which have emanated from certain quarters. Instead of acknowledging that the prosperity of electric railways is a matter of as great concern to the citizens as it is to the corporations, attempts have been made to create a feeling of unfair partisanship against the railways. The average municipal official, in his public utterances, takes the position that the public is on one side and the railway on the other; that their interests are irreconcilable, and that any advantage given to the corporation must be at the expense of the people.

But we have insisted that the prosperity of the electric railway is a matter of selfish interest to every individual in the community. He is benefited by good service and is inconvenienced by inefficient service. Service involves the ability to command facilities, and facilities can only be provided in case a corporation can secure capital. The community and its transportation facilities, therefore, have a common and single interest. The success, growth and prosperity of a city are dependent upon the co-ordinate development of its utilities. The investor and the public prosper or suffer together. Each, therefore, has a common interest in promoting the prosperity of the other. The fundamental question is the ability of the utility to give first-class service; to extend its lines as communities develop and as traffic increases; to provide new equipment and to keep abreast of improvements in the art. The first and paramount consideration is the standard of service, and the all-important test is whether the electric railways, on a 5-cent fare, can continue to give first-class service.

We have adduced official records to show what has happened to the electric railway industry in New York State in the last six or seven years. The figures are startling in their significance, in their menace to public convenience and prosperity. In 1909 150 miles of new electric railway line were put into operation in the State; in 1910, 64 miles; in 1911, 37 miles; in 1914 there was no increase, and in 1916 not only was no new mileage built but 10 miles of line were actually torn up. Just how unhealthy the situation has become will be indicated by the fact that all new financing of electric railway development in this State has been through bond issues. No one was willing to take chances in providing new money for stock in such enterprises; every new investor demanded a lien upon the property.

PEOPLE HAVE BEEN SET TO THINKING

We have believed that the people wanted to know the facts and that they were intelligent enough to realize that their electric railways must be reasonably prosperous if a high standard of service was to be provided. We are doing our best to give them these facts, and we have been gratified to observe the responsiveness of public opinion to the conditions disclosed by the testimony before the commissions. In order that the press and public might be fully acquainted with the actual conditions, as brought out in the testimony, the committee retained Ivy L. Lee to handle the dissemination of this information, presenting the story of our necessities in a straight-forward, business-like fashion, always using data taken from the official reports of the commissions or from sworn testimony.

I believe that we have succeeded in convincing the thoughtful people of New York that the expenses of electric railways have increased enormously within the last five years and that the profits in the industry have shrunk to a dangerously low point. We have induced people to think about the business problems which underlie the industry, so that as the cases of the individual companies are tried we can confidently expect a careful, business-like weighing of the evidence without prejudice and with the full realization of the handicaps under which all electric railways have been operating in recent years.

The New York cases are still being presented, and much valuable experience is still to be had; but the great advantage of co-operative action by a group of companies is already clear. The opportunity is thus presented to bring out the general economic conditions surrounding the industry, an opportunity which would not arise if each company prosecuted its action independently. In proceedings by individual corporations it is so easy for the opposition to obscure the real issue by raking up alleged ancient scandals and by filling the case so full of personalities that the broad, economic questions are lost to view.

INDUSTRY NEEDS RADICAL READJUSTMENT

It needs no argument to prove that all that has been said on behalf of the electric railways of New York can be properly said with regard to the industry throughout the nation. The accumulating burdens of regulation and legislation, added to the steady increase in operating expenses, have reduced the electric railway business to the point where a radical readjustment is necessary if the industry is to perform the service the public interests require.

The fundamental difficulty with the industry concerns the system of charges. The rate of fare is a relic from horse-car days. The electric railway industry is the only business which, to my knowledge, has the price of its service fixed by tradition, without any reference to the present cost of rendering the service. The fight in New York and throughout the country is essentially a struggle to break the bond which binds the electric railway business within the nickel. It is a fight to establish the principle that rates of fare shall be fixed with reference to the cost of good service, including such a fair return upon the capital already invested as will attract new capital when it is required to provide for necessary expansion in development.

The test of commission government of public utilities is undoubtedly at hand. It was very easy for the public service commissions to reduce utility charges in the days of decreasing costs, for such decisions brought popular satisfaction. If is quite another matter, however, to raise rates in the days of increasing costs, for rate increases are never popular. Yet commissions the country over are face to face with the necessity of making the choice between a so-called popular decision and exact justice. If they refuse to give relief to the electric railways, they practically sign the death warrant of the industry. The owners of electric railway properties will be found urging municipal ownership as the only escape from an intolerable situation. The fight for higher fares, therefore, involves essentially the fate of the experiment of public regulation of privately owned and operated utilities.

PROBLEM IS ONE OF PUBLIC EDUCATION

In my opinion, after long study and deliberation, the problem now confronting the electric railway industry is one of public education. It is a problem of informing the people of the straits into which the industry has fallen, and of convincing the public that rates of fare must be fixed as in any other business, with due regard to all the costs of providing good service.

The electric railways must demonstrate that the best policy, from the standpoint of the people, is one of liberality towards those who have honestly and in good faith invested capital in public utility enterprises. The public must be shown that their interest is best served when .capital receives a fair return in good years and in bad, and when their utilities are protected from short-sighted, dishonest and unscrupulous attacks. In return the community may expect and demand efficient, adequate and satisfactory service.

The railways must make the public see clearly that the increases in operating expenses have been caused by economic conditions over which they have had no control. Wages and the cost of materials of all kinds have steadily mounted. They must show that these unfavorable conditions arose at a time when the electric railway was subjected to most severe competition.

ASSOCIATION SHOULD STUDY WHOLE FARE PROBLEM

The industry has come to the point where the nickel as the standard fare generally must be abandoned. Its abandonment may involve radical readjustments in the whole structure of urban rates. Is a flat increase from 5 to 6 cents the most desirable method? Under what conditions may a street railway equitably charge for transfers? Under what circumstances, if any, does the zone system furnish the best solution?

These are questions which go to the foundation of the business. They are questions which must be solved by the public utilities and not allowed to become political footballs or matters of commission caprice. Doubtless all of these methods will be tried.

The number of companies which have advanced rates is nearly 100. The results which will follow these increases will doubtless be quite dissimilar. Of those charging a 6-cent fare some will have an increase in operating revenue approaching the theoretical maximum of 20 per cent, because the volume of traffic will show little decrease. In other cases the decrease in travel may largely neutralize the higher rate of fare.

It is the duty of the industry to study carefully all of these cases to ascertain why some companies fare better than others. We must be able accurately to forecast, through such a study, what results a company operating under given conditions can expect from a 6-cent fare. We must work out standards by which an intelligent decision can be made as to whether in a given case the wisest plan for increasing revenues involves a flat increase in the rate of fare, a charge for transfers or the introduction of the zone system.

It is the duty of the industry to make such a careful, scientific and complete study of the results secured, that the fundamental principles may be clearly and unmistakably developed, and the limitations of each method of relief accurately measured. Such a task is not one which can be left to voluntary investigators who can afford merely to skim the surface of the problem. It is a subject which requires thoughtful, painstaking study by the leaders of the industry, reinforced by careful, scientific research. No problem of equal importance has been presented to the industry since the electrification of the horse-car lines.

It seems to me the best method of studying the questions is through the creation of a committee of the American Electric Railway Association to be charged with the duty of making a careful, exhaustive and scientific analysis of the entire fare problem. Such work will save many false steps. It will furnish a basis of indisputable fact which no commission can afford to ignore. It will serve as the medium of educating the public concerning the true situation of the industry. It will blaze the trail leading to the financial rehabilitation of the electric railway.

Why a Charge for Transfers Is Justified*

An Efficiently Managed Property Should Be Allowed to Earn 8 Per Cent. The Form of a Revenue Increase Is a Matter Which Must Be Determined Largely by Local Conditions.

By Frank Hedley
Vice-President and General Manager, Interborough Rapid Transit Company and New York Railways, New York, N. Y.

THE conditions under which the electric railways in this country have been operated for the last twenty years have gradually resulted in a reduction of the margin between income and outgo. Not a few corporations have been sailing perilously close to the wind. The change in motive power from horse to electricity, the increase in size and the improved character of the rolling stock, the length of ride for the nickel and the demand that liberal and universal transfer systems be adopted, have all had their effect in bringing about this result. The increase in taxes of all sorts and the regulation necessary and proper on the part of public service commissions have also added to the financial burden. As far as the situation in New York City is concerned, we have practically reached the point on the surface lines where we must do something to increase our income or go into insolvency, with all that that means to the public in the way of breaking up of the systems, abolition of transfers and the ~~cutting-off~~ of through routes.

As a general proposition I think the whole matter is subject to the following analysis:

1. Do the surface car lines perform a useful and necessary function in the economic life of the cities which they serve?
2. Are the companies now earning an adequate return on the fair valuation of their properties?
3. Are the companies efficiently managed and operated?
4. Is there a prospect of reducing the taxes?
5. Can the companies reasonably expect to increase their net revenues by an increase of business?
6. Should fares be increased as the only possible means of relief?

ELECTRIC RAILWAYS ARE INDISPENSABLE

It will scarcely be denied that adequate urban transportation facilities constitute an indispensable function in the commercial and industrial life of every municipality. Each city must decide for itself whether its facilities are meager, adequate or superfluous. With regard to New York, in Manhattan Island alone, the surface car lines are carrying in round figures about 550,000,000 passengers annually. Notwithstanding the introduction of additional facilities in the past, in the shape of rapid transit lines, the experience has been that the surface lines of Manhattan Island are needed to meet transportation requirements. Undoubtedly with the opening of the new rapid transit lines now in process of construction, there will be a radical readjustment of travel which will divert some traffic from the surface lines. If the experience of the past is any guide, in time the existence of those rapid transit lines will tend to increase the amount of business to be handled by the surface lines. There will, however, undoubtedly be a lean period during which the surface lines will suffer a loss of revenue. How serious that will be no one can prophesy with accuracy.

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*Abstract of address presented at conference of American Electric Railway Association, New York, Oct. 9, 1917.

ADEQUATE RETURN IS EIGHT PER CENT

For sixty years the railroad law of the State of New York provided that fares could not be so reduced as to produce less than 10 per cent upon the capital actually expended. I do not intend here to enter into a long discussion as to what constitutes a reasonable average return. I will only say that it is my understanding that the Supreme Court of the United States has held that to take property for public use for less than 6 per cent is confiscation. Since the European war began the great nations of the world have paid more than 6 per cent for the money borrowed upon the best of credit. I do not think that anything less than 7 per cent is a reasonable average return on a street railway property, and we should set aside at least one-half of 1 per cent for surplus and at least one-half of 1 per cent for contingencies. This makes a total of 8 per cent as the least average return which a public utility ought to be expected to receive, if it is to give satisfactory service.

The question of an adequate return is of course contingent upon the efficient management of a property. Everything that can be done in reason to eliminate waste, reduce costs and secure economies which do not impair the service or involve unjust treatment of employees, should obviously be accomplished before any company can reasonably maintain that it is efficiently managed. This is a requirement which the public has a right to expect and demand.

TAXES ARE A HEAVY BURDEN

The New York Railways has been paying to the city, State and nation approximately 11 per cent of its gross revenue in the form of taxes or in the carrying of burdens which are in the nature of a tax, including such obligations as the maintenance of paving and the removal of snow and ice, etc. This total is out of all proportion to the return which the company has been permitted to earn, which has been approximately only 4 per cent on the value of the property.

All railways realize that the automobile industry has produced a radical increase in the cost of maintaining pavement and has served to add to the congestion of the streets, reducing the speed with which the cars can be operated. This has tended to render the service less attractive to the public, has increased operating expenses in the running of cars and has added enormously to the cost of keeping in repair the pavements in the railway area, which are now much more rapidly worn out than formerly because of the heavy automobile traffic. In 1911 the number of registrations of commercial automobiles run in Greater New York was in round figures 3900, as compared to approximately 19,000 in 1916, or fivefold that of 1911. When one considers that in addition to the commercial automobiles there are the pleasure cars and the jitneys and buses in some cities which not only wear out the pavement for the railways but reduce the revenue of the latter, it is manifest that the time has come for a readjustment of these tax burdens.

GENERAL INCREASE OF BUSINESS NOT TO BE EXPECTED

In some sections of the country the operating companies may have a reasonable expectation that the development for the next few years through the extension of their systems or the growth of the territory traversed will increase their revenues and enable them to earn a fair return on invested capital. I think, however, that in the majority of instances this is not reasonably possible. In certain cases an increase in fare is the only solution of the problem. The justice of this has been recognized in a number of cases, notably in Massachusetts and Connecticut.

METHOD OF REVENUE INCREASE DETERMINED BY LOCAL CONDITIONS

The question as to whether the fare should be increased depends primarily upon the establishment of the facts that with efficient management the company is not earning an adequate return, that there seems no reasonable prospect of an early reduction of its taxes, and that without relief of some sort it cannot maintain and operate its properties and at the same time earn an adequate return on its investment. Whether the increase of fare should take the form of an increase in the initial fare or in a charge for transfers, is a matter which must be determined largely by local conditions.

WHY TRANSFER CHARGE IS ASKED IN NEW YORK CITY

In New York we are taking the position that we would like to try the plan of charging for transfers because that may bring the necessary relief, and we are not seeking to be unreasonable or to mulct the public. We are frank to say we do not know exactly what such relief will mean to us in dollars and cents, but we are willing to make a trial, reserving to ourselves the right to seek further relief in the event that the measure proposed is not efficacious in producing the desired result.

Of course, it must be borne in mind that up to this time we have been operating under the general flat-fare system which is characteristic of most American urban operation. Under such a system the man who rides a short distance pays for a part of the expense of transporting another man who rides a long distance and whose nickel does not adequately recompense for the service rendered. There is undoubtedly an injustice in such a system as far as certain individuals may be concerned, but in the long run it has proved to be in the interest of the welfare of the greatest number.

It may be argued that the passenger who pays his nickel on one car and rides two blocks, transfers to a second car and rides five blocks at an additional charge of 2 cents is unduly discriminated against as compared with the passenger who pays a nickel on a car and rides seven blocks thereon. There is something to be said on both sides of this question. It is obviously difficult to reduce to terms of dollars and cents what the additional cost is due to the stopping and starting of the cars involved, with additional power consumption, wear and tear on brakeshoes, accident possibilities, etc., in the case of the transfer passenger as compared with the cash passenger. There is some additional cost. Measured in terms of the possibilities, however, the transfer passenger has the opportunity of riding, and in many cases actually does ride, a much longer distance from his starting point to his final destination, changing as he does several times from one car to another, than does the passenger who rides on one line without change. As the transfer passengers are relatively in the minority and as their individual privileges are relatively greater, it seems only just that they should contribute their part toward the cost of giving the greater service. In a city like New York, where the longitudinal lines are so close together, it is unjust and uneconomical to expect the railways to operate extra crosstown cars which would not be necessary if it were not for the fact that people will board a crosstown car and ride for a very short distance in order to reach the first longitudinal line. The operation of much unprofitable mileage on either side of the point of heaviest riding is obviously a source of unjustifiable expense, unless the persons availing themselves of the transfer privilege are willing to pay for it.

It is impossible from a practical operating standpoint to eliminate entirely the abuse created by stop-overs on transfers to make calls, shop or transact other business in the vicinity of transfer points. We have greatly reduced that possibility in New York by the type of transfer used, but we well recognize that we have not entirely stamped out the abuse. The charge for transfers will in all probability tend to cause persons to travel over direct routes and without transferring if practicable, where at present they resort to the transfer privilege because of the ability to stop over. A change of this character cannot be reasonably construed as a hardship to the individuals concerned, and from the broad standpoint of efficient handling of transportation facilities it is urgently desired. Such a scheme of directing travel certainly would tend to promote the welfare of the public as a whole, for it would decrease the number of cars that it is necessary to operate, thereby reducing the congestion in the streets. A reduction in congestion would mean a reduction in the possibility of accidents. Moreover, the speeding up of all traffic would mean a financial economy, because slow movement is costly in time and money to the operators of all vehicles involved.

Increases in Flat Rates for Present Zones*

How the Bay State Street Railway Has Tackled the Fare-Increase Problem in the Light of Its Peculiar Conditions. A Uniform Method Is Not Deemed Advisable in This Case.

By P. F. Sullivan

President Bay State Street Railway, Boston, Mass.

I SHALL tell you something about, first, our conditions in Massachusetts; second, our campaign for increased fares, and, third, the result of our campaign—touching upon the latter in regard to zones and rates of fare in zones.

In Massachusetts we are operating under the most peculiar and onerous conditions in this country. We are working under a mongrel public service act, an act that gives mandatory powers to the commission. All railways, however, were built under conditions that were related to recommendatory powers. We cannot take land for the abolition of grade crossings, or for the acquisition of sites for power stations or carhouses. We are compelled to operate on the public ways, and these are narrow, hilly and crooked. That is why our average speed is low, and platform wages and other elements of operating cost high. We realized about four years ago that intensive railroading had its limits in Massachusetts, and that the only relief in sight was an increase in the rates.

Our company is peculiar in many ways. A consolidation of seventy-odd companies, we operate substantially one-third of the mileage of the whole State. Our lines run through twenty cities and seventy towns in a stretch of territory in eastern Massachusetts 110 miles long. The cities are usually small ones, in most of which the industries are mainly textile, and in some shoe manufacturing. The population in such cities contributes less per capita to railway operation than any other population in the United States or Canada.

Many people look upon us as a company with an income of more than $10,000,000—one that can be compared with others of similar income. It is not possible to make such a comparison. The largest city in which we operate has a population of about 120,000. A portion of our income is derived from that city, but the very much greater part of our income is derived from the large number of small cities and towns above mentioned.

Four years ago we began our movement for higher fares, basing our case on investment value. The commission found an investment value substantially 7 per cent below our value, but theirs was a value for rate-making purposes which did not include all the property of the company. On that point they were entirely right. For example, there was about $1,000,000 worth of our property leased to another company, and properly that should not have been included.

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*Abstract of address presented at conference of American Electric Railway Association, New York, Oct. 9, 1917.

On the investment value found the commission ruled that we were entitled to earn 6 per cent. They also said that after making proper allowance for the modern theory of depreciation, which involved an amount of nearly $700,000, we ought to do several things in the matter of intensive operation. The irony of that situation was largely this—almost everything they said we ought to do was something they and their predecessor commission had prevented us from doing. All in all, they made several good rulings, and several bad ones, and I do not think I am telling any tales out of school when I say that they wish they had not written some of the things they did write.

In that readjustment we did not get enough. Our application was for a uniform increase from a 5-cent rate to a 6-cent rate. The commission refused all increases except in what might be called interurban territory, although this is not comparable at all to what in other parts of the country is understood as such territory. Our interurban trackage is simply lines on which the cars are operated with ordinary speed between cities and towns on public ways. The commission allowed an increase covering 375 miles of such territory. Our total mileage is about 900 miles.

Right there, however, we found a great deal of comfort, for the practice of our commissions in the past has been to follow the principle of the same rate of fare in each city and each town and between centers, no matter whether the territory was paying or nonpaying.

GETTING THE FARE CASE REOPENED

The decision rendered in July, 1916, was to remain in effect until Aug. 31, 1917. During the winter the era of greatly increased prices for materials and cost of operation came in. We found we were up against it and could not sell securities, and we decided on another plan of campaign. Having broken down that barrier of a uniform rate of fare, for our whole territory, we proceeded on the theory that we would endeavor to make a still further change in our rates. We would seek to have our territory subdivided into three classes—urban, suburban and interurban—the last being the territory where an increase in fare had already been allowed.

The first obstacle was to get the commission to reopen the case. Under its rulings the burden of proof would be upon the petitioner. We said that we wanted quick action and asked how the commission would feel if we went directly to the Legislature. There we could obtain quick action with the burden of proof on the other side.

Just previous to this, however, we had started on a campaign of publicity. I sent a letter to the Mayor and the city solicitor of each city, representatives of boards of trade and others, inviting them to come into Boston without telling them why. Substantially ninety men came to attend a luncheon. I told them that a great deal had been said about getting together and laying the cards on the table, and that I had asked them to come so that I might do that very thing. And the cards showed that either we must have an increased income or the public must take and operate the railway if it wanted service. The city representatives said that they had no legal right to take over the railway, but that they would join us in a request for increased income if we would join them in going before the Legislature for the general right to take over the lines.

At that meeting they appointed a committee which reported back that we ought to go to the different communities and tell them what I had said. They asked if I would not undertake the campaign of publicity, and this was arranged. I went around to about fourteen different places, and told the story in the most elementary manner, dealing with the fundamentals. I think that was the very best thing that we did. The newspapers in the local communities gave us from two to three columns of space, and thus publicity was secured just where it was needed.

We went in good faith to the Governor with two propositions, namely, increased fares or public ownership, and said that we were ready to do exactly what I said we would do. He balked on the proposition of public ownership, but said he would recommend the other. We then petitioned the Legislature, knowing that we had only one chance in five. The Senate accepted the petition and referred the matter to a committee, but we fell short four votes in the House.

Under these circumstances, therefore, we presented a petition to the commission to reopen the case. Some communities that had been previously actively hostile went before the commission and favored our petition. Others were not very enthusiastic in favor of it, but the next morning the commission decided to reopen the case. In thirty days from that time we got a favorable decision, allowing a basic 6-cent fare in all our territory, and a compromise in the form of twenty tickets for $1 in book form, the cover to accompany any ticket and the tickets not to be used on Sundays, holidays or Saturday afternoons. We are to try this plan for six months, until Jan. 15, 1918. This period applies only to the matter under consideration in the reopened case. The company is just now announcing a mileage system for the rest of the territory, 375 miles, where the rate increase was approved in 1916. The new rate will be 3 cents a mile instead of 2 cents, which means substantially a 30 per cent increase on top of the preceding 20 per cent increase. [See Traffic and Transportation Department in this issue.—Eds.]

The tickets represent 21 per cent of the income in the territory affected, *i. e.*, in cities where transfers are used. Such territory produces 13 per cent of the company's gross income. The fares now average 5.7 cents. The difference between that and 6 cents is due to two things—namely, the tickets mentioned above, which are substantially 2.5 per cent of our gross, and the use of commutation and workmen's tickets.

The company has sixteen traffic centers. The results have been as different as if some of them were 1000 miles apart. We showed in one center a loss of 2.4 per cent in income in two months and a half. We showed in another center an increase of 19.7 per cent in income, the other centers varying all the way between these two figures. Anyone who did not look below the surface could take either one of these situations and prove a case that was not true. The falling off in income in the first center was not due to the increase in fares but to local industrial conditions

The great increase in income in the other center was not due to increased fares, because there were none in that district—the city of Newport, R. I. This has to-day a floating population, due to the influx of sailors, or substantially the same number as its permanent population.

We are at present weighing every factor, giving due weight to weather conditions and other vicissitudes. Our increase in fares for the two months and a half after July 15 was greater than the increase in the preceding six months and a half, but, inasmuch as we cannot yet attach the proper weight to each factor, we cannot now give a more definite figure. We shall have something better about the first week of November, and all the data will be at the service of any electric railway man who cares to send for them.

I do not believe in a horizontal increase on existing zones. As to whether another can apply that principle in his territory, it is for him to say. I know that it does not fit our conditions.

The rate of fare, as General Hancock said years ago about the tariff, is purely a local question. I do not believe there is any rule that can be scientifically applied in one place that will produce the same results in another place, for all the elements that enter into that problem will not be the same.

We have a traffic loss, and this shows three stages. It is least in the interurban territory, more in the suburban territory, and greatest in the urban territory. I would suggest caution in applying a horizontal increase with the expectation of getting a corresponding numerical increase in income.

Shortening Present Single-Fare Zones*

Fifteen Reasons, Based in Part on the Experience in Milwaukee, Are Given in Favor of the Fare-Zone System of Increasing Fares Rather than Increasing the Unit Fare or Charging for Transfers

By Edwin Gruhl

Assistant to President The Milwaukee Electric Railway & Light Company, Milwaukee, Wis.

THE desirable solution of the fare problem is the one which provokes least public disfavor, yields the greatest increase in net earnings and is economically sound—and is still possible of permanent application. It is believed that in many cases the shortened zone has these advantages over suggestions to increase flat-rate fares or charge for transfers.

The baker when confronted by higher cost of manufacture does not increase the customary price of the loaf. He cuts down the size. The politician when facing the higher cost of government does not increase the tax rate. He raises the assessment. Indirection is the least unpopular method. In applying the shortened zone plan only a minority of the patrons will be affected, and it requires no involved technical discussion to convince the public that if added earnings are necessary those who ride farthest should pay the increase. It is not a square deal to ask the center to carry the fringe indefinitely.

The revenue possibilities of the shortened zone plan are substantial. Speakers have on two previous occasions before this association explained the operation of the zone system as applied to Milwaukee's suburbs. The single-fare zone extends from 3½ to 4½ miles from the center of population and traffic. Beyond this center zone, or metropolitan district, we charge 2 cents cash or 1 2/3 cents ticket fare for each mile zone. The average fare within the single-fare zone is 4.23 cents. Studies indicate that the creation of another zone about 1 mile in width in the present single-fare area with the same zone fare would yield added annual revenues of $844,000. A 5-cent straight fare in the present single-fare area would yield only $790,000, under the assumption of no decrease in riding habit, and a 1-cent charge for transfer, provided passengers paid for as many as they now require, would yield only $446,000. The transfer ratio in Milwaukee is high. About 41½ per cent of our revenue passengers ride on transfers, and it may be expected, in line with experience elsewhere, that the demand for transfers would be materially reduced if charged for. We could not expect that a charge of 1 cent for a transfer would yield more than $300,000.

We have for several years made what Doolittle calls functional income accounts of the business. These separately show expenses varying with the car-mile, car-hour, passengers, miles of single track and other operating units. By ascertaining the units of any part of the business it is possible to construct an income account showing the revenues, expenses and net income or deficit of any cross-section of the business. We have done this in the case of the proposed mile zone at the outer edge of the present single-fare area. It is unnecessary here to make detailed reference to the figures, but some of the results concretely illustrate the result of tendencies responsible for our present difficulties and likely to be responsible for even greater difficulties in the future.

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*Address presented at conference of American Electric Railway Association, New York, Oct. 9, 1917.

We found that 23.3 per cent of the car-miles and 20.2 per cent of the car-hours of the present single-fare area were required to supply service in the contemplated zone. The number of fares lifted was a scant 20 per cent of the total. The miles of single track required for the service was 33.9 per cent, and the percentage of the total valuation apportionable to the service was 31.9 per cent. It is not surprising, therefore, that the income account of the new zone disclosed that it now fails to pay operating expenses including depreciation and taxes. The present single-fare area yielded just over 4 per cent on the Wisconsin Railroad Commission's low valuation of physical property. With the new zone eliminated, which it is proposed to have stand on its own feet, the new single-fare area under present rates of fare and with present transfer privileges would yield a return of 7.43 per cent on the physical value of the property as found by the Railroad Commission.

The cost of street railway service is controlled by the distance passengers are carried and the service provided therefor. While transportation costs are made up of items which are independent of the length of haul as well as items which vary directly with the haul, the latter predominate. Our average haul per passenger in the single-fare area in 1911 was about 2.73 miles. Recent studies indicate that it is now more nearly 3.3 miles. An increase in the passenger haul is inevitable with the growth of residence districts in outlying territory. As this occurs the average single-fare haul within unrestricted single-fare areas becomes more and more unremunerative.

Because of the operation of these cost factors every street railway has a geographic limit beyond which it cannot haul passengers for a single fare without loss. It is probable that in most cities, as in the case of Milwaukee, this economical limit has not only been reached but long since been exceeded.

Just how rapidly this extension or spread of population over wider areas is taking place is evident from population studies made in Milwaukee. We have made forecasts of population to 1930 based upon past rate of increase, studies in changes of character of real estate, industrial factors, etc. These studies indicate that where in 1910 there was 93.3 per cent of the population in a 6½-mile area located within the central 3½-mile area, this might be expected to decrease to 76.5 per cent of the total population within the same area in 1930. These conclusions were corroborated by independent studies made by the Bell Telephone Company. There is no question but that the relatively greater increase in population in the outskirts will result, as cities grow, in a greater proportion of long-haul business.

Besides this evident economic justification, the zone basis of street railway fares is more in keeping with the principle of public utility law which prohibits discrimination. Only such a system of charges is reasonable in which each person or class pays in accordance with the cost of service occasioned by each class. This principle has been responsible for the condemnation by commissions of the flat rate electric and water service and the insistance in railroad cases that the losses on the long haul shall not be offset by profits on the short-haul business.

The zone basis of fares, moreover, conforms more closely than any other system with the ability of the customer to pay. Living expenses, generally speaking, are less, and living advantages greater at the outskirts than in the center of the city. This we regard as a very important point. The value of real estate is a fair index of the comparative importance of the major item—ground rent. In Milwaukee, the tax assessments have for years been maintained closely to within 100 per cent of the sales value, and the assessments of land and improvements are carefully separated. Within the proposed restricted single-fare area we find an average assessed value of $260 per front foot on streets upon which the car lines operate, and an average value of $100 per front foot on adjacent residence streets. In the proposed new mile zone we find an average value of $37 per front foot on streets on which the street railway operates, and $30 on adjacent streets. In other words, realty values in the proposed zone are only 14 to 30 per cent of realty values in the proposed single-fare area. There can be no question but that the outskirts have offsetting economic advantages which enable its inhabitants to pay the full cost of street railway service occasioned by the longer haul.

The factor of competing forms of transportation is also an important one. It is significant that the jitneys, when the price of gasoline permitted us to have more of them, operated almost wholly within this proposed new inner single-fare area. In any permanent system of fares, the possibility of motor bus competition for short-haul business is important. The zone system is the only rational way of successfully meeting this competition.

The effect of any change in the system of fares upon riding habit must also be considered. It is probable, judging from the experience with 6-cent fares in Massachusetts, that increases in the single or flat-rate fares result in decreased riding. This decrease occurs in the more profitable short haul or convenience traffic. Some reduction in riding habit is also to be expected with the charge for transfer. It is difficult to forecast the net result of changes in riding habit with increasing prices. It is apparent, however, that under the zone system such as here discussed fewer passengers will be affected than by the two alternative plans; the opposition from patrons will be less, and the riding habit will be least affected because most of the traffic upon which the increased charge will be laid is of a long haul and necessary, rather than of a short haul and convenience nature.

Finally the most important advantage of the shortened zone plan over plans to increase single fares or charge for transfers may be referred to. This is its flexibility for future adjustment. New zones may be established or old zones eliminated as net earnings fall or rise without change in the methods of collection, etc. Or charges within the zone may be increased or decreased. The justification for such increases or decreases may be readily ascertained from the studies of traffic and cost. On the other hand, with a charge for a transfer once introduced and fixed, increases would be difficult and other forms of relief would necessarily have to be resorted to. It is not probable that any street railway will eventually obtain all the relief from losses which the economic facts justify. Commissions are at times lacking in courage, and adjustments will likely be made in installments.

Among the objections it is claimed that the zone plan is un-American. But in the present crisis it has been found expedient to adopt many innovations which are not sanctioned by American practice. In fact, the "one city-one fare" idea was sponsored by electric railway promoters who feared that the zone system would reduce prospective profits of the projected business. The same free and easy American plan of a flat rate for lodging and food and eat what you please is surviving only in our smaller hotels. If the zone plan has merit, now is the opportunte time to adopt it as an American institution.

It is urged that it leads to congestion of population. But the truth is, as Doolittle has pointed out, that congestion is nowhere greater than in our large American cities. It is actually decreasing in some European cities where the zone system is almost universally applied, but there are probably other factors contributing to this decrease. The street railway fare is so small a part of the citizen's budget that it cannot influence living habits. What is true is that the American city is surrounded with a succession of new and more fashionable residence sections, the older ones falling into decay and disrepute. If the older sections were taxed, regulated and inspected the way our street railways are kept up to standard, our cities would have no slum problem and realty values would have greater stability.

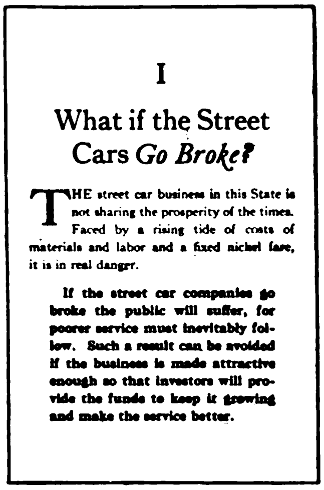
The difficulties and inconvenience of fare collection are also frequently referred to as an objection of great practical weight. These administrative problems are not nearly as serious as imagined. They have been effectively met in the plan of fare collection of the Hudson tubes, and they have occasioned no difficulty in other places in which the system is operated.

Cost of Health Supervision

The conference board of physicians in industrial practice has issued a compilation for 1916 of health-supervision costs as reported by ninety-nine industrial plants located in fifteen states. The total average number of employees supervised during the year was 495,544. The total cases of all kinds were 3,165,114, at a total medical and surgical cost of $1,238,485, or an average of $2.50. The average annual cost per employee, excluding four plants for which the cost includes sickness treatment of employees and their families at home, was $2.21.

For five establishments in the transportation industry the supervised employees totaled 35,795. The cases numbered 81,591 and cost $69,633, an average annual cost per employee of $1.95. In the case of seven plants in the light and power industry, the employees numbered 24,921. Their cases totaled 49,046 and cost $92,601, an average of $3.72.

The data contained in the compilation were secured from plants engaged in many industries; in light, medium and heavy work; in comparatively safe as well as hazardous operations, and in shops of various size and character, located in different parts of the United States. Some are situated in cities where hospitals and specialists are available, and some are not.

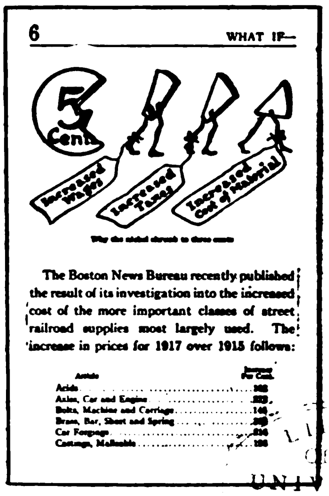


I

What if the Street Cars *Go Broke?*

THE street car business in this State is not sharing the prosperity of the times. Faced by a rising tide of costs of materials and labor and a fixed nickel fare, it is in real danger.

If the street car companies go broke the public will suffer, for poorer service must inevitably follow. Such a result can be avoided if the business is made attractive enough so that investors will provide the funds to keep it growing and make the service better.



6 WHAT IF—

5 Cent
Increased Wages
Increased Taxes
Increased Cost of Material

The Boston News Bureau recently published the result of its investigation into the increased cost of the more important classes of street railroad supplies most largely used. The increase in prices for 1917 over 1915 follows:

Article	Increase Per Cent.
Acids	[illegible]
Axles, Car and Engine	[illegible]
Bolts, Machine and Carriage	[illegible]
Brass, Bar, Sheet and Spring	[illegible]
Car Forgings	[illegible]
Castings, Malleable	[illegible]

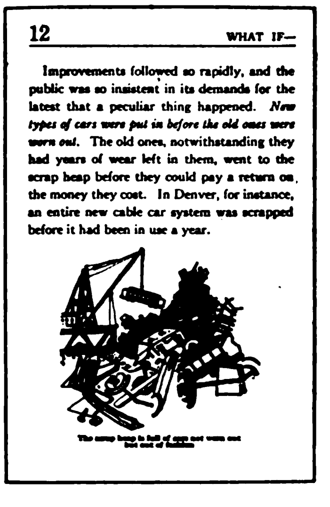
What If Street Cars Go Broke?

New York Association Puts Out Publicity Pamphlet with This Title

THE latest publicity material issued by the New York Electric Railway Association in its campaign for higher fares in New York State bears the title "What If The Street Cars Go Broke"? It is a sixteen-page pamphlet with cover and carries on its front cover a quotation from the decision of the Public Service Commission in the case of the Schenectady Railway Company as follows: "Driving private capital from the work of extending and improving the transit facilities our people now enjoy * * * would be deplorable."

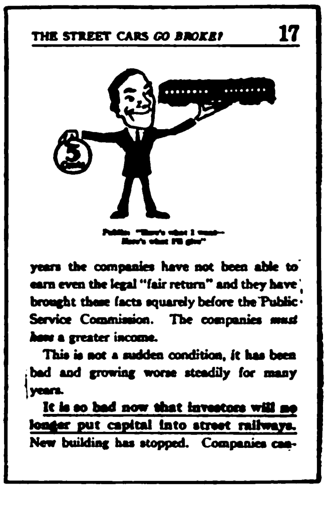
The first section of the pamphlet contains abstracts of some testimony presented at the recent hearing in Albany, including that by Dr. Conway that not half of the up-State trolley companies in New York are earning even their fixed charges, and twice as many are failing to earn fixed charges in 1916 as in 1908. The second section shows that the railway companies have to pay more than ever before for their supplies. The third section shows how the public is demanding better cars, faster trips, smoother tracks, transfers, longer rides, etc., but there is no increase in fare. The fourth section shows how the electric car has made the growth of big cities possible; the fifth, the foolishness of competition as a street car regulator, and the final section, that investors are fighting shy of putting any money into the electric railway business.

Four pages of the pamphlet are reproduced.



12 WHAT IF—

Improvements followed so rapidly, and the public was so insistent in its demands for the latest that a peculiar thing happened. *New types of cars were put in before the old ones were worn out.* The old ones, notwithstanding they had years of wear left in them, went to the scrap heap before they could pay a return on the money they cost. In Denver, for instance, an entire new cable car system was scrapped before it had been in use a year.



THE STREET CARS *GO BROKE?* 17

years the companies have not been able to earn even the legal "fair return" and they have brought these facts squarely before the Public Service Commission. The companies *must have* a greater income.

This is not a sudden condition, it has been bad and growing worse steadily for many years.

It is so bad now that investors will no longer put capital into street railways.

New building has stopped. Companies can-

New York Conference Proceedings

The American Electric Railway Association on October 9 Held a Conference in Place of the Usual Convention—The Discussion Centered on Higher Fares and Labor Conditions.—J. J. Stanley Elected President Attendance Three Hundred to Three Hundred and Fifty.

An informal conference this year took the place of what would have been the thirty-sixth annual convention of the American Electric Railway Association. Morning and afternoon sessions were held on Tuesday, Oct. 9, at the United Engineering Societies' building in New York City, the former headquarters of the association.

The morning session was opened by President L. S. Storrs with an explanation that the reasons for the holding of an informal conference instead of the usual convention were the disturbed conditions of the country and the necessity for the presence of most railway men on their own properties. He also announced the election by the executive committee of the following officers and executive committee members for the year 1917-1918; President J. J. Stanley, Cleveland (Ohio) Railway; first vice-president, J. H. Pardee, J. G. White Management Corporation, New York, N. Y.; second vice-president Richard McCulloch, United Railways of St. Louis, Mo.; third vice-president M. C. Brush, Boston (Mass.) Elevated Railway; fourth vice-president T. S. Williams, Brooklyn (N. Y.) Rapid Transit Company; manufacturers' representatives on executive committee: Thomas Finigan, American Brake Shoe & Foundry Company, Chicago, Ill.; James H. McGraw, McGraw-Hill Publishing Company, Inc., New York, N. Y.; S. M. Curwen, J. G. Brill Company, Philadelphia, Pa.; E. W. Rice, Jr., General Electric Company, Schenectady, N. Y., and Guy E. Tripp, Westinghouse Electric & Mfg. Company, New York, N. Y.

John J. Stanley
President Cleveland Railway
and
President-Elect American Electric Railway Association

After stating that the report of the secretary-treasurer, E. B. Burritt, would be received by title, Mr. Storrs read his presidential address, an abstract of which forms the leading article in this issue.

REPORT OF THE SECRETARY-TREASURER

On account of the entrance of this country into the great war the association, for the first time in its history, omits its annual convention and holds instead a one-day conference for the discussion of immediate problems. The action leading to this result was taken by the executive committee in April of this year.

Practically all committee work has likewise been suspended. These steps were taken in the belief that the unusual and difficult conditions facing the industry would leave officials of member companies little time to devote to matters not concerned with the direct operation of their properties. Other activities of the association, however, have not been slowed up. On the contrary, efforts have been redoubled to the end that the association may serve the industry through other channels with increased efficiency.

An important work was undertaken the early part of this year by the association's committee on national defense. Steps were taken in January, 1916, to organize this committee and later the committee met in Washington with a conference of steam railroad officials called by the Secretary of War at the instance of Daniel Willard, chairman advisory commission Council of National Defense. As a result a plan to supply the government with information concerning the electric railways was worked out and is now approaching completion.

In addition the committee has from time to time issued bulletins of information concerning issues arising as a result of the war. To date nine of these bulletins have been distributed to all electric railways, whether or not they were members of the association. They related to general suggestions, food conservation, first Liberty Loan, registration of employees under the draft law, coal supply (two bulletins), military tariffs, freight car loading and second Liberty Loan. The committee will issue further bulletins as the occasion requires. The association magazine *Aera* has assisted in this work through the publication of additional information of value in the present situation.

Through the suspension of many of the association's activities, the magazine assumes a more and more important place in the organization's affairs. It is the medium by which the interest of members, both individual and company, must be kept alive and its support is more than ever a matter of necessity.

The work of the committees of the affiliated technical associations having been suspended, the question box maintained in the magazine is one of the best means afforded to the active men of the various engineering and operating departments for the discussion of the problems that arise in their affairs. *Aera* is also paying much attention to the pressing and vital problems which confront the industry in connection with increased revenue and the war. It is necessary that there be presented to the executives of our properties every available piece of information in connection with these subjects and in this way and by the publication of discussions which present the railways' case, our magazine is exerting a distinct influence. The advertising receipts have increased during the year, in spite of business conditions which militate against larger advertising appropriations on the part of business concerns in the electric railway field.

The mid-year meeting and dinner of the association was held in Boston on Feb. 16, 1917. The attendance at the meeting was about 650. A comprehensive program arranged by the committee on subjects was carried out.

During the year those sections of the Engineering Manual which were revised during 1916 were reprinted and issued to company members and those individuals allied with the Engineering Association.

The work of soliciting new company members has been carried on actively through the means of circulars and special letters from the office of the secretary. Unfavorable business conditions, however, have militated against the acquisition of any considerable number of new members.

During the year the association has lost nine railway companies and nine manufacturer companies through resignation and one railway and two manufacturer companies through consolidation. It has gained seven new railway and seven new manufacturer companies. The resignation of the nine railway companies was due in each case to unfavorable business conditions. The same reason caused the withdrawal of some of the manufacturer companies. Others gave the abandonment of the annual convention as the cause for severing connection with the association.

The committee on company sections and individual membership reports the organization on Feb. 15, 1917, of Section No. 11, on the property of the Toledo Railways & Light Company. This is a joint section with the National Electric Light Association, the American Gas Association and the National District Heating Association. It started with 132 railway members. Several other sections were in prospect but with the entrance of the United States into the war the companies contemplating their organization advised the committee on company sections that plans would be abandoned for the present. The company section membership shows a satisfactory increase, the total membership now being 1741, a gain for the year of 267.

Efforts were made during the year to increase the enrollment of individual members, sixty-four new members being secured. Notwithstanding these efforts this class of membership shows a net loss during the year of thirty-three. Almost all of these were manufacturers who dropped their individual membership because the membership of their companies carried with it the same privileges for which they were formerly required to take individual membership.

INCOME AND EXPENSE STATEMENT
Ten Months Ended Aug. 31, 1917

Revenues		
Admission fees:		
Railway companies	$70.00	
Manufacturing companies	70.00	$140.00
Annual dues:		
Railway companies	$45,648.50	
Manufacturing companies	9,225.50	
Individuals	3,133.67	$58,007.67
Miscellaneous income:		
Contribution from Hotel Men's Assn.	$32.02	
Interest on deposits	452.08	
Sale of advance papers, year book, etc.	369.76	
Sale of "Engineering Manual" and binder	174.43	
Sale of "Studies in the Cost of Urban Transportation Service"	158.40	
Sale of "Bibliography on Valuation"	20.75	
Sale of other pamphlets	235.51	
Sale of dinner tickets	5,230.00	$6,672.95
Aera:		
Advertising	$14,083.16	
Subscriptions:		
Railway companies	3,764.00	
Manufacturing companies	1,329.00	
Individuals	2,086.00	
Company section members	1,739.01	
Non-members	114.50	
Sale of extra copies	42.43	
Sale of binders	17.00	$23,175.10
		$87,995.72
Expenses		
American Association	$43,591.48	
Accountants' Association	1,321.85	
Engineering Association	4,848.26	
Claims Association	1,768.25	
Transportation & Traffic Association	2,334.31	
Aera	21,492.36	$75,356.51

STATEMENT OF MEMBERSHIP
Sept. 30, 1917

	Company			
	Railway	Manufacturing	Total	Individual
Number of members, Feb. 1, 1917	355	211	566	1,289
Number of members reinstated	1	9	10	5
Number of new members	5	6	11	27
Resignations since Feb. 1, 1917	4	7	11	629
Consolidations	...	2	2	...
Net total	357	217	574	1,256
Company section members				1,741

The bureau of information maintained at association headquarters has been active throughout the year in meeting requests for information from many sources. The demands for this service are constantly increasing. Data on a great variety of subjects were furnished in response to 546 requests during the twelve months ending Sept. 30, 1917.

In addition to the supplying of information on request the bureau compiled and issued in July a comprehensive bulletin on wages and working conditions of trainmen. This bulletin comprised thirty-four pages, the information having been secured from 674 companies.

The association has continued its subscription to the Hooper-Holmes Bureau for 1917. Thirty-three companies made 17,234 reports, the bureau returning reports on 942 names.

The association has been represented in Washington this year by S. S. Perry. Mr. Perry under the direction of the committee on federal relations has kept the association informed in matters of interest before Congress and the Interstate Commerce Commission.

During the pendency of the war revenue bill a committee representing several classes of public utilities made its headquarters in Washington, and the entire time of its members was devoted to matters connected with this legislation. The association was represented on this committee by the chairman P. H. Gadsden, president Charleston Consolidated Railway & Lighting Company, Charleston, S. C., and E. W. Wakelee, vice-president Public Service Railway, Newark, N. J.

The association has maintained its membership in the Chamber of Commerce of the United States during the year and was represented by delegates at the annual convention held in Washington, and at the special war convention of American business held at Atlantic City.

LABOR MATTERS AND HIGHER FARES

The remainder of the morning session was occupied with the reading of three papers and a part of the discussion on higher fares. The papers, which are all abstracted earlier in this issue, were as follows: "Is the War Bonus Practicable as a Means of Wage Adjustment in the Electric Railway Industry?" by E. G. Connette, president United Gas & Electric Engineering Corporation, New York, N. Y.; "Female Substitutes for Male Employees," by F. W. Brooks, president Detroit (Mich.) United Railways, and "The Pending Applications for Fare Increases in New York State," by J. K. Choate, vice-president J. G. White Management Corporation, New York, N. Y.

C. L. S. Tingley, American Railways Company, Philadelphia, Pa., opened the discussion on increases in fares. He said that while the matter is as pressing in Pennsylvania as in New York the association there has not yet succeeded in getting the companies to act together. The Scranton Railway has filed a tariff calling for a 6-cent fare over its entire system. This company was selected because it was considered a prosperous one and because in part of the city there was an old legislative grant in place of a local franchise, making the system fairly directly subject to legislative control. In preparation for the campaign much publicity work was done in explaining the reasons for the increase. As a result the Board of Trade of Scranton appointed a committee to consider the matter and the company supplied full data. On the whole the committee supported the company's contentions, but the board has so far failed to take action. The city council has instructed its legal department to file a protest on the basis that the legal fare limit is 5 cents. Other protests have been filed along the same line, only one alleging that the 5-cent fare is ample.

CENTRALIZATION OF INFORMATION IS A NECESSITY

J. S. Drum, San Francisco-Oakland Terminal Railways, Oakland, Cal., said that this road ceased paying dividends in 1912. Since that time it has encountered all sorts of difficulties, paving, financing, labor, etc. It is at present paying the highest rate for electric railway labor in the United States. The bonus system which has been in operation has cost the company $1,300,000 extra during the last few years, but the men want still higher wages. The cost of living is no higher in this railway's territory than elsewhere, but the men insist on exorbitant wages regardless of this fact.

Mr. Drum pointed out that the papers presented at the meeting had outlined clearly the problems before the industry. The question remaining is to find the solution. In labor circles centralization is the feature of the movement for higher wages. Mr. Choate's suggestion, therefore, for the formation of a central committee on higher fares for the association is timely. The association should realize that this is a problem of necessity, and one that must be solved by the industry.

Referring to Mr. Choate's paper Mr. Drum pointed out that municipal ownership cannot be counted upon as a remedy because cities will not buy properties that seem to be losing money. They will not make bad business bargains. Again, reduction of service is impossible under present conditions. The direction in which the problem must be solved is in educating the public, public bodies, employees and others as to the real conditions. To this end practical assistance from the association is needed. Employees have made demands partly because they do not understand the distinction between labor conditions in this and other industries. The desired information is not easy to get but it is necessary. It should show comparisons of wages and living expenses in different parts of the country.

Mr. Drum showed that public education is needed partly because politics must be combatted, and because it is always difficult to secure an increase in price of something for which the people must pay directly. Newspaper arguments not based upon sound economics must also be refuted. The burden of spreading the facts rests upon the individual companies. Each must spread exact information in the community from which it derives its income and to a large extent its capital. The association committee should have broad powers to enable it to assist in this work, and it should assume its proper responsibility. The problems are staring us in the face. The thing to do is to take off our coats and get to work.

In commenting upon the remarks of Mr. Drum, President Storrs stated that a committee on increases in fares has just been appointed, under the chairmanship of Mr. Choate, and already has held a meeting. He then called upon A. W. Brady, Union Traction Company of Indiana, Anderson, Ind. Mr. Brady confined his remarks to interurban fares, although, he said, the Indiana urban railways have the same problems as those elsewhere. In Indiana the interurban fares are on a copper-zone basis with a basic rate of 2 cents per mile. The steam railroads in the State are held by statute to a 2-cent rate in 5-cent zones. The question which troubles the electric railway managers is as to the effect upon their traffic of a raise in rate of fare to, say, 2¼ cents per mile in competition with the steam roads restricted as the latter are by statute.

In Ohio, Mr. Brady said, some roads have undertaken to increase the rate to 2½ cents and one of these, the Western Ohio Railway, has done so with satisfactory results so far.

MR. BRUSH RECOMMENDED SPEEDY ACTION

M. C. Brush, Boston Elevated Railway, advocated vigorous action by those present at the meeting. In his opinion if the members present did not immediately do something different from what they had previously done, as a result of their attendance at the meeting, the time and expense incurred in attending it had largely been wasted. Committees to investigate and report are excellent but at the same time this matter of increased revenue is pressing, and cases are under way even while the meeting is in progress. In Massachusetts, for example, there is a continuing investigation of electric railway matters. A recess committee of the Legislature has been studying the situation and will very shortly resume sittings. Later the committee of eleven men will visit a number of cities in the course of their investigation. One way in which the other companies can help those in Massachusetts, and indirectly help the industry, will be by giving this committee full information if their respective localities are visited.

In Mr. Brush's opinion the 6-cent fare is not the solution of the fare problem. What is needed is to provide permanent relief. Bankers will not invest money in electric railways unless they are convinced that there is provision for automatic adjustment of fares as conditions change. As an example of the right sort of thing in this connection Mr. Brush referred to the recent decision of the Massachusetts commission permitting the charging of a rate of 2 cents per mile by the Boston & Worcester Street Railway.

Continuing, Mr. Brush said that in no other industry than the public utility is the burden upon the producer to show that increased income is necessary. In other lines prices are raised as required, and it is up to those affected to show that the rates are too high. In other words, prices of products are changed as conditions change, and it is the duty of legislatures to provide the same possibility for the electric railways. Unless they do so there will be no money available for the purchase of cars and rails.

SOME THINGS THAT CAN BE DONE

Coming to the practical application of his suggestions, Mr. Brush said better team work is needed in the industry. The companies must pull together and they could do this partly through the bureau advocated by Mr. Drum. The manufacturer members should also be called upon to assist as they reach a large section of the public. The co-operation of employees must be enlisted, too, as they come in touch with many people directly and can convince them that a living wage for the railway employee means reasonable fares. One plan which the Boston Elevated Railway is just inaugurating is the distribution of "transfer story" slips, similar in size to the transfers but of a different color. These are to be handed out with the transfers. A car sign campaign will be conducted at the same time, the signs being changed every three days. The first card shown will be blank, the next will carry an interrogation mark, and the following ones will contain convincing data in striking form. Advertising matter of this and other kinds could be syndicated so that all roads could have the benefit at moderate cost. Mr. Brush said further that the association of holders of electric railway securities which had been formed in Massachusetts was doing excellent work in appearing at hearings where increases of fare were in question. A national association of this kind would be effective.

Mr. Brush then gave a résumé of the statement which he made recently before the recess committee in regard to the fundamental difficulty of securing justice under present conditions. The difficulty, he said, is political; we cannot expect commissioners to commit political suicide. The law must render easy, by making mandatory, the provision of proper fares for the electric railways. Legislators must be made to understand that the problem under consideration is the future of the industry. The topic of future transportation facilities is one which must interest the public no matter how little it cares about the interests of the present stockholders. Destruction of credit of electric railways by the assimilation of incorrect ideas by investors will make future transportation expensive. In the case of the Providence & Fall River Street Railway, recently sold at auction, the residents of the district served did not realize what they were losing in the dismantling of the railway until the actual wrecking of the property began. Then they waked up and hastily raised enough money to buy it, paying a handsome profit to the contractor.

In conclusion Mr. Brush urged that the fare matter be gone into thoroughly. Relief from excessive taxation is not enough. In Boston entire remission of taxes would provide only a small measure of the relief required, as would freedom from subway rentals also. Small detailed relief will not avail. As one way of impressing the lessons of the meeting upon the country promptly he suggested that the members present telegraph home urging the companies through the local representatives of the Associated Press to editors to give all possible space to reports of the proceedings of the meeting.

R. E. DANFORTH AWARDED COMPANY SECTION MEDAL

During the progress of the morning session a number of matters not directly connected with the general discussion were taken up. For the committee on award of a bronze medal for the best paper presented before a company section during the year, C. S. Sergeant, Boston Elevated Railway, read a report. This recited the titles of papers presented in the competition and stated that the medal had been awarded to R. E. Danforth, Public Service Railway, Newark, N. J., for his paper on "Economy." Honorable mention was also accorded to Eugene Wagor, Manila Electric Railroad & Light Company, for his paper on "Duties of Trainmen." After the report had been presented President Storrs invited Mr. Danforth to come forward, and Mr. Sergeant presented the medal to him with a brief expression of his pleasure in doing this on behalf of the committee.

On motion of J. J. Stanley the following resolution regarding the second Liberty Loan was unanimously passed:

"*Resolved*, That the American Electric Railway Association pledges its support and urges its members to support the government in the flotation of the second Liberty Loan of 1917, and that the co-operation of its members be given to the local Liberty Loan committees."

M. R. Boylan, Public Service Railway, Newark, N. J., explained to the conference that the United States Bureau of the Census will shortly commence the work of collecting statistics relating to the electrical industries for the calendar year ending Dec. 31, 1917. The association, he said, has been requested by the bureau to urge upon the companies that they give their co-operation in this important work. As in the case of the census of 1912 the Accountants' Association will appoint a committee to work with the bureau in the matter of the form of the schedules and the inquiries that they contain. The association has been assured by the chief statistician for manufactures, under whose direction this work will be carried out, that it will be the desire of his office to simplify the schedules as much as practicable and to have them conform with respect to their "Revenue and Income" account and "Operating Expenses" to the system of accounting adopted by the Interstate Commerce Commission and by the American Electric Railway Association. In his letter the chief statistician stated that he will be glad to receive suggestions or criticisms from electric railways with respect to the schedules. Copies of the last census report on electrical industries and of the schedules issued in connection with its compilation will be sent to any companies which desire them.

PROCEEDINGS AT AFTERNOON SESSION

The afternoon session of the conference was devoted to a topical discussion of various methods of increasing fares. Addresses along this line were made as follows: "Increases in Flat Rates for Present Zones," by P. F. Sullivan, president Bay State Street Railway, Boston, Mass.; "Charges for Transfers," by Frank Hedley, vice-president and general manager Interborough Rapid Transit Company and New York Railways, New York, N. Y., and "Shortening Present Single-Fare Zones," by Edwin Gruhl, assistant to president North American Company, New York, N. Y. In Mr. Hedley's absence, his paper was read by his assistant, F. T. Wood. All the speeches are abstracted elsewhere in this issue.

In opening the discussion President Storrs said that the problem of securing financial relief is general and that every railway man should realize the urgency of the situation. He suggested that employees might well be educated in regard to the situation through company-section meetings.

Charles L. Henry commented upon the valuable information presented to the conference. He said that he would not place too great dependence upon educating the public, for education of the individual is very often restricted by the latter's selfishness.

Clarence P. King, president Washington Railway & Electric Company, described the regulatory conditions in the District of Columbia. He stated that now it seems impossible to get any governing body to consent to anything but one general fare in the company's 7-mile by 10-mile territory. At present there are universal transfers and six tickets for a quarter. Some time, Mr. King thought, the company might in some way secure relief in a flat 5-cent fare.

C. C. Peirce, manager railway department General Electric Company, Boston, Mass., mentioned the fact that it is a serious task to raise fares without making the product too costly for sale. He said that the Providence & Fall River Street Railway, Swansea Center, Mass., of which he had been vice-president, had raised its rates, but each time the gross fell off. In other words, the company had reached the absolute maximum of traffic receipts to be expected. In conclusion, Mr. Peirce strongly urged the railways to extend their publicity work, promising the support of the manufacturers.

Mr. Choate then explained the reason why railways in New York State outside of the metropolitan district had applied for a 6-cent fare. He said that the companies, on the basis of the Ulster & Delaware and New York & North Shore Traction court decisions, were trying to get the commission to override the old 5-cent maximum railroad law and local franchises, and that the question of a 1-cent increase seemed the simplest means for securing a decision from the commission in confirmation of its present complete power to raise rates. If the 6-cent fare should not give the desired relief, the door would be open for the companies to try to secure zone rates. Without doubt, he said, the ultimate goal is the distance tariff.

Mr. Choate added that he is daily receiving many letters from bankers and investors for copies of the publicity pamphlet, "What if the Street Cars Go Broke?" that has been prepared by the New York Electric Railway Association. The inquiries have shown the increasing interest taken in the conditions confronting electric railways. Mr. Choate also told how he had furnished a high-school pupil with exhaustive material for the affirmative side of a debate on the question of 6-cent fares for electric railways. This closed the discussion and the conference was adjourned.

Meeting of Executive Committee

THE American Association executive committee met in New York on Oct. 8, devoting most of the day to a consideration of the subject of higher fares. J. K. Choate, J. G. White Management Corporation, New York, N. Y., explained the plans which are under way in this connection. Mr. Choate is chairman of a committee on increased revenue for electric railways, the appointment of which was authorized at an earlier meeting of the executive committee. The other members of the committee are M. C. Brush, Boston Elevated Railway; J. D. Mortimer, North American Company, New York, N. Y.; J. H. Alexander, Cleveland Railway, and C. Loomis Allen, Allen & Peck, Syracuse, N. Y.

By resolution the following telegram was ordered sent to Brig.-Gen. George H. Harries at Camp Cody, New Mexico:

"The executive committee of the American Electric Railway Association in session here to-day (Oct. 8, 1917) extends to you as past-president of the association and as a personal friend of its members their heartiest congratulations upon your appointment as brigadier-general in the United States Army, and its best wishes for your welfare. The committee feels that the same qualities which have made you so valuable a member and officer of the association will be of great service to your country in this its hour of need. L. S. STORRS, President."

The committee also elected officers and executive committee members as announced elsewhere in the report of the proceedings of the conference, the only changes being the advancement of each vice-president, bringing J. J. Stanley, Cleveland Railway, into the presidency, and adding as the new vice-president, T. S. Williams, Brooklyn Rapid Transit Company.

Among other routine items of business the formation of a public utility section by the American Bar Association was noted, and it was decided to urge the company members of the association to be represented in this through their legal departments.

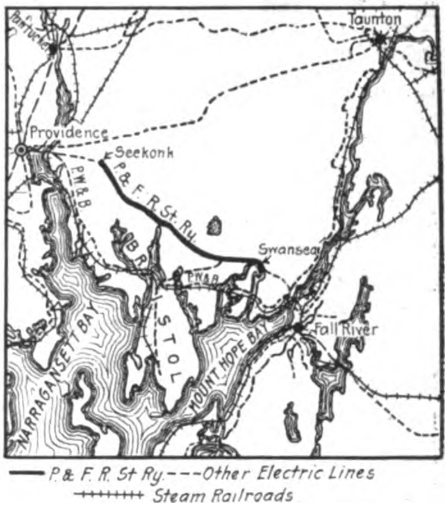
Those in attendance at the meeting were L. S. Storrs, J. J. Stanley, J. H. Pardee, Richard McCulloch, Guy M. Tripp, S. M. Curwen, Thomas Finigan, M. C. Brush, R. E. McDougall, M. R. Boylan, F. R. Phillips, C. S. Sergeant, H. H. Vreeland, A. W. Brady, C. L. Henry, J. D. Mortimer, J. K. Choate and E. B. Burritt.

Saving an Electric Railway from Destruction

How a Massachusetts Road Was Rescued from Dismantling After Being Sold at Auction, with the Scrap Pile as Its Destination—Public Sentiment Aroused at Prospect of Losing Facilities

THE Providence & Fall River Street Railway was sold at auction on Sept. 12, 1917, to Karl Andrén of Boston, Mass., formerly purchasing agent for Stone & Webster and now well known as a dealer in second-hand machinery. The sale, which received brief comment in last week's issue of this paper, resulted from the inability of the road to pay its bond interest and was held by the Industrial Trust Company of Providence, R. I., as trustee for the bondholders, under a decree of the United States Court at Boston. The road is 12.5 miles long, and as the map reproduced herewith shows extends from the Rhode Island Company's line at East Providence to the Bay State Street Railway's line at Swansea. It formed part of a through route between Providence and Fall River, and on account of its irregular alignment was known throughout southeastern Massachusetts as the "Snake Line." Mr. Andrén purchased the road for $68,000 and intended to dismantle it and sell the entire property; but when the local public, particularly in the Swansea district, came to realize that the road was to be torn up a vigorously conducted campaign was at once inaugurated by representative citizens and business interests with the object of saving the property and resuming service, the cars having stopped running on Sept. 22. The purchaser on Oct. 6 granted a reprieve subject to the payment of a guarantee fund of $20,000, and subscriptions were at once collected to insure the road's remaining on the Massachusetts street railway map. It now seems probable that the road will be purchased from Mr. Andrén at a price of $90,000 and service restored within a few days.

The road was built in 1901 and for five years competed with some measure of success with other means of transportation in its district. Since 1906, however, earnings have decreased seriously, and an important factor in this situation has been the greatly improved service given by the New York, New Haven & Hartford Railroad on its electrified Providence, Warren & Bristol branch. The running time between Fall River and Providence over the Providence & Fall River road was one hour and twenty-five minutes, as compared with forty-eight minutes on the New Haven line. The fare from Providence to Fall River was formerly 25 cents on the New Haven line and 15 cents on the Providence & Fall River road, but some years ago the 15-cent fare was increased to 27 cents by the establishment of a 6-cent fare unit on the so-called "Middle Road." On the New Haven branch, however, the fare is still 25 cents, an extra charge being made, however, for baggage. The Providence & Fall River road has also been used for freight traffic between New Bedford, Fall River and Providence, but it appears that the company did not receive any substantial share of the revenue from this source, earning mainly mileage charges from the passage of foreign express cars over its rails.



MAP SHOWING LOCATION OF "SNAKE LINE"

In the fiscal year 1916 the gross earnings of the road were $50,734, operating expenses being $42,099, leaving a balance of $8,635. Fixed charges totaled $14,017, leaving a deficit of $5,382.

The road was originally capitalized at $300,000. Its late capital stock was $165,000, with an equal amount of bonds, and a floating debt of about $140,000. For some years the note holders had been paying the bond interest to save foreclosure. The bonds were due on July 1, 1921. Finally action in the United States Court at Boston was brought by a committee of bondholders representing $157,000 out of the total $165,000.

The prospect of the road's being torn up aroused public sentiment to the necessity for prompt action, and under the leadership of various prominent citizens, selectmen of Swansea and the Fall River Chamber of Commerce, public meetings were held for the purpose of securing subscriptions to purchase the property from the Andrén company. The accompanying statement by the Chamber of Commerce emphasizes the community's realization of the value of the road's service, once that service was threatened with permanent withdrawal.

FALL RIVER CHAMBER OF COMMERCE
FALL RIVER, MASSACHUSETTS

To the Business Men of Fall River, Mass.

Gentlemen: An opportunity is offered to purchase and save from destruction the Providence & Fall River Street Railway. The property, originally capitalized at $300,000, can be had for $90,000. We have, moreover, evidence to prove, which we shall shortly give you in detail, that the earnings of the road have hitherto been amply sufficient to pay a good dividend on this smaller investment.

We wish to present for your consideration the advantage which the rehabilitation of this line will be to you both directly in your business and indirectly through its benefit to Fall River in general.

The towns across the river form a large and rapidly growing community in which capital is being increasingly invested, in which many Fall River workers have their homes and from which the residents come to Fall River to trade, either because they have always traded here and prefer if possible to continue doing so, or because Fall River is the nearest market. Our own merchants in farm produce also secure at a small transportation cost a large portion of their stocks here. This interchanging trade is large and valuable and is bound to grow more so if the east transportation of the trolley is continued; and just as surely bound to be lost if it is discontinued.

This trolley line has also been used by the electric express for transportation between Fall River and Providence, to the great advantage and service of Fall River manufacturers and merchants. Discontinuance of the line means a longer and more costly route. Its continuance means a saving and a convenience to Fall River shippers. The exigency of the steam railroad which has recently made necessary an extreme reduction in the acceptance of less-carload freight, renders the value of the trolley express all the greater and the more essential.

There is also the general consideration of the loss in momentum and growth which will come from the stoppage of all systematic transportation between the city and a large suburban district. So inter-related are the various communities affected that one cannot suffer without the other sharing the effects.

For these reasons we submit to you that it will be a good business policy in itself, irrespective of any direct dividends, for the business men of Fall River to invest in the rehabilitation of the Providence & Fall River Street Railway. It would require but a dollar's worth of trade a week from the district traversed by the road to repay good dividends on an investment of $1,000 in stock to continue the road.

A preliminary investigation of the road's earnings the past year, which we will make more thorough as time allows, indicates that the road earned approximately 11 per cent upon the proposed new capitalization of $100,000. There is good assurance of at least equal earning the coming year. The Chamber of Commerce is convinced that it is urging upon your attention an investment which is at once a benefit to yourself, to your business and to the community.

That you may see that judicial men have already been convinced of the wisdom and desirability of such investment as we suggest, a memorandum of stock placed in Fall River on Sept. 25 is given herewith. The par value of the stock is $50 a share. Subscribers of the above date, the first day the stock was offered in Fall River, number ten, and the total number of shares subscribed for exceeded 200.

We trust to have this matter presented to your attention within a day or two personally by a representative of the Chamber of Commerce. In the meantime we shall greatly appreciate it if you will indicate your desire to subscribe by communicating with the secretary of the Chamber, with Acting President Thomas E. Lahey, or with Louis S. Gray of Swansea.

THE FALL RIVER CHAMBER OF COMMERCE,
WILLIAM A. HART, Secretary.

On Sept. 24 an enthusiastic meeting was held at the Town Hall, Swansea, attended by fully 300 persons, at which practical assurance was given that the road would be purchased from the Boston house. Mr. Andrén offered to give the citizens sixty days in which to complete the transaction and it was announced that an initial payment of $20,000 by Sept. 29 would be accepted as binding the bargain. Later Mr. Andrén agreed to postpone the date to Oct. 6, and on that day the initial instalment was paid as required, thus assuring the continuance of the road. The cessation of service on Sept. 22 resulted in much inconvenience to residents of the Swansea district, some of whom were obliged to rise at 3 a. m. and walk several miles to the nearest electric railway in order to obtain transportation into Fall River, also walking home at night from the terminus of the Bay State system in Swansea.

At the Swansea meeting a member of the Board of Selectmen stated that the loss of the street railway would mean far more to the people of the district than they realized at the time. There would be a loss to real estate, to taxation, to the manufacturing industries of the town and inconvenience to school children. It was brought out at the meeting that under the arrangements by which the road was operated prior to the suspension of service, the company received 2.5 cents per mile for handling Bay State cars over its line, but nothing from the Rhode Island Company, which took cars from the Massachusetts-Rhode Island line at Seekonk to Market Square, Providence. It was also stated that the Andrén company could make $20,000 more at present market prices by selling the road piecemeal than by allowing the citizen interests to purchase it for $90,000, but that the owners were willing to make the sacrifice in order to preserve the service to the community. Other prominent citizens and clergy spoke in behalf of the retention of the road. On Sept. 28 another public meeting was held at the same place and pledges of $80,000 out of the required $90,000 were secured. In about a quarter of an hour $15,000 more was pledged, and an extension of the time of the initial payment to Oct. 6 was announced.

In describing the meeting the Fall River *Globe* of Sept. 29 concluded with the statement that it is doubtful if ever in the history of the country a railway was sold in like manner, and the wildly enthusiastic scenes which attended the purchase resembled the plot of a most up-to-date "movie" drama. The solidarity of the community has been greatly increased by the proceedings, although the losses of the original security holders naturally have not made the story a wholly cheerful one.

It is expected that the new owners will seek legislation at the 1918 session in Massachusetts to permit a guarantee of 6 per cent dividends by the municipality of Swansea and also to reduce taxation burdens of the road.

Valuation Law Requires No Ultimate Value

Director Prouty, However, Says Full Benefits of Federal Valuation Cannot Be Realized Without Final Figures

According to Charles A. Prouty, director of division of valuation, Interstate Commerce Commission, the present state of the federal valuation law requires no finding of ultimate value. In his opinion, however, the law will be useless unless it some time does require the commission to reach a conclusion as to the dollars and cents value of the property that a carrier is devoting to public use. These statements are contained in a memorandum discussion of the protest of the Texas Midland Railroad against the tentative report of the division of valuation.

Mr. Prouty's opinion is further set forth in detail below:

"As a member of the Interstate Commerce Commission I several times joined with my associates in recommending to Congress that it provide for a valuation of railroad property, and in so doing I for one understood that a valuation in dollars of the property as a whole was called for. There can be little doubt that a majority of the members of the Congress which enacted this measure understood that it provided for a statement of the value of the properties dealt with in money and that the act was so accepted by the country at large.

"It is still my own conviction that an ultimate value for rate-making purposes should be stated and that the full benefit of this valuation cannot be realized unless this be done. The vice of the railroad situation to-day is uncertainty. If the present system of providing public service by private capital is to be continued, some way must be found to assure that capital of the treatment which it will receive. It is difficult to see how this can be done until the value of the property now devoted to that service has been first determined.

"This does not, however, at all mean that any part of the work now being done or of the money now being expended is thrown away because the commission is not required to establish at this time such ultimate value.

Before such a value can be named the facts which the commission is collecting and reporting to Congress should be before the tribunal which fixes it. The facts are being prepared under the present act and a final value can be quickly stated when Congress has determined by whom and possibly by what rule such value shall be determined."

Mr. Prouty continues, however, with the remark that it is perhaps fortunate that the commission is not required now to state final values. He says:

"When the railroads whose protests are now under consideration were selected for valuation, the nature of this problem was not fully appreciated. None presents certain phases of this subject which should be before the commission before it lays down any rule for the determination of a final value. It may be doubted if any such final value can be safely stated until the tribunal making it has before it a sufficient number and variety of properties so that the full effect of whatever rule is adopted can be clearly apprehended. The ideal way in which to value the railroads would perhaps be to marshal the facts as to most of them exactly as that is now being done, and then with full knowledge of the meaning of whatever principles are applied to proceed with a statement of final value. While to my mind it would be unfortunate to omit an ultimate value in the end, it is not perhaps unfortunate that the statement of that value is for the present postponed."

COMMUNICATIONS

Cost of Storage Battery Maintenance

THE ELECTRIC STORAGE BATTERY COMPANY
PHILADELPHIA, PA., Oct. 3, 1917.

To the Editors:

In your issue of Sept. 1 I note an article by Prof. D. D. Ewing, describing several different plans for insuring continuous service from a railway transmission line for a town of about 2500 inhabitants, in which he compares a storage battery installation with several other methods for improving the continuity of service. On page 347 he tabulates the estimated financial results, and on the basis of this comparison recommends a gasoline engine-driven generator.

In Professor Ewing's discussion of the storage-battery plan there are some statements which I believe warrant further comment. In the first place the author makes a distinction between "a floating battery" and "a stand-by battery," which does not appear to be entirely clear. In modern central station practice the stand-by battery is always a floating battery, inasmuch as it is kept constantly connected to the station bus ready to carry the load in any emergency. This is true not only where a d.c. load is concerned, but also in those cases where a battery has been installed for stand-by service in connection with an a.c. distribution system, such as the installation at the Newton substation of the Boston Edison Company and the battery installed at the Alhambra substation of the Milwaukee Light, Heat & Power Company. In these instances the battery is always connected to the d.c. terminals of a motor-generator set or rotary converter operating on the a.c. side in parallel with the a.c. station bus. In case of any interruption on the a.c. circuit, the battery is constantly ready to feed into the a.c. distribution system. In both of these cases a battery of the so-called stand-by type was installed, and such service is strictly stand-by work, inasmuch as the battery is discharged only in case of some accidental interruption in the normal power supply. It would appear, therefore, that "the very high degree of continuity of service" referred to by the author could be assured without increasing the investment shown in Table IV.

The annual charges against the storage-battery installation shown in Table IV appear to be abnormally high in view of the character of the battery installation and the kind of service contemplated. The interest charges at 5 per cent will amount to about $1,000 per year. The cost of maintenance and depreciation would be extremely low. The maintenance charges against the motor-generator set and switchboard apparatus would be almost negligible. The cost of battery maintenance would also be comparatively small in view of the small amount of work required of the battery in strictly stand-by service such as this. From the results obtained from stand-by batteries in the last eight years, during which this type of battery and battery service has been developing, it is probably conservative to figure that $500 per year would keep the installation described by Professor Ewing in first-class operative condition indefinitely.

In regard to the cost of attendance, while the author does not go into this in great detail, it is probable that the battery installation under consideration would not call for any additional attendance above that required for the existing substation apparatus.

I believe, therefore, that the author's figure of $3,288 as the annual charge against the storage battery should be reduced to more nearly $1,500, and that in view of the higher grade of service assured by this installation, it should be recommended in preference to either of the others.

J. LESTER WOODBRIDGE, Chief Engineer.

"More Service at Less Cost" Issue

PUGET SOUND TRACTION, LIGHT & POWER COMPANY
SEATTLE, WASH., Oct. 3, 1917.

To the Editors:

I have certainly enjoyed reading your "More Service at Less Cost" issue. It is the only up-to-date compilation on the light-weight safety car, and you certainly have treated this subject in a very thorough and painstaking manner. This number should be of great value to those street railways which are trying to introduce this service in their communities. The only trouble that I have with the situation so far as the light-weight car goes at the present is our inability to get them. We certainly could use all those we have on order immediately if we had them here.

G. A. RICHARDSON,
General Superintendent of Railways.

The Electrical Exposition and Motor Show, held annually in Grand Central Palace, New York, opened this week Wednesday to continue through next Saturday, Oct. 20. The booths of the Red Cross and the various government departments are particularly popular.

EQUIPMENT and MAINTENANCE

HAVE YOU A GOOD WAY
OF DOING A JOB?
—*Pass It Along*

These Articles Have Been Selected to Provoke Thought and Stimulate Discussion. All of the Technical Departments Are Represented

Welded Compromise Track Joints

The Author Has Found Electric Welding Very Satisfactory in Making Such Joints

BY JULIAN M. SCOTT
Superintendent of Tools and Machinery,
Montreal (Canada) Tramways

The making of satisfactory compromise track joints is one of the difficult problems of the way department of electric railways. Some roads use fish plates made in their own shops, others use manufactured joints of one form or another, and still others find some form of welded joint the best. In so far as I am aware, the first welded compromise joint was made by the Thermit process. Such a joint is shown in the first illustration. When properly made it is perfectly satisfactory and the process is very simple. The general plan is to unite two 5-ft. pieces of each rail, giving a section of 10 ft. At each end of this is placed a standard rail joint. This makes an excellent job and is a good investment for the extra money spent as compared with the fish-plate joint. Having stated the case for the thermit compromise joint the writer will proceed to describe an adaptation of the electric arc welding process to the making of such joints, illustrating the description with several typical pieces of work.

The electric arc welding process supplemented by the acetylene cutting torch is well adapted to the making of compromise joints, involving a very simple procedure, inexpensive apparatus and practical immunity from failure. The materials required are flat, mild steel bars, ordinary ¼-in. round, mild steel welding rods, and borax glass for the cleansing flux. The direct-current power needed is usually available in ample quantity. The only apparatus necessary is a motor-generator set or a cheap welder resistance outfit, consisting, for example, of standard car rheostats capable of carrying 150 to 250 amp. and holding the current within these limits when 70 volts are consumed in the arc.

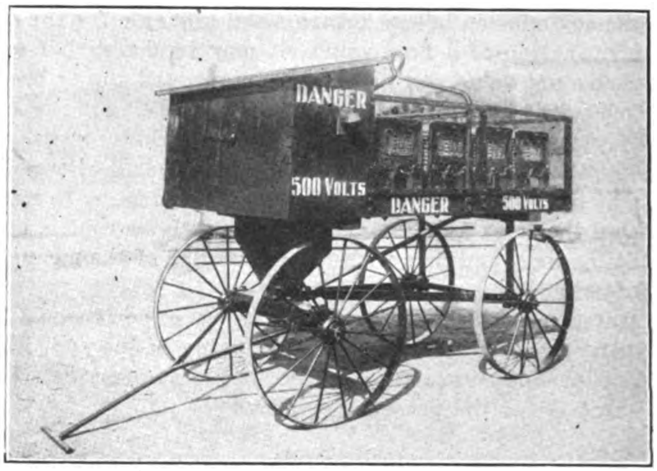


FIG. 5—PORTABLE RHEOSTAT OUTFIT FOR ELECTRIC ARC WELDING OF RAIL JOINTS

Such a set of rheostats arranged in portable form is shown in one of the illustrations. This is a home-made equipment designed for two circuits. It provides for a welding crew of three men, two welders and a helper, and does the work very well. Of course a motor-generator set would be more efficient.

A joint made between rails of approximately equal size is shown in Fig. 2; one between a 5-in. T-rail and a 7-in. girder guard rail in Fig. 3, and one between a

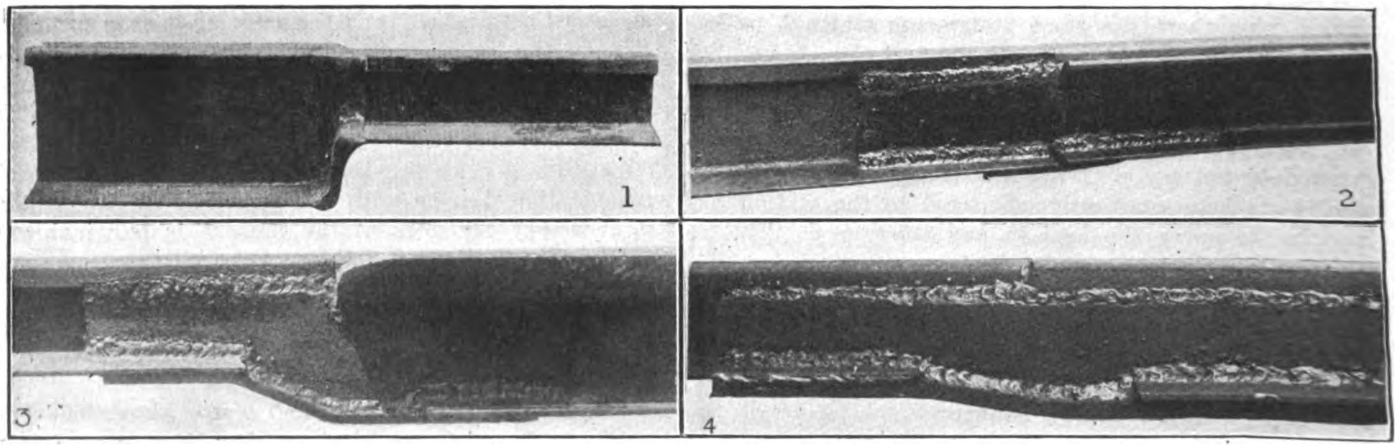


Fig. 1—Compromise thermit joint between 9-in. trilby rail and 5-in. T-rail. Fig. 2—Electric arc welded compromise joint between two rails of approximately the same size. Fig. 3—Electric arc welded compromise joint between 5-in. T-rail and 7-in. girder guard rail. Fig. 4—Electric arc welded compromise joint between 4¼-in. T-rail and 5-in. T-rail.

FOUR VIEWS OF COMPROMISE RAIL JOINTS WELDED ELECTRICALLY

4¼-in. and a 5-in. T-rail in Fig. 4. In the last-named two joints there was no room for substantial side plates on account of the small depth. To overcome this lack of room 4 in. of the base of each rail was removed on both sides of the web. This gave room for the necessary depth of side plates and permitted the addition of a base plate which virtually continues the rail base, as is clearly indicated in Fig. 6. All trimming of rails and plates for these joints was done with an oxy-acetylene torch, which is both quicker and neater than the carbon arc.

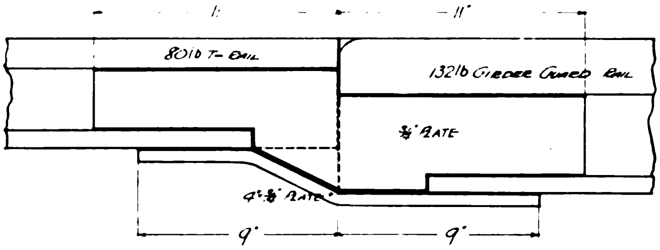
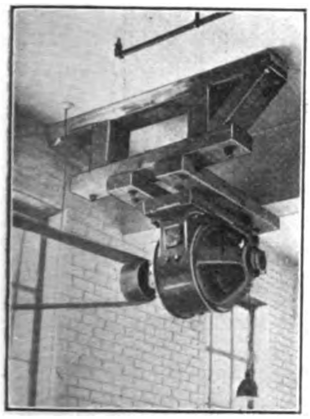


FIG. 6—DRAWING GIVING DETAILS OF JOINT SHOWN IN FIG. 3

Joints made by the arc welding process described have been proved by test to be fully equal in strength to the adjacent rails, and in many cases were actually stronger. Our experience shows that two men with helper can produce from four to five of these joints per day. The number of arc-hours per day is about thirteen, one arc being used practically continuously and the other intermittently. With the rheostats the energy consumption per day is roughly 1000 kw.-hr., corresponding to from 250 to 200 kw-hr. per joint. The energy consumption with a motor-generator set would probably be about one-third of this amount.

Location for Motor Makes Mounting Difficult

In the Hooper Street carhouse of the Springfield (Mass.) Street Railway, it became necessary to mount a 20-hp. motor on the ceiling for group drive service. The ceiling is supported by reinforced-concrete beams spaced too far apart for the use of an ordinary pair of base planks, and it was undesirable to cut down the light supply from the window shown at the left in the illustration by running any supporting structure in front of it. The situation was met by supporting the motor on two short planks attached at one end to one of the roof beams and at the other to an inexpensive but stout wooden cradle bolted into the ceiling and seated into the shop outer wall. This left the space in front of the window clear except for the driving belt and enhanced the range of the sprinkler service by eliminating the extension obstruction which at first seemed the only solution of the problem. The motor mounted in this way is operating in a satisfactory manner, no trouble from vibration being experienced.



MOTOR MOUNTED ON CEILING IN SUBSTANTIAL WAY

Time Studies Made in Digging Pole Holes

Costs Obtained on Poles Dug in Clay, Sand, Rock and Other Kinds of Subsurface Conditions

BY ALLAN C. HASKELL
Principal Assistant Engineer Construction Service Company, New York City

Several interesting and instructive figures have been obtained from a series of time studies made by the writer on a job of digging eighty-six pole holes. The work was done in New England where a cross-country line was being constructed and where a variety of soil conditions was encountered. The class of labor employed was exceptionally high, five of the eight men observed being natives of New England, two being born in America of Irish parents and the eighth a French-Canadian. All had worked as groundmen for a considerable time and were thoroughly familiar with the methods employed.

The specifications called for holes 5.5 ft. deep and 2 ft. in diameter, which were to receive 30 ft. cedar poles. As each hole was completed, however, it was carefully measured with a steel tape so that its contents could be accurately computed. There was found to be a considerable variation, the diameters ranging from 1.6 ft. to 2.4 ft. and the depths from 5 ft. to 5.9 ft.

Where the digging was fairly easy, as in sand or clay, there was one man to a hole and he was equipped with an iron bar about 8 ft. long for loosening, a short-handled pointed spade, and a long-handled round-nosed scoop. Of the eighty-six holes on which observations were made, sixty-seven were in clay, four in easy sand, three had boulders of various sizes throughout, but all capable of being handled by one man, one had one large boulder in it, requiring a chain to remove it, one was in sand and water where there were frequent cave-ins, one was in soft rock which could be broken by hand with the bar, and nine were in granite and had to be blasted.

A résumé of the observations on the sixty-seven clay holes follows, the time being given in minutes:

	Working Time						
Man	Actual	Other	Delays	Total Time	No. of Holes	Cubic Yards	Man-Minutes Per Cubic Yard
A	693	41	71	805	6	3.44	234
B	2,092	64	23	2,179	15	9.28	235
C	1,613	86	62	1,761	13	6.30	280
D	1,124	65	65	1,254	9	6.31	199
E	838	45	15	898	7	4.18	215
F	841	31	18	890	6	3.84	232
G	848	42	14	904	7	4.12	219
H	489	26	12	527	4	1.91	276
	8,538	400	280	9,218	67	39.38	234

Of the total time, 92.6 per cent was actually worked, that is, spent in digging or loosening; 4.4 per cent, noted as "other time," was spent in walking from hole to hole, changing tools, etc.; and only 3 per cent was lost in actual delays such as going for water, stopping to rest and the like. This is a very good performance, due in large measure to the foreman who kept his eye on his men most of the time, but also in part to the men themselves who were well trained, strong and industrious.

A record of the four sand holes was as follows, the time being given in minutes as in the previous table:

	Working Time						
Man	Actual	Other	Delays	Total Time	No. of Holes	Cubic Yards	Man-Minutes Per Cubic Yard
B	226	16	...	242	3	1.40	178
C	97	3	...	100	1	0.59	170
	323	19	...	342	4	1.99	172

The three holes in which one-man boulders were encountered were dug in the following minutes:

Man	Working Time Actual	Working Time Other	Delays	Total Time	No. of Holes	Cubic Yards	Man-Minutes Per Cubic Yard
B.........	164	9	...	173	1	0.85	204
C.........	185	5	...	190	1	0.76	250
F.........	175	10	7	192	1	0.73	263
	524	24	7	555	3	2.34	237

It took the man A 354 minutes to dig the hole into which the large boulder fell. Of this time, however, 128 minutes were occupied in his going back to camp for a chain hoist and there was a delay of twenty-one minutes while he went to a farmhouse to fill the water pails. The normal time, therefore, should be as follows:

106 man-minutes, digging 3.5 ft. up to the time the boulder fell in.
20 man-minutes, fair allowance to get and arrange chain-hoist.
9 man-minutes, actually taking out boulder.
80 man-minutes, digging 2 ft. of earth to required depth.

215 man-minutes, total for 0.775 cu. yd., or 278 man-minutes per cubic yard.

It took the man D 197 minutes to dig the sand hole in which there was water. Of this time 167 minutes were spent in actually digging and 30 minutes in bailing out, every few shovelfuls, with a water-pail tied to the end of a stick. The hole was 5 ft. deep when finished and 2 ft. in diameter. Therefore the time per cubic yard was 338 man-minutes.

Man C dug hole which had soft rock throughout in 231 minutes. It was 5.3 ft. deep by 1.8 ft. in diameter, making 0.50 cu. yd., and when completed the time was 462 man-minutes per cubic yard.

A record of the nine rock holes follows. One man started these holes as usual, removing the earth until he encountered rock, then he went on to start the next hole. Later four men with hand drills and sledges drilled the rock, one holding the drill, two hammering, one pouring water, and then it was blasted. One drilling was usually enough. Two or three men cleared out the blasted rock.

Hole No.	Removing Earth, Minutes	Depth of Earth, Ft.	Drilling to 5.5 Ft., Minutes	Blasting, Minutes	Clearing Rock, Minutes	Depth of Rock, Ft.
1....	81	4.3	225	44	216	1.2
2....	63	2.5	651	15	556	3.0
3....	39	1.7	759	22	679	3.8
4....	94	4.1	180	16	247	1.4
5....	23	1.3	706	14	727	4.2
6....	43	1.9	771	15	788	3.6
7....	96	3.8	387	20	378	1.7
8....	41	2.3	652	18	722	3.2
9....	35	1.7	565	21	563	3.8
	515	23.6	4,896	185	4,876	25.9

Thus it required about 189 man minutes per foot for drilling. On the basis of 5.5 ft. deep and 2 ft. diameter the total time per cubic yard for the earth portion was 187 man-minutes per cubic yard, and 3310 man-minutes per cubic yard for the rock portion. For these particular holes in which a little more than half was rock, the time was about 1820 man-minutes.

Groundmen were paid \$2, and the foreman \$5 per eight-hour day. Therefore, a man-minute cost $\frac{\$2}{480}=$ 0.42 cent, and the costs of the various holes were as follows:

Clay Holes = 234 × 0.42 = \$0.98 per cubic yard for labor. The foreman had eight men under him on this work. Therefore, the cost per man-minute for supervision was $\frac{\$5.00}{8\times8\times60}=0.13$ cent. The total cost, then, for groundmen and foremen = 98 cents + (234 × 0.13) = \$1.28 per cubic yard. The average yardage per hole was $\frac{39.38}{67}=0.59$ and the average cost per hole, 75 cents. Computed in this way the costs for the other jobs were as follows:

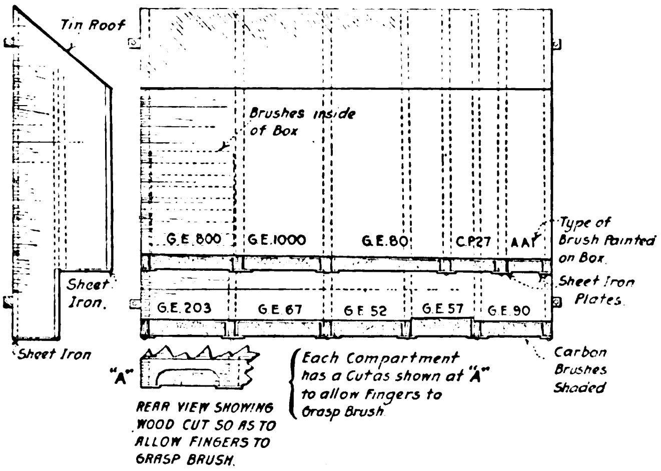
Sand holes.......	= \$0.95 per cubic yd.	\$0.47 per hole
Holes with one-man boulders	= \$1.31 per cubic yd.	\$1.02 per hole
Hole into which large boulder fell	= \$1.53 per cubic yd.	\$1.19 per hole
Sand and water hole	= \$1.86 per cubic yd.	\$1.08 per hole
Soft rock hole....	= \$2.54 per cubic yd.	\$1.27 per hole

Solid rock.. = \$18.20 per cubic yd. for rock and \$10.00 for these particular holes which averaged a little more than half rock.

These costs do not include preparatory time, such as getting to the job, getting tools out ready to start, etc. This time varies on different jobs, and it is best to make whatever allowance is necessary according to the particular conditions. On the job observed this cost amounted to 5.9 per cent of the labor cost including the foreman. Roughly, one-half hour per day for all hands was used up in getting under way.

Box for Convenient Storage of Motor Brushes

In one of the shops of a large street railway company the motor brushes are kept in a box such as is shown in the accompanying illustration. There is a compartment for each size of brush and the box is located on a post which is convenient to the repair pits. Owing to the narrowness of the post and the objection to having the sides of the box project beyond the sides of the post the compartments are arranged in a double row. This arrangement, however, would not be necessary if the box were located on the wall. The top of the box is made sloping and covered with tin to prevent waste or other materials from being placed on it. As shown, the wood at the back of the box is cut away along the bottom line to give room for the fingers to slip in and grasp the brush. The compartments of the box are filled by inserting brushes in the bottom, each brush pushing up the one above it. The use of this box has effected considerable saving since the brushes are no longer left around on the floor and in the pit where they may be damaged or swept up as refuse.



Tin Roof
Brushes inside of Box
G.E.800
G.E.1000
G.E.80
C.P.27
AA1
Type of Brush Painted on Box
Sheet Iron.
Sheet Iron Plates.
G.E.203
G.E.67
G.E.52
G.E.57
G.E.90
Sheet Iron
"A"
REAR VIEW SHOWING WOOD CUT SO AS TO ALLOW FINGERS TO GRASP BRUSH.
Each Compartment has a Cut as shown at "A" to allow Fingers to Grasp Brush
Carbon Brushes Shaded

DETAILS OF BOX FOR HOLDING MOTOR BRUSHES

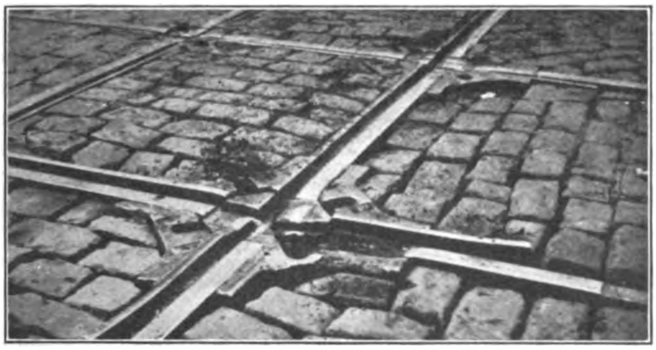


FIG. 1—BROKEN DOWN INSERT PLATE AND WING RAIL BEFORE REPAIR

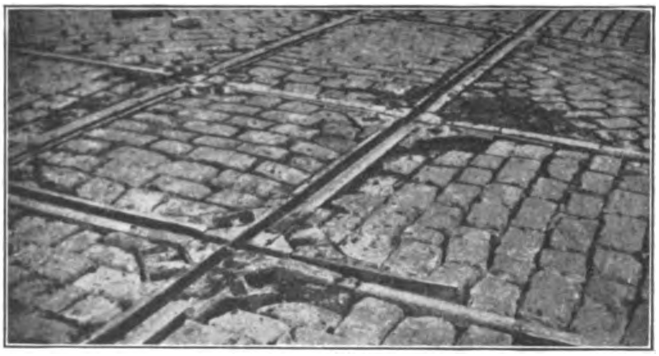


FIG. 2—SAME RAIL INTERSECTION AFTER REPAIR WORK HAD BEEN COMPLETED

How Some Difficult Special Work Repair Jobs Were Accomplished

Three Types of Welding Processes Used in Repairing Special Work That Could Not Be Replaced

BY W. L. WHITLOCK
Office Engineer Denver Tramway Company

Inability to get delivery on new special work and high costs have necessitated the repairing of old special work which was worn beyond what would ordinarily be considered good practice to attempt to retain in service. In a number of cases the work of repairing these badly worn pieces called into play all the ingenuity of our track force and the use of all our special track repair devices.

A square crossing where the manganese insert was broken and the ball of the wing rail was broken off as well is shown in Fig. 1. The problem of repairing this wing rail in the absence of new special work to replace it was particularly hard to solve. The first attempt was to cut a short piece of rail similar to the piece broken off and to weld this into the proper position on the casting. However, the welding on the casting did not hold.

The next attempt was to burn out the web and base remaining in the casting in order to fit in a new piece of rail. For this purpose a Prest-O-Lite outfit was called into use, but without much success. The Indianapolis welder and the Lincoln bonding machine were also given a try-out in attempting to cut away this casting, but none of them would cut it enough to allow the removal of the original rail. The Prest-O-Lite outfit was again called into action and this time succeeded in cutting a little wider space in the casting, although it was impossible to cut away the entire rail or casting around it. However, a short piece of rail was cut off to fit in this place and the new insert and short piece of rail were thermit welded into position. The cupped rails at the inserts were then built up and ground, making a good finished job, as is seen in Fig. 2.

A Substitute for Spelter in Insert Foundations

The old scheme of placing the manganese insert on a spelter foundation in the casting has been a source of constant maintenance expense. Our company is now using thermit instead of spelter for this purpose, and while this practice has only been in use a few weeks, it is apparently going to prove satisfactory. This thermit welding is done by the track department.

The track men first remove the insert and clean the casting thoroughly during the daytime. After service is off at night the thermit gang comes on the job. A portable air compressor and gasoline torch are used to preheat the casting, and molder's sand is placed in the casting in such a way as to prevent the thermit from running out. The insert is also preheated and placed in a position slightly below the level of the adjoining rails by letting it rest on small pieces of scrap iron. The thermit crucibles are then placed in position and fired, the thermit entering the holes around the inserts and filling up all space underneath and around the manganese piece. The gang used in this work consists of five men. They are usually followed up by the arc welders and rail grinders, who fill up and grind off all low places adjoining the inserts.

A badly disintegrated manganese curve crossing on one of the heaviest traveled lines in Denver is shown in Fig. 3. This crossing had been in service for ten years at the time the photograph was taken and the manganese frog and wing rail were in dangerous condition. Delivery was still uncertain on the new crossing which had been ordered months before. While the frog was

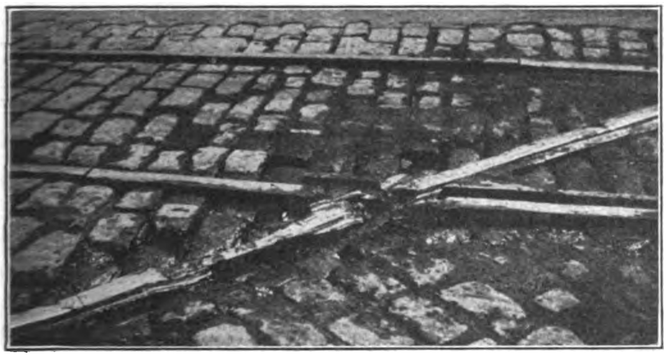


FIG. 3—FROG AND WING RAIL BADLY IN NEED OF REPAIR

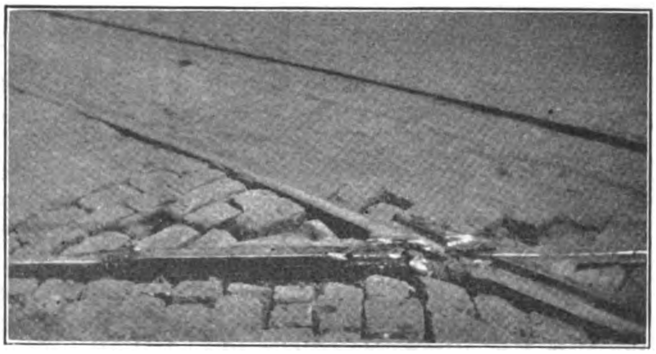


FIG. 4—SAME FROG AFTER WING RAIL HAD BEEN REPLACED WITH NEW RAIL SECTION

in bad shape, it still had a solid piece where the wing rail was cast into the frog. Because of this it was decided to replace the wing rail with a short piece of ordinary rail as a temporary repair. Special fish plates were made long enough to reach from the frog to a point 10 in. beyond the joint, and these plates were arranged to be bolted to the rail, thereby serving as a sort of clamp to hold the new piece of rail in position during the repair process and as an angle-bar support afterward.

After traffic was off the line, two track men, a Prest-O-Lite outfit and an Indianapolis welder were assigned to the job, and in the short time of two hours had the manganese wing rail cut off about 6 in. from the frog. The Prest-O-Lite outfit was used for this purpose, and also to cut the bolt holes in the new section of rail to fit the corresponding holes in the fish plates. The old curved rail adjoining the new section of rail installed was so worn down that it was necessary to build up the ball of the rail to meet the new pieces. For this purpose the Indianapolis welder was used. Fig. 4 shows the section of rail in place before the frog had been built up.

The entire job at this crossing involved a labor and material cost which did not exceed $7.

Next New Haven Locomotives to Have Two Additional Driving Axles

New Equipment Will Have Twelve Motors and 50 per Cent Greater Capacity—To Operate Over New Haven, New York Central and Pennsylvania Railroad Lines

Brief mention was made last week of the new passenger locomotives which the Westinghouse Electric & Manufacturing Company is building for the New York, New Haven & Hartford Railroad. The locomotives will weigh approximately 180 tons and will differ from the present New Haven geared locomotives in having six driving axles instead of four. Additional motors have also been provided so that the capacity will be 50 per cent greater than any of the electric locomotives now in service on this road. The maximum tractive effort will be at least 47,500 lb. The locomotives will be of the articulated truck type shown in Fig. 1, each main truck having what is known as the "Prairie" type of wheel arrangement. The cab is to be supported by means of spring loaded friction plates on the running gear.

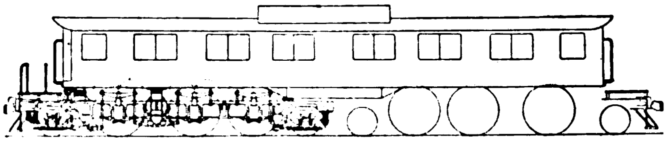
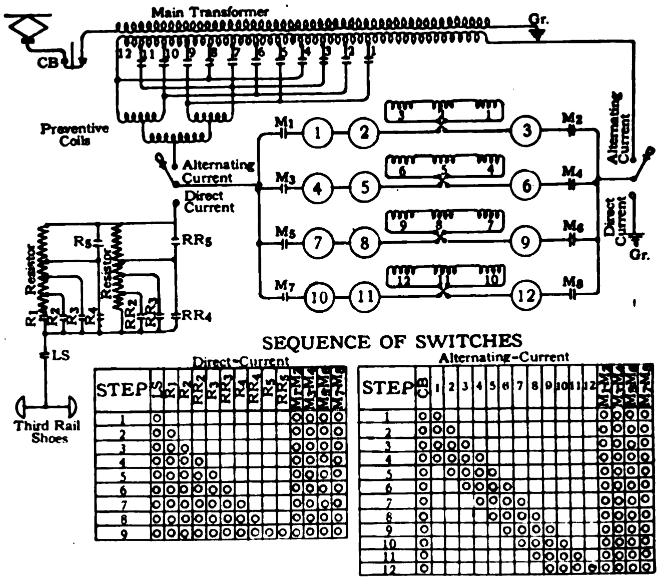


FIG. 1—OUTLINE OF NEW HAVEN RAILROAD NEW PASSENGER LOCOMOTIVE

Like the other New Haven electric engines the new equipment will have series motors designed to operate on either alternating or direct current. The direct current is obtained directly from the third rail when the locomotives are operating on the New York Central tracks and those of the Pennsylvania Railroad. On the New York Connecting Railroad and at other locations the alternating-current system is used, the power is taken from the 11,000-volt overhead trolley wire, and the potential is reduced by means of a transformer.

Geared to each driving axle will be two single-phase series motors. The twelve motors will be divided into four groups, the motors of each group being connected permanently in series. Thus there will be a comparatively low voltage across each individual commutator and the cables in the main motor circuit need only be large enough to carry the current taken by a single motor.



SEQUENCE OF SWITCHES

Direct-Current

STEP	LS	R1	R2	RR2	R3	RR3	R4	RR4	R5	RR5	M1M2	M3M4	M5M6	M7M8
1	○										○	○	○	○
2	○	○									○	○	○	○
3	○	○	○								○	○	○	○
4	○	○	○	○							○	○	○	○
5	○	○	○	○	○						○	○	○	○
6	○	○	○	○	○	○					○	○	○	○
7	○	○	○	○	○	○	○				○	○	○	○
8	○	○	○	○	○	○	○	○			○	○	○	○
9	○	○	○	○	○	○	○	○	○	○	○	○	○	○

Alternating-Current

STEP	CB	1	2	3	4	5	6	7	8	9	10	11	12	M1M2	M3M4	M5M6	M7M8
1	○	○												○	○	○	○
2	○	○	○											○	○	○	○
3	○	○	○	○										○	○	○	○
4	○	○	○	○	○									○	○	○	○
5	○		○	○	○	○								○	○	○	○
6	○			○	○	○	○							○	○	○	○
7	○				○	○	○	○						○	○	○	○
8	○					○	○	○	○					○	○	○	○
9	○						○	○	○	○				○	○	○	○
10	○							○	○	○	○			○	○	○	○
11	○								○	○	○	○		○	○	○	○
12	○									○	○	○	○	○	○	○	○

FIG. 2—CONTROL CIRCUITS FOR BOTH A.C. AND D.C. OPERATION

While the new locomotives will be 50 per cent larger than the present ones, yet on account of the larger hauling requirements which will eventually exist, it is expected that the trains will operate double headed. The control has, therefore, been developed for multiple-unit operation with any of the geared type locomotives now in service on this road. The control circuit connections for both direct-current and alternating-current operation will be as shown in Fig. 2. When operating on alternating current the speed control will be obtained by using different transformer taps, preventive coils being provided so that when changing from one tap to another the transformer coils can be momentarily short circuited without causing an excessive flow of current. On direct-current operation the usual resistors will be used for starting and for speed control.

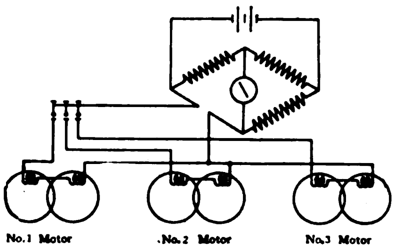


FIG. 3—CONNECTIONS FOR TEMPERATURE COILS

Temperature coils will be located in the armatures of each pair of motors. These coils will be connected as shown in Fig. 3 so that one set can be made the fourth leg of the Wheatstone bridge. The resistances in the other legs of this bridge are constant and the voltmeter across the bridge is calibrated so that the temperature can be read directly. Thus the armature temperature can be closely watched and any overheating can be quickly detected.

Complete steam heating equipment capable of heating through passenger trains will be installed in each locomotive. This equipment will consist of an extended-surface, flash-type, kerosene-burning boiler with a capacity for evaporating 4200 lb. of water per hour. For supplying this boiler there will be a water tank having a capacity of 1440 gal. and an oil tank capable of holding 370 gal.

A Theory of Rail Corrugation

Temperature Difference of Rail Head and Base and Absence of Freedom of Rail to Expand and Contract Given as Reasons for Beginning of Corrugation

BY C. L. HUNTZINGER
Chicago, Ill.

The construction of modern street car tracks is such that eccentric stresses due to temperature are developed in the rail. The head is the only portion of the rail exposed to the elements as the web and base are incased in the paving material, sand bed, grout or concrete base. These incasing materials insulate the lower portions of the rail from the heat of the sun and carry off the heat which reaches the lower portions of the rail through conduction, causing a considerable difference in temperature in the head and base.

That this condition exists can be verified on a hot summer's day while the sun is shining by removing a rail from the track bed. The head will be so hot that the hand can scarcely be held in contact with it, while the base will be comparatively cool. To find these conditions the work must be done quickly as the heat will distribute itself evenly through the rail section in a short time after being exposed.

On steam roads and other tracks where the entire rail is exposed every portion of the rail section has the same temperature and its linear expansion or contraction is the same for any point on the perimeter of the section. This expansion is taken care of in the joints by means of slotted holes in the rail, or in the case of elevated railroads by expansion joints, designed purposely to accommodate this change in length. By allowing this free movement of the rail in expanding and contracting all stresses due to temperature are eliminated.

The case of a rail in a section of street car track is entirely different. As explained before, no two portions of a rail section have the same temperature, so the linear expansion or contraction is different for every point in a vertical section. Provision for expansion and contraction is not made, as in the case of steam and elevated roads, and with welded joints it is impossible for the rail to have any linear motion whatsoever. Any change in temperature causing expansion or contraction must be taken care of by the rail in the form of stress. A rail unevenly heated, if not restrained, would assume the shape of an arc, but being held rigidly in place by the track fastenings and construction it is impossible for it to respond to the interior stresses, thereby causing an eccentric compressive stress in the extreme fibers of the portion, generally the head, having the greatest heat.

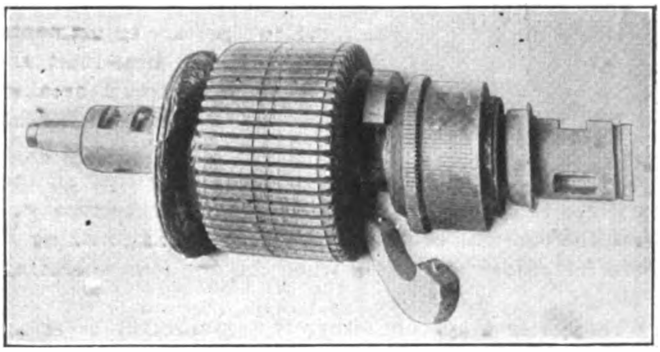
The material in the head resists this expansive stress thereby becoming more compressed in texture, but instead of being uniformly compressed throughout its length the rail texture assumes a series of waves, which show a greater degree of compression at the crests than in the valleys. The behavior of the rail under these conditions is similar to that produced by heating one edge of a slender piece of metal and cooling the other, at the same time restraining it so it is impossible for it to expand in its natural manner. These waves are naturally microscopic, but small as they are this condition of the rail makes it favorable for the commencement of corrugation.

If a moving load is rolled over a rail while stressed, as explained above, the wheel passing from the crest of the stressed wave to the less stressed trough will act as a blow. With successive wheels passing, the ensuing blows form a dish in the rail which, no matter how small, still remains even after the unequal temperature and accompanying stresses have been removed. In support of my argument that the rolling load while moving along a rail acts as a blow, I wish to call attention to the noticeable vibration or chatter which street car trucks have while moving at ordinary speed, and this I contend is sufficient to be manifest in the form of an impact or blow. Although the depressions prior to and directly after the passing of the load are microscopic in size, rail corrugation has started, and those familiar with the subject know with what rapidity it increases in depth and spreads along the rail, once it is started.

Many authorities on street railway construction and maintenance have experimented with rails having heads of various contour, trying to find a section which would be free from corrugating, but the writer is of the opinion that as long as conditions exist where an uneven temperature and the accompanying stresses are created in a rail, this trouble will be experienced to a greater or lesser degree.

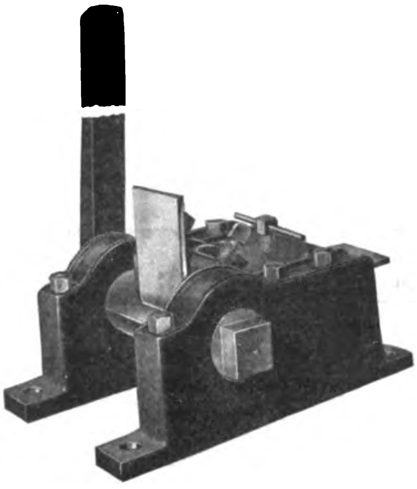
Useful Kink in Rewinding Armatures

The Spokane & Inland Empire Railroad has rehabilitated a large number of Westinghouse-68C motors in order to improve their operation. In connection with this job the armatures were rewound and to do this satisfactorily it was found necessary to provide substantial support for the coils at the end of the core. These supports are seen in the illustration. On the commutator end a split ring of hard wood treated with linseed oil was used, while the support on the other end consists of a casting made at a local foundry and insulated with mica and Empire cloth. By winding the



VIEW OF ARMATURE SHOWING COIL SUPPORTS AT CORE ENDS coils on these supports all movement and breaking of the coils and the severing of the contacts have been eliminated. The end of the finished armature is covered with asbestos cloth to guard against flashing commutators.

Busbar Bending Machine



DEVICE FOR BENDING BUSBARS

Busbar bending is simplified by the use of a machine which has suitable adjustments. Apparatus made by the General Devices & Fittings Company, Chicago, Ill., for this purpose is shown in the illustration. It can be set to bend bars to any desired angle up to 90 deg., and by an additional adjustment any number of pieces can be bent with the proper allowance so that they will lie together evenly spaced in a stack.

The device will handle bars up to 6 in. in width and ⅜ in. in thickness. The bar to be bent is run through the bed of the machine and clasped in place. Operating the long bending arm causes a heavy jaw to carry the ends of the bar to the desired angle.

Series Relay for High-Voltage Circuits

For tripping oil circuit breakers the high-voltage series relay shown in the illustration has been developed for installations where economic considerations prohibit the use of the usual relays connected to current transformers.

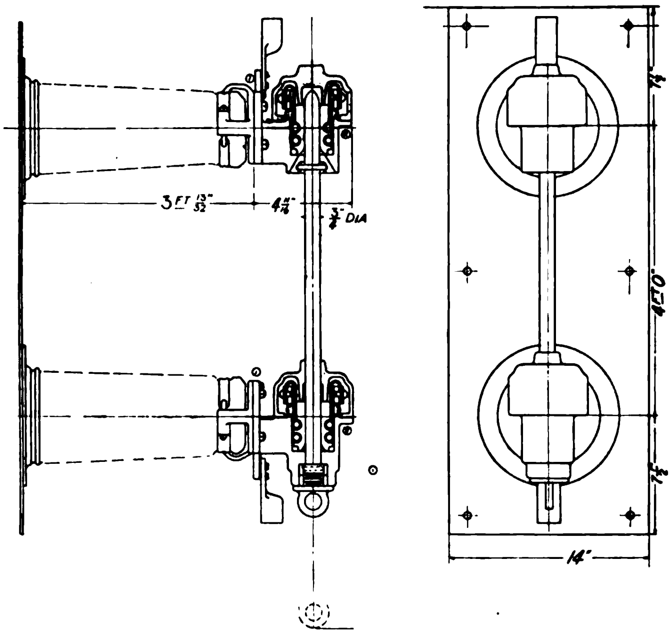
HIGH - VOLTAGE RELAY WITH INSULATING ROD

The upper section consists of a solenoid mounted on a high-voltage insulator to isolate it from the ground. The coil of this solenoid is connected in series with the line on which it operates. One end of the coil is also connected to the solenoid frame to avoid objectionable static stresses. The lower section of the relay contains the calibration parts, adjustments for load settings, time-limit arrangements and circuit breaker control circuit contacts. The two sections are connected by a long wooden rod so that all the parts in the lower section except the contacts can be at ground potential, making it safe for adjustments even when the line is at operating voltage.

These relays operate either instantaneously or on an inverse time limit, obtained by means of a dash-pot mounted on the frame which holds the tripping contacts. The same contacts, operating and adjusting mechanisms and solenoid are used for all voltages. The solenoid coil is rated according to the normal current in the line, and the size of the insulator on which the solenoid is mounted is based on the line potential. The solenoid coil can be readily changed when the voltage is off the circuit. The relay was developed by the General Electric Company for use on voltages up to 15,000.

Disconnecting Switch Designed for Restricted Quarters

Operating the ordinary high-voltage knife-blade disconnecting switch requires considerable space below and in front of the switch, the amount of space being dependent both upon the length of the blade and of the hook rod used to operate the switch. In cases where space is at a premium the switch shown in the illustration has solved the difficulty. In this switch the knife blade has been replaced by a copper rod with a cast eye fastened on one end and a renewable solid brass contact tip on the other. Pulling this rod down opens the switch. When the switch is opened a flange near the top of the rod prevents it from dropping below the upper part of the lower stationary contact. The wide flare of the lower end of the upper contact block leads the rod into position when the switch is being closed, and after the rod is in the upper position a slight turn to the right or left locks it and prevents it from accidentally opening. The switch was developed by the General Electric Company.



DISCONNECTING SWITCH HAVING ROD IN PLACE OF SWITCH BLADE

To obtain commutator saws the Washington Water Power Company, Spokane, Wash., buys soft steel washers about 1 in. in diameter. A hundred of these at a time are placed on a spindle and milled with cutting teeth. They are then case hardened. The cost of the little saws complete is about a half cent apiece, and very good service is obtained from them.

News of Electric Railways

Traffic and Transportation
Financial and Corporate Personal Mention Construction News

$15,455,000 Spent in Three Years

Kansas City Railways Shows How This Sum Has Been Expended to the Lasting Benefit of the City

Clyde Taylor, vice-president of the Kansas City (Mo.) Railways, as noted in the ELECTRIC RAILWAY JOURNAL of Sept. 15, page 452, discussed the problems of the company before a special meeting of the officials of Kansas City, Mo., and Kansas City, Kan., recently. In reviewing the work already done by the company Mr. Taylor said in part:

"A few figures will demonstrate the importance of this property to the city.

CALENDAR YEAR 1916

This company:	
Paid to Kansas City business concerns	$1.512.670
Payroll	3,120.000
Paid for fuel	917,265
Paid Kansas City water department	15.830
Bought 75 new cars	450 000
Rebuilt 121 cars, equipped with folding doors and steps	75,000
Built 9 miles of new extension and rebuilt 16.7 miles of old track at cost of over	1.000.000

THREE-YEAR PERIOD ENDING JULY 7, 1917.

This company:	
Rehabilitated, repaved and repaired track at	$1,506.000
Purchased 125 new cars	635.000
Built 25.5 miles of extensions	836,000
	$2,777,000
174 cars equipped with folding doors and steps	$111,000
22 cars equipped with folding steps only	11.000
42 cars completely rebuilt	44 000
274 cars repaired and revarnished	72,000
	$238,000
In addition:	
Spent for general maintenance	$3.756.000
Paid for wages	9 158 000
Paid for taxes	1,346 000
Placed to credit of city	1.195.000
	$15,455.000

"This property is confronted with serious problems, upon the correct solution of which the future of Kansas City will largely depend. Everything that one buys has advanced tremendously in price within the last five years. Here are some of our figures:

FIVE-YEAR PERIOD FROM 1912 TO 1917

During this time:	
Materials and supplies advanced, per cent	36.78
Taxes increased, per cent	84.72
Wages of employees advanced, per cent	15.24
Cost of fuel advanced, per cent	46.16
Present cost of fuel at mines	$1.00
Probable cost under President's order fixing price	$1.70
Approximate tonnage burned per day, tons	1 000
Increase in cost if President's price prevails	$255,000

TEN-YEAR PERIOD ENDING 1917.
JUNE 30 TO JUNE 30.

Annual payroll:	
1908	$1,736,000
1909	1.851,000
1910	2,035,000
1911	2.429,000
1912 (receivership)	2,321 000
1913	2,467.000
1914	2.664,000
1915	2.998 000
1916	3.070.000
1917	3,091,000
Total payroll	$24,662,000

"Now, in almost all industries where the costs of operation have increased, the business has been kept going by increasing the price of the output, so that the ultimate consumer bears the burden and this is economically and morally sound. Electric railway transportation has not increased in price, but has in this community, in fact, decreased, because of many extensions, thereby giving more service for the same 5 cents. This in the face of tremendous increase in the cost of the service.

"This company has approximately 3500 employees. They have their problems and I think we are broad enough to recognize, and I hope they are, that their problems are of the same character as ours. We have invited the different classes of employees to form committees, whose functions will be frankly and fairly to take up the wage problems with the officials of the company. If we cannot agree it is stipulated that there shall be selected fair, competent and honest arbitrators who will themselves go into the situation and give us and them the answer. The problems that face this property are not only the problems of this property but of every citizen in this community.

"I ask support in working for a solution that will be for the benefit of all. I ask you men to see to it that politics are kept out and that all vindictiveness and ill will be kept out, and that if there are those in the community who, for ulterior reasons, seek to stir up strife and turmoil, then that this town shall put a stop to that sort of business."

Fundamental Differences Considered

Hearing on Oct. 5 on Proposed Philadelphia Lease Looked Upon as Very Helpful to an Understanding

The matter of the lease of the high-speed rapid transit lines in Philadelphia to the Philadelphia Rapid Transit Company was gone into again at the hearing on Oct. 5 before the finance committee of Councils and the joint committee of finance and street railways. At the previous meetings the draft lease was fully explained and the different interpretations fully discussed. At the meeting on Oct. 5 the fundamental differences were gone into with respect to the attitudes in which ex-Director of City Transit A. Merritt Taylor and the present director, W. S. Twining, approached the problem of framing the lease. This was done by James Collins Jones, counsel for the Chamber of Commerce, who summed up the differences in the questions "Who shall bear the burden of the initial losses from the operation of the unified transit system—the city or the car riders?" and "Who shall take the profits in the later years of the lease?" It was Mr. Jones' judgment that the Twining lease offered the fairer solution. Mr. Jones agreed with some of the ideas of Mr. Taylor and suggested changes in the proposed lease. At the same time he leaned most in his attitude toward the administration proposition. In the opinion of the Philadelphia *Public Ledger* Mr. Jones appeared as counselor and could point out differences to the rival elements and thereby suggest a way to settlement and compromise.

Mr. Jones said the Taylor lease protected a 5 per cent dividend for the transit company, but he did not concede that the company was as strongly protected in the Twining lease in the matter of the 5 and 6 per cent dividends. Mr. Jones agreed with Mr. Taylor in favor of the immediate abolition of the 3-cent exchange ticket. He opposed it as being discriminatory in that some car riders were transported for 5 cents while others under similar conditions were obliged to pay an extra 3 cents for an exchange ticket. He suggested a substitution of the universal transfer for which the same charge would be made all over the city. He thought that the extra charge for universal transfers or exchanges should be about 1 cent, making the total fare for the rider who used a transfer 6 cents. He said at one point that, far from being impressed with the looseness of the drawing of the Twining lease, he had been impressed with the high-grade character of the draftsmanship displayed.

Dr. Lewis, special counsel to the Mayor, said that when the hearings had been concluded and the proposed lease had been considered from every angle of public interest, he would be glad to consider with Thomas Raeburn White, of counsel for Mr. Taylor, amendments to be made to the Twining lease. Later on it was agreed that both sides should confer and try to arrive at a mutual understanding.

Another feature of the meeting was the reading of a paper by Mr. Taylor which he described as containing a "discussion of and constructive suggestions as to provision for deficits and for returns to the city and company, also as to immediate elimination of exchange tickets."

Increases in Wages in Baltimore

Following a meeting of the board of directors of the United Railways & Electric Company, Baltimore, Md., on Sept. 28, T. A. Cross, president of the company, announced an increase in the rates of pay of motormen and conductors of the company, and of employees in a number of other departments, amounting to approximately $250,000 for the year. The board authorized the increase in view of the present high cost of living, and in appreciation of the loyalty of the men to the service. The revised schedule of wages to motormen and conductors is as follows:

Class No. 1 will comprise men who have been in the service less than one year, and will be paid 26 cents an hour.

Class No. 2 will comprise men who have been continuously in the service more than one year and less than two, and will be paid 27 cents an hour.

Class No. 3 will comprise men who have been continuously in the service more than two years and less than three, and will be paid 28 cents an hour.

Class No. 4 will comprise men who have been continuously in the service more than three years and less than five, and will be paid 29 cents an hour.

Class No. 5 will comprise men who have been continuously in the service more than five years, and will be paid 30 cents an hour.

The company maintains a pension system for the benefit of its employees, under which those retiring, after a specified period, are pensioned for the remainder of their lives. The company also has in operation a death benefit, or insurance plan, to the privileges of which employees are eligible, the entire expense of both the pension and insurance plans being borne by the company without any outlay whatever on the part of the employees.

Chattanooga Strike Developments

Several conferences were held on Sept. 24 by those who are seeking to bring together the officers of the Chattanooga Railway & Light Company, Chattanooga, Tenn., and the men who are out on strike. Certain concessions were said to have been made by F. W. Hoover, vice-president of the company, in the interest of a settlement. The prospects were regarded as bright at that time. Toward midnight, after receiving a message from the conference with Mr. Hoover, Organizer Cline for the men said he could not see his way clear to recommend all that had been proposed to the union for adoption. Several days more of dickering followed. A formal offer was then outlined by the company. Mr. Hoover later left the city on business and was gone several days. During his absence the agitation for a settlement was kept up by outside interests. Mr. Cline, representing the men, again balked at the individual contract. The whole matter was, however, gone over by the men, who submitted certain amendments.

On Sept. 30 the Chattanooga *Times* published a story to show that in their insistence upon recognition of the union the men were demanding concessions not recognized by the Amalgamated Association as a justifiable cause for a strike. In support of this the paper quoted from the testimony of Edward McMorrow, a member of the executive committee of the national body, presented during the inquiry in June by the Senate committee into the strike of the electric railway employees in Washington.

On Oct. 1 it was made plain by the Chattanooga Railway & Light Company that the last word had been said by it. All the concessions possible had been made. On Oct. 3 the matter still rested as just related.

Seattle Wins Earnings Case

Judge J. T. Ronald of the King County Superior Court at Seattle, Wash., recently sustained the city's demurrer to an amended answer in the action brought by the city of Seattle to recover $64,000, representing 2 per cent of the gross earnings of the Puget Sound Traction, Light & Power Company of Seattle during 1916. Hugh M. Caldwell, corporation counsel, entered a demurrer to the amended answer of the company, in which answer the company pleaded that it had petitioned the State Public Service Commission to be relieved of this 2 per cent gross earning tax and other franchise obligations; and claimed that the city was responsible for a loss of $70,000 or thereabouts through the passage of an ordinance requiring the sale of tickets on cars, later held invalid by the federal court. On Jan. 15, last, the Puget Sound Traction, Light & Power Company offered a check to the city for $64,000, representing 2 per cent of its gross earnings for 1916, with the provision that in accepting it the city abandon its plan of bringing suit to require the company to pave rights-of-way, assume portion of the cost of bridges and other obligations, which the company is seeking to have abrogated by the State Public Service Commission. The city of Seattle refused the check and directed Mr. Caldwell to bring suit to recover the amount.

Municipal Extension Impediments

Assistant Corporation Counsel of Seattle Outlines Procedure Necessary to Secure Funds to Extend Municipal Railroad

In an opinion rendered by Walter F. Meier, assistant corporation counsel of the city of Seattle, Wash., to Councilman Will H. Hanna, chairman of the finance committee of the Council, it is stated that before money can be taken from the general fund to build an extension to the municipal railway system, under the express provisions of the state statute it will be necessary to submit the plan for such extension to the people for their approval. The proposed appropriation of $12,000 from the general fund to be used in the construction of an extension from the end of Division A into Ballard is, therefore, illegal. In an opinion made to the Council about a week ago, Mr. Meier held that the transfer of money from the light depreciation fund for the extension of the railway is illegal. Following that opinion, the Council abandoned the plan of appropriating money from the light depreciation fund, and a bill transferring an equal amount from the general fund was introduced. Under the two opinions furnished by Mr. Meier, at the request of the finance committee, there are only two ways to finance an electric railway extension. One is to obtain the approval of the voters to such a plan and to the consequent expenditure, and the other is to authorize and sell utility bonds, without submitting the proposition to the voters.

Discipline of Kansas City Police

It will be remembered that union leaders had threatened a general strike if policemen who had refused to ride cars with strike breakers were discharged from the force. The policemen were discharged, but no strike was called. The union leaders declared that they would secure the dismissal of John Ranson, police commissioner, who had taken a decided stand for discipline and protection of property. It had been promised at the meeting of the State Federation of Labor that definite steps would be taken against Governor Gardner if Governor Gardner did not dismiss Mr. Ranson. The State Federation, however, went on record as supporting law and order and opposed to any labor unsettlement that might be construed as springing from enemy influence, and no mention was made publicly of the Kansas City situation. It is reported that the union leaders were advised not to start a fight on Governor Gardner on the ground that he would not take the part of strikers against his appointees on police boards. It is also reported that labor leaders expect to see the discharged policemen reinstated in their jobs in Kansas City in due time, and with this statement the criticisms of the more radical are being met.

Union Recognition Waived

Publicity by Business Men Helps to Mold Public Opinion Against Union Recognition

The labor troubles in Kansas City, Mo., which started with the strike of employees of the Kansas City Railways and have extended to packing houses, freight depots, soap factories and manufacturing establishments, still hamper plans of business men. A turning point, however, seems to have been reached, for on Sept. 23 the striking freight handlers agreed to return to work without recognition of their union. It will be remembered that the street railway strike was settled without formal recognition of the union. The packers, however, recognized the union in their settlement. Union leaders then declared that the basis of the packing house settlement would be that of other strikes. Several weeks ago a Business Men's Association was organized and it used large newspaper space to inform the public of the incitement of unrest among workmen. The publicity campaign was credited with effecting such a change of public sentiment that the freight handlers decided it would be most unwise to insist upon union recognition. The railroads had been able to keep their freight depots more or less in operation, and the agreement provides that the men employed during the strike need not be discharged to make places for the strikers who now return to work. Patrick F. Gill, government mediator, arranged the settlement of the freight handlers' strike. Teamsters and chauffeurs who refused to handle goods for or from freight houses have returned to work.

Electrification Efficient, Economical and Satisfactory

Charles A. Goodnow, vice-president of the Chicago, Milwaukee & St. Paul Railroad, who has been in charge of the electrical construction during the last few years, is quoted as follows:

"It was unjustly and ignorantly stated in the financial column of a New York newspaper that St. Paul was going on with its electrification, not because that method of operating had proved satisfactory or economical, but because we had gone so far that we could not stop.

"This may be flatly denied, like some other recent stories in the campaign against St. Paul's credit. Electrification has not only proved to be highly efficient, but economical and satisfactory in every way. It has solved the problem of reliable and cheap mountain operation, especially in the winter, and has demonstrated that the cost of repairs is only about one-half that of steam operation, while the capacity of the electric engines as regards both speed and tonnage, is practically double that of steam locomotives. Electric engines put in service in December, 1915, are still doing 100 per cent work and have never had a general overhauling."

Abandonment of Road Sought

The Inter Urban Railway, Des Moines, Iowa, has filed a petition with the State Railroad Commission of Iowa requesting permission to abandon its branch to Woodward, on a spur of the line to Perry and 5 miles from the junction point at Moran. The company contends that the road is not a paying proposition; that it cannot afford to pay for an overhead crossing which the Railroad Commission has ordered, and that the rails are needed by the company for double tracking its line to Camp Dodge. Citizens of Woodward have declared through Senator A. M. McColl that they will oppose the closing of the road.

The Inter Urban Railway has announced that if it can secure a 15-cent rate for soldiers it will double-track its entire line to Camp Dodge. At the present time the soldiers are paying 10 cents to Des Moines, while citizens pay 15 cents. Emil G. Schmidt, president of the road, states that it will cost $300,000 to double-track the line to Camp Dodge, but that with the increased fare he has made arrangements to finance the work. Camp Dodge is 12 miles from Des Moines, so at the present time the company is receiving less than 1 cent a mile for carrying the soldiers.

Strike in Twin Cities

Minnesota Public Safety Commission Brings About Settlement—Discharges to Be Investigated

A strike of trainmen of the Twin City Rapid Transit Company begun on Oct. 6, as a result of the activity of union organizers, was ended on Oct. 9 at the direction of the Minnesota Public Safety Commission. The commission found that the only real difference between the company and the men on strike was the question of the reinstatement of men previously discharged and that the policy of the company was not to discharge employees solely on the score of their membership in any organization. It advised that the men return to work immediately, the status of the fifty-seven men to be investigated on their individual merits. The present status seems to be just about the same as it was before the strike. The company has not recognized the union.

DEVELOPMENTS JUST BEFORE THE STRIKE

Previous to the strike the company was conferring with a co-operative trainmen's committee selected from the carhouses and had agreed to practically all the requests of the men. Later an advance of 10 per cent in wages was granted. At this time the union intervened. Horace Lowry, president of the company, refused to confer with the union under the circumstances. Vice-President T. F. Line and Representative Edward McMorrow of the Amalgamated then took over the direction of the affairs of the men who had organized and the strike began. A general sympathetic strike was threatened, but the commissioners' order ended the affair. Following the settlement President Lowry said: "I have nothing to say except the Public Safety Commission has taken the matter out of my hands and the company's control. We must and will obey cheerfully and patriotically the order of the commission."

PUBLIC INCONVENIENCED LITTLE

Rowdyism in St. Paul resulted in damage to equipment of the company and in slight injuries to passengers and policemen. Except for these outbreaks and the discontinuance of owl service three nights the public was inconvenienced very little. An average of 88.8 per cent normal service was reported by the company the last day. This was 6.8 per cent over the previous day. When the strike was called the company announced that 319 trainmen out of 2716, or 16 per cent, failed to report for duty. Three per cent is the normal absence report, leaving the percentage of men on strike at only 13 per cent of the total. The company was prompt to offer to receive applications from men who had quit work but had done no unlawful act while out.

A Question of Veracity

Policemen Accused of Insubordination Plead Lack of Definite Instructions

After deliberating seventeen and one-half hours without reaching an agreement, the jury considering the case against former Patrolman E. W. Benjamin of Seattle, Wash., charged with failure to do his duty as a public officer during the recent strike of the railway employees of the Puget Sound Traction, Light & Power Company in Seattle, was discharged by Superior Judge Boyd J. Tallman. Benjamin is one of thirteen officers charged in one information with the same offense, but granted separate trials. It is stated that his case will be tried again before the State proceeds against the other defendants. The State's case rested mainly upon testimony of Police Sergeant F. A. Ribbach, who said he ordered the policemen to board the cars for a trip downtown for the purpose of protecting property and the car crew, and that Benjamin and his co-defendants refused to obey him. All of the "striking" policemen testified that Ribbach did not issue any orders, and that when they attempted to learn from him what they should do, once upon the cars, he walked away. They all asserted they were ready to obey any commands as soon as detailed instructions were received by them. G. A. Richardson, general superintendent of railways of the Puget Sound Traction, Light & Power Company at Seattle, testified that his company had asked the police for protection.

Cleveland Considers Coal Situation

Chamber of Commerce Takes Up Matter Which Threatens Community

At a meeting of the industrial development committee of the Chamber of Commerce of Cleveland, Ohio, recently, business men discussed the coal situation in its various phases. A serious shortage of coal exists and there is grave concern as to the possibility of securing the fuel necessary for keeping mills, factories, industrial plants and utility stations in operation until the opening of the spring season. On Sept. 20 coal producers and jobbers met with the committee to discuss means of securing a proper supply. It is probable that the matter will be taken to the authorities at Washington.

Orders have been received by the railroads to deliver slack coal for industrial purposes. This will give some relief, but perhaps not fully satisfy the needs of the industries.

A few days ago the Western Ohio Railway, Lima, notified the Public Utilities Commission that its supply was running very low and that something would have to be done within a short time in order to keep the road in operation. It is understood that arrangements have been made to take care of the situation temporarily.

Review of Danville Strike

Company Agrees to Recognize Union and Reinstate Two Discharged Employees—Question of Wage Scale to Be Arbitrated

Previous to a four-day strike called on Sept. 13, about 100 city trainmen of the Danville Street Railway & Light Company, Danville, Ill., had been working under individual contracts with the company. Two increases in pay had already been allowed by the company during the present year, bringing their wage scale up to the following amounts: First six months' service, \$2.35 a day; second six months, \$2.45; second and third years, \$2.55; fourth and fifth years, \$2.65; all over five years of service, \$2.75 per day, all on the basis of a nine-hour day.

Prompted by J. D. Keenan, a resident of Danville and a member of the Boilermakers' Union, a few of the trainmen organized a local division of the Amalgamated Association on Sept. 11 and appointed a committee to wait upon the company. The principal demands of this committee were for the reinstatement of two trainmen who had been discharged early that same week, an increase in pay of 7½ cents an hour to all trainmen and recognition of the union. J. E. Johnson, general superintendent, pointed out to the committee that the company had increased wages twice since last May, and that the men were receiving pay which compared favorably with that of men in similar work in other cities of like size in the Middle West. The trainmen were further told that although the contracts signed by the individual employees had not expired, and although the majority of employees had no interest in the union, yet the company felt that a strike was an extremely unfortunate thing particularly at the present time and that it would deal with the union if this were formed and undertake to negotiate a new contract rather than be a party to any labor disturbance. The men were told that their right to organize would be respected, and the committee was asked to appear with some authorized representative of the Amalgamated Association for the purpose of negotiating a contract.

STRIKE CALLED WITHOUT WARNING

Without further notice or negotiations the committee called a strike of all trainmen on the morning of Thursday, Sept. 13, the opening day of the Illinois-Indiana Fair. A number of the company's employees reported for work that morning, but it was considered inadvisable to attempt to operate. The cars were ordered to the carhouse, where they remained for three days. During this period the company made no effort to resume service. Through the Illinois-Indiana Fair Association another conference was arranged for Monday, Sept. 17, between authorized representatives of the Amalgamated Association and H. E. Chubbuck, vice-president executive of the Illinois Traction System, which controls the Danville property.

BASIS OF SETTLEMENT

At this conference a settlement was reached. The company agreed to reinstate the two discharged employees, to recognize the organization, not to discriminate against a man because of his union or non-union affiliations, and finally to leave the question of wage scale to the decision of a board of arbitration to consist of three members, one to be appointed by the trainmen's organization, one by the company, and the two arbitrators to select the third member. This board was to report its findings within thirty days after its organization. Up to the present time the selection of the members of the board of arbitration has not been made.

Naval Reserve Officers Wanted

The Secretary of the Navy has authorized the commissioning of 100 graduate electrical engineers as lieutenants, junior grade, in the Naval Reserve, and has directed that the necessary action be taken to provide these officers at the earliest practicable date. Eighty-five nominations are to be made by each of the following agencies: Naval Consulting Board, National Reserve Council and the American Institute of Electrical Engineers. From the 255 nominations thus made a board of naval officers will select 100 for appointment about Oct. 20. The officers selected will receive a month's training on shore and upon the completion of that term will be ordered to the active fleet as electrical officers of ships for a period of at least six months. After this period they will be assigned to duty as the exigencies of the service may demand.

Developments in San Francisco

First Conference of Engineers on Purchase Matter—Eight Hundred Platform Men on Duty—Many Men Returning Daily

The first conference between representatives of the city and the United Railroads, San Francisco, Cal., on the matter of purchase of the railway properties by the city, was held on Oct. 2. This meeting was in accordance with the authorization of the Board of Supervisors, as reported in the ELECTRIC RAILWAY JOURNAL recently. M. M. O'Shaughnessy, city engineer, represented the city, and William von Phul, general manager of the United Railroads, represented the company. Further conferences have been planned at which the details of both sides of the matter will be discussed.

As for the strike of the trainmen of the company service on Oct. 5 was practically normal on all lines north of Market Street until 1 a. m. and the owl cars were expected to be put on the run very shortly. Auto buses operated by large factories, etc., were being discontinued except by those companies in sympathy with union labor. On Oct. 5 about 800 platform men were on duty and their ranks were being increased by five to fifteen men a day from among the strikers. The company is reinstating only men whose records are good. The men reinstated are working at the old rate with the loss of seniority. There was a meeting of strikers on the evening of Oct. 5 for the announced purpose of holding a secret ballot on the question of returning to work. The result of the ballot was to continue the strike. The company, however, does not believe this to have been a fair test.

An appraisal of the value of the United Railroads' physical properties which has been undertaken by the California Railroad Commission is expected to facilitate the work of representatives of the city and the company who are meeting for a similar purpose.

It is notable that the receipts of the Municipal Railway have increased during the strike on the United Railroads. Earnings of the municipal lines for September totaled \$313,125 as against \$236,935 in August, 1915, which was the next largest month in the history of the system.

Relief of Coal Situation in Lexington.—Resumption of mining operations in the southeastern Kentucky-Tennessee field on a basis which leaves the differences to arbitration is believed to have relieved the embarrassment of the Kentucky Traction & Terminal Company, Lexington, Ky., which has been on the verge of a shutdown for lack of coal for several weeks.

Mr. von Phul Selected by Company to Confer with City Engineer.—William von Phul, vice-president and general manager of the United Railroads, San Francisco, Cal., has been appointed to represent the corporation in the negotiations with the city to make an appraisement looking toward the purchase of the railroad's lines by the municipality of San Francisco.

Employees Buy Coal at Cost.—In accordance with its custom of doing everything possible to assist those in its employ, the United Railways, St. Louis, Mo., is now delivering 10 000 tons of coal to the homes of its employees at cost. This is the fulfillment of a plan announced by President McCulloch several weeks ago. The company purchased the coal after receiving orders for approximately 10,000 tons. The coal is being delivered to the homes at about $3.85 a ton.

Minneapolis Franchise Matter Still Before Council Committee.—The Minneapolis (Minn.) Street Railway franchise matter is still before the street railway committee of the Council, which has been listening to an extended discussion of the differences between C. L. Pillsbury's valuation of the company's property and that of the city engineer. Mr. Pillsbury is in the East. S. P. Jones, expert, and the city attorney are still engaged in drafting the outline of a franchise.

Increase in Wages in Wheeling.—The West Virginia Traction & Electric Company, Wheeling, W. Va., has granted another increase in wages to its motormen and conductors. The advance went into effect on Oct. 1. The former scale of wages was from 22 to 31 cents an hour. The new scale is from 26 to 34 cents an hour and will remain in force until May 1, 1918. The increase will mean an additional outlay of about $1,000 a month or about $12,000 a year, and 110 men will be benefited.

Municipal Railway Loss Piles Up.—Up to September of this year, the municipal electric railway lines in Seattle, Wash., have operated at a loss of $113,739. In addition to this loss, the lighting department lost up to Jan. 1, 1917, in excess of $20 000 on current furnished for the operation of cars. The street railway fund is now indebted to the general fund, through loans and advances in the sum of $149,429, of which amount $72 093 represents interest on $425,000 of street railway bonds.

Cars Used for Advertising Liberty Loan.—On the opening day of the second Liberty Loan campaign, John J. Stanley, president of the Cleveland (Ohio) Railway, contributed to the advertising of the campaign by having two cars run as a train and carry a big lettered message commending the purchase of the bonds. The cars were decorated with flags, and miniature liberty bells heralded their approach. One of the big signs on the side of the cars was as follows: "Back Up the Boys at the Front. If You Can't Go—Buy U. S. Government Liberty Bonds."

United States Engineering Agency.—The United States Department of Labor has created a division whose function it is to aid the employer in obtaining suitable professional help. It is known as the Teachers and Professional Service Division. While intended to embrace all professions, attention has thus far been confined to the teaching and engineering professions. The services of the division are free to both employer and employee. All communications should be addressed: Teachers and Professional Service Division, U. S. Employment Service, 845 South Wabash Avenue, Chicago, Ill.

Electric Railway Successful in Crossing Case.—Justice Swayze in the Court of Errors and Appeals at Trenton, N. J., has filed an opinion in which Hamilton Township loses its long fight to compel the Trenton & Mercer County Traction Corporation to construct its line across the tracks of the Pennsylvania Railroad at Yardville and continue to the Monmouth County line. The court holds that the electric railway is without legal right to cross the railroad at that place, and that the township has no legal right to mandamus the company to continue the road. The court of errors reverses the Supreme Court, which permitted the company to build its line in two sections.

New Working Terms in Knoxville.—A contract entered into by the Knoxville Railway & Light Company, Knoxville, Tenn., with its employees runs for two years from Aug. 31 last and provides for increases in pay of the employees of the railway. The union is recognized and experienced trainmen and shopmen are granted an increase of 2 cents an hour, while the newer men in the operating department are advanced 4 cents an hour. Time and a half for overtime is another condition of the contract, which also stipulates that each extra conductor shall be paid at least $1.50 on every day he reports for duty. A provision for the renewal of the contract is contained in the agreement.

Another Wage Increase in Spokane.—The second raise to be granted in one month has been allowed by the Washington Water Power Company, Spokane, Wash., to trainmen in its employ for three years or more. The new wages are retroactive to Sept. 14. The increase is 1 cent an hour for men who have been with the company three years and 2 cents for those who have completed fifteen years of service. The extra men are raised $5 a month and the minimum salary guarantee for them has been made $65. The revised schedule allows two-man car employees of three to fifteen years' service 35 cents an hour and the one-man workers 39 cents. Those of fifteen years or more are allowed 37 and 41 cents for two-man and one-man service, respectively.

Disagreement Between Company and City Over Municipal Line Operations.—Following a deadlock between members of the City Council of Tacoma, Wash., and the Tacoma Railway & Power Company over the granting of transfers between the tideflats railway line of the city and the railway lines of the private company, Mayor A. V. Fawcett has presented to the City Council a proposition for operating the municipal electric railway to the tideflats directly under the Mayor's department. The deadlock came as the result of adoption by the City Council of a resolution requesting the return of 2 cents on every transfer, and the ultimatum of Louis H. Bean, manager of the company, that his company would not pay the city more than 1¾ cents on each transfer. This controversy temporarily leaves the city without transfer facilities on its tideflats line.

East Cleveland Franchise Matter Settled.—The new contract between the Cleveland (Ohio) Railway and East Cleveland relative to service on Hayden Avenue having been approved by the City Council of Cleveland on Oct. 6, service was installed the following day. Hayden Avenue people now have a six-minute service through to the Public Square, Cleveland. They must pay a fare of 5 cents, with 1 cent for a transfer to other lines. Anyone using the Hayden Avenue cars within the boundaries of East Cleveland must pay a 5-cent fare, but while within the limits of Cleveland proper the fare on Hayden Avenue cars is 3 cents. The settlement of this dispute, however, has not improved the East Cleveland service, which, as a result of the order of Fielder Sanders, street railway commissioner of Cleveland, has been made unsatisfactory to East Cleveland.

Railway Supplies Employees with Coal.—Many employees of the Louisville Railway are getting their winter's supplies of coal this fall with the assistance of the company, which buys domestic sizes in carlots and lets the employees have the coal at cost. The men arrange for the delivery of the coal to their homes and the company pays the initial charges, taking the amounts charged against each man from his pay envelope at a schedule determined upon. The service to the employees started in a small way among some of the employees of the shops of the company. It has been very successful in that it is enabling the employees to get their coal at a cost about $1.50 on the ton under the Louisville retail market. The company's own coal requirements are well protected by contracts which have more than a year to run, enough time to give the company opportunity to make what preparations may be necessary to meet conditions that will exist when the contracts expire. Allowances were made to the operators holding the contracts and they are getting a higher figure than when the contracts were made.

Increase in Wages in Spokane.—Employees of the Spokane (Wash.) Traction Company, the city street railway system of the Spokane & Inland Empire Railway, have voted to accept the company's offer of a general advance in pay of 3 cents an hour. The action has successfully concluded negotiations which started with a demand for an increase of 5 cents an hour. Under the wage agreement the company will continue to give its employees and their wives half rates over the suburban lines, also on the Great Northern Railway, which owns the Spokane system, but it does not give free transportation on city or suburban lines to the wives of its men. The increase is retroactive to Sept. 1. Under the new schedule the men will receive 30 cents an hour the first six months, 31 cents the second six months, 32 cents the third six months, and 33 cents the fourth six months. Thereafter they will receive 35 cents an hour. Under the old schedule the minimum pay was 28 cents an hour and the maximum 33 cents. Men operating the one-man cars, under the new schedule, will receive 1 cent an hour more than employees on cars requiring two men.

Coasting Recorder Saves a Cow.—*The Trollier*, published by the Rhode Island Company, Providence, R. I., contained in a recent issue an item in part as follows: "While Motorman Minot was driving his car to Providence one night last week and observing the rules as required in connection with the operation of the recorder by coasting whenever and wherever possible, a black cow suddenly appeared on the track ahead of him. He applied the brakes and stopped within a few feet of the milk producer. Owing to the fact that he was coasting, he had good control of his car and avoided what surely would have been an accident under other conditions. Motorman Minot stated that before using the recorder he was accustomed to coming along through that locality with full power on. If he had been doing so the other night it would certainly have been 'Good-by, cow.' Motorman Minot ran into and killed a deer a few years ago at about the same spot. While the Rico recorder is not used for that purpose, it appears that in this case it was a good auxiliary to the work of the Hoover commission at Washington because it assisted in conserving the supply of milk. This is just one little incident that shows the advantage of having cars equipped with this modern coasting device."

Change Proposed in Cincinnati Rapid Transit Locations.—At a meeting of the Rapid Transit Commission of Cincinnati, Ohio, on Oct. 5, Frank S. Krug, chief engineer, submitted a plan for a change of location of the rapid transit tracks between Mohawk and Brighton. Instead of following the canal bed between those two points, the new plan provides that the tracks emerge from the bed of the canal into the open between the bed and Central Avenue and continue in that manner for about half a mile, re-entering the canal bed at or near Brighton. Mr. Krug also submitted plans in greater detail of changes suggested several weeks ago whereby the interurban station would be located under Government Square, or a combined interurban station and loop station under Government Square and Fountain Square, between Main and Vine Streets. The original plan provided for a station on Canal Street. In order to build the combined interurban and loop station under Government and Fountain Squares, Vine Street would have to be substituted for Walnut Street as the location of the subway. Nine separate plans, with costs, have been worked out for these stations. The commission, however, has not had time to go into the details. Until this is done, nothing definite can be said as to the choice.

Program of Association Meeting

Jovian Order

The national convention of the Jovian Order will be held at the McAlpin Hotel, New York, on Oct. 22 and 23. On Oct. 22 the local Jovian League will entertain all visiting Jovians at luncheon. Dr. Carl Wallis Petty will deliver a patriotic address. On the afternoon of Oct. 22 the business sessions of the convention will be opened by H. L. Doherty, Jupiter of the order. On Oct. 23 the business sessions will be opened by an address by John W. Lieb, president of the National Electric Light Association.

Financial and Corporate

Annual Reports

International Traction Company

The comparative income statement of the International Traction Company system, Buffalo, N. Y., for the years ended Dec. 31, 1915 and 1916, is as shown in the following insert:

	1916		1915	
	Amount	Per Cent	Amount	Per Cent
Gross passenger earnings....	$7,530,041	96.3	$6,564,631	95.9
Receipts from other sources..	288,636	3.7	275,348	4.1
Total	$7,818,677	100.0	$6,839,974	100.0
Operating expenses	$4,030,282	51.6	$3,480,543	50.9
Taxes	535,156	6.8	425,485	6.2
Total	$4,565,438	58.4	$3,906,028	57.1
Net earnings from operation.	$3,253,239	41.6	$2,933,946	42.9
Interest	$1,667,276	21.3	$1,681,468	24.6
Rentals	46,210	0.6	47,971	0.7
Sinking fund and amortization of debt discount and expense	149,223	1.9	137,521	2.0
Total fixed charges........	$1,862,709	23.8	$1,866,960	27.3
Balance for renewals, replacements and dividends.......	$1,390,580	17.8	$1,066,986	15.6
Renewals and replacements reserve	522,708	6.7	396,582	5.8
Surplus	$867,822	11.1	$670,404	9.8

The gross earnings of the system for the year 1916 showed an increase of $978,703, or 14.3 per cent over 1915. This increase was due to exceptional industrial activity prevalent throughout the territory served. Although largely stimulated by the excessive demand for war munitions and supplies, the natural growth of traffic has been steadily upward. Accordingly constant effort is being exerted to expand the facilities of the company to keep pace with the need of service.

The operating expenses and taxes for 1916 increased $659,410 or 16.8 per cent. This increase is mainly accounted for by an increase in wages granted the employees on May 1, 1916, as well as a very large increase in cost of materials and supplies, and increased taxes, federal, State and municipal.

The fixed charges for 1916 decreased $4,251 as compared with the previous year. The balance remaining for renewals, replacements and dividends showed a gain of $323,544, and the amount reserved for renewals and replacements increased $126,126.

The report of the company states that operation for the opening months of 1917 shows an increase in gross earnings. Although the cost of nearly everything used in the operation of the property has increased enormously, the management is confident that the net results for the year 1917 will show a substantial increase.

Philadelphia & Western Railway

The earnings of the Philadelphia & Western Railway, Upper Darby, Pa., for the fiscal year ended June 30, 1917, were adversely affected by the infantile-paralysis quarantine in 1916, but in spite of this the operating revenues at $538,137 showed a gain of $46,649 for the last year. The operating expenses, however, increased $31,951, so that the operating income at $271,366 represented an increase of $14,697 over the preceding year. The net income gained $14,574. After appropriating $10,000 for the purchase of new equipment, there was a balance of $110,844 transferred to profit and loss.

The passengers carried in the last fiscal year numbered 3,644,752, an increase of 274,284. Other statistics of operation follow: Receipts per passenger, 13.9 cents, an increase of 0.2 cent; passenger car mileage, 1,417,891, an increase of 41,200; earnings per passenger car-mile, 35.6 cents, an increase of 2.1 cents; and expenses per revenue car-mile, 18.51 cents, an increase of 1.76 cents.

It is stated, however, that the net earnings for the last six months have shown a decline, in spite of an increase in gross. This has been due to the great increase in the prices of coal, all other materials and labor. New rates effective on July 5, 1917, are now being investigated by the commission, excess fare receipts being issued. Until the case is decided, the additional fares cannot be included in the company's earnings.

Stock to Employees and Patrons

Monongahela Valley Traction Company Announces Plan Under Which Its Employees and Patrons May Share in Company's Profits

A plan whereby its employees and the citizens of the communities on the lines of the Monongahela Valley Traction Company, Fairmont, W. Va., are offered an opportunity of participating in the ownership of the company has been announced. The plan is designed to make it easy for the employees and for the patrons of the company to become owners, on attractive terms, of common and preferred stock of the company under a partial-payment plan which provides for payments to be applied to the purchase of the shares at convenient times and at convenient places. The sale of stock is in the hands of Robert Garret & Sons, investment bankers, Baltimore, and the plan of sale as they worked it out is as follows:

The price of the shares will be $43 for each combination of one share of preferred and one share of common stock of a par value of $25 each, but no more than fifty shares of preferred and fifty shares of common will be confirmed to any one subscriber under this plan.

An initial payment of $7 will be required on each combination of one share of preferred and one share of common, which will be credited to the subscriber's account at the banking institution, the subscriber agreeing to pay the balance in installments of $3 a month on each combination of one share of preferred and one share of common until paid for.

The subscriber's account will be credited with all dividends received on the stocks and will be charged with interest on the unpaid balance at the rate of 6 per cent per annum, such charges to be made quarterly. On the present dividend basis the stocks will return the subscriber about 6.40 per cent on the investment.

Under this plan the shares will be fully paid for in one year, the last payment being an odd amount which will adjust interest charges as against dividends received. Subscribers may anticipate their monthly installments and complete the payments at any time.

The stocks pledged with the banking institution are to be retained by it until full payment is made under this monthly plan.

On the failure of any subscriber to pay his monthly installments thirty days' grace will be allowed and if payment is not made at that time, the banking institution will have the right to sell the stocks pledged, at the market price, returning to the subscriber any excess over the amount realized from the sale.

Protest Against Paving Charges

The Chambersburg & Gettysburg Electric Railway, which operates 13 miles of electric railway in Chambersburg, Pa., is asking for relief from paving charges sought to be imposed upon it by the Borough Council of Chambersburg. At a meeting of the Council on Sept. 17 the company filed a letter setting forth its side of the case. It said that since 1905 the gross earnings have averaged only $40,132 a year, the expenses $37,748 a year, and the net income after the payment of taxes only $1,739 a year. All of the net has been put back into the property for improvements and extensions. The company said that it would cost about $16.800 to pave the six blocks called for in the ordinance. The carrying charges on this sum would amount to about $1,680, or almost as much as the average annual net income of all the lines of the company for the last twelve years. The bond interest at present in default amounted to $161,250. Unless the company received some relief the bondholders would be obliged to foreclose. Three plans were advanced as possible solutions. The first suggested, among various things, a modification of the franchise, with the understanding that the company would pave its remaining track within the borough limits at the rate of not exceeding one block per annum. The second suggested the purchase of the railway by the borough or its purchase by either or both of the other electric railways operating in Chambersburg. The third suggested an arrangement with the other companies operating in the city for specified trackage rights with the understanding that the Chambersburg & Gettysburg Railway should not be required to pave its remaining trackage at the rate of more than one block a year.

American Water Works & Electric Company, New York, N. Y.—The income of the American Water Works & Electric Company for the fiscal year ended June 30, 1917, amounted to $1,538,016 as compared to $1,366,810 the year before, an increase of $171,205. The expenses and taxes, less the proportion contributed by subsidary companies for expense of administration and included in the operating expenses of such companies, totaled $75,433 in 1917 and $67,719 in 1916. The net earnings in 1917 were, therefore, $1,462,582 as compared to $1,299,091 in 1916. Deductions increased from $789,958 to $814,347, but the net still showed a gain from $509,133 to $648,234, or $139,101. The holding company's income in 1917 included $139,266 for nine months' dividends declared on the preferred stock of the West Penn Traction & Water Power Company, there having been no amount included in 1916. The holding company's proportion of the undistributed earnings of the West Penn properties for the last fiscal year, not included above, was approximately $425,000.

Boston & Maine Railroad, Boston, Mass.—The annual report of the Boston & Maine Railroad for the year ended June 30, 1917, covers the operations of the two owned electric railway branches, the Portsmouth (N. H.) Electric Railway and the Concord & Manchester Electric Branch, Manchester, N. H., and the one leased line, the Conway (Mass.) Electric Street Railway. The combined operating revenues of the first two lines for the last fiscal year were $259,671, an increase of $9,313 over the returns of the year before. The operating expenses, however, increased $43,337 to a total of $202,000. As a result, therefore, the net revenue at $57,670 showed a falling off of $34,024. The number of passengers carried increased from 4,931,397 to 5,115,662, and the revenue car-miles decreased from 1,068,142 to 1,050,047. The operating revenues of the Conway Electric Street Railway decreased from $10,774 in 1915 to $10,522 in 1916, but the operating expense, on account of lessened maintenance and general expenses, dropped to a greater extent—from $11,176 in 1915 to $8,377 in 1916. The operating deficit of $402 in 1915 was thus converted into an operating income of $2,144 in 1916. After taxes and interest, however, there was a deficit of $5,333 for the last year as compared to a deficit of $7,466 the year before.

Boston & Worcester Street Railway, Boston, Mass.—The total revenues of the Boston & Worcester Street Railway for the year ended June 30, 1917, were $806,179, an increase of $4,926 over the results of the year before. All of this gain came from revenue from transportation, for miscellaneous revenue decreased. The expense of operation, however, rose $42,652 to a total of $541,905, so that the net operating revenue at $264,274 represented a decrease of $37,726. Taxes and interest charges were about the same in the last two years, but the dividend payments fell off from $99,769 to $77,457. The surplus for the last year totaled $16,264 as compared with $31,284 the year before. The car-miles operated in 1917 totaled 2,105,738 and the car-hours 139,281.

Cape Town Consolidated Tramways & Land Company, Ltd., Cape Town, S. A.—The profit and loss statement of the Cape Town Consolidated Tramways & Land Company, Ltd., for the calendar year 1916 shows a debit balance of £630 as compared to £816 the year before. The operation of the tramway subsidiary during 1916 resulted in a profit of £2,225 as compared to £1,486 in 1915. The number of passengers carried increased 49,424, and the receipts £543. Expenses increased on account of higher labor and material costs. The amount representing the cost of the advances to the three subsidiary companies has been reduced by £19,100, representing the value of the Cape Town Municipal debentures received from the Cape Marine Suburbs, Ltd., in part repayment of advances made to that company. No dividends have been declared by the subsidiary companies during the year.

Chicago (Ill.) City Railway.—Application has been filed with the Illinois Public Utilities Commission by the Chicago City Railway for authority to issue 5 per cent first mortgage bonds in the amount of $2,172,000, the money to be used in the construction and expansion of lines.

Columbus, Delaware & Marion Electric Company, Columbus, Ohio.—Under date of Sept. 27, Rudolph Kleybolte, chairman of the bondholders' protective committee of the Columbus, Delaware & Marion Electric Railroad, appealed to the holders of the first mortgage bonds of that company not to exchange their bonds for second mortgage bonds of the Columbus, Delaware & Marion Electric Company, the successor company under the sale of the property at foreclosure. According to Mr. Kleybolte, $250,000 of the bonds which were deposited have been withdrawn from the plan. On Oct. 4 Mr. Kleybolte said that Fincke, Bangert & Company had made a written offer of $850 for each $1,000 bond of the Columbus, Delaware & Marion Electric Railroad, provided they could buy $501,000 or more of the bonds. It is said to be their purpose, if they secure a majority of the bonds, to remove the Cleveland Trust Company as trustee and to designate a new trustee. Mr. Kleybolte urges the first mortgage bondholders to pay their assessment under protest and notify the Cleveland Trust Company they refuse to exchange their first mortgage bonds for second mortgage bonds.

Fort Wayne & Northern Indiana Traction Company, Fort Wayne, Ind.—The following committee has been appointed to protect the interests of the holders of the first mortgage 5 per cent bonds of the Lafayette & Logansport Traction Company, due on June 1, 1936: Col. Sheldon Potter, William B. Whelen, Edward B. Kane and Rowland Comly, chairman, all of Philadelphia. The Lafayette & Logansport Traction Company's property is included in the system of the Fort Wayne & Northern Indiana Traction Company.

Lehigh Valley Transit Company, Allentown, Pa.—George E. Claflin has been elected a director of the Lehigh Valley Transit Company to succeed Charles E. Ingersoll, resigned.

Louisville (Ky.) Railway.—Letters to stockholders of the Louisville Traction Company, holding company of the Louisville Railway, recommend a plan for surrender of the charter of the traction company, a New Jersey corporation, and exchange of its stock for stock in the Louisville Railway. The plan has been discussed for several months and is in the line of economy, since dissolution of the traction company would eliminate cost of its continued existence, besides eliminating taxes paid by that company and the necessity of stockholders' estates paying additional inheritance taxes in cases of death. The capital of the Louisville Railway is $2,500,000 of preferred and $5,456,000 of common; that of the traction company $3,500,000 of preferred and $11,889,700 of common. It is proposed to increase the preferred stock of the Louisville Railway to $3,500,000 and the common stock to $8,322,790 and to exchange the preferred stock of the Louisville Traction Company share for share and the common stock on the basis of 100 shares of the traction for seventy shares of the railway stock. Stockholders are asked to vote on the proposal.

Minneapolis, St. Paul, Rochester & Dubuque Electric Traction Company, Minneapolis, Minn.—Judge Wilbur F. Booth in the United States District Court at Minneapolis has handed down a decision prohibiting the abandonment or dismantling of the line of the Minneapolis, St. Paul, Rochester & Dubuque Electric Traction Company and has ordered that the property be again offered for sale, the time and place to be fixed later. The property is to be first offered as one parcel with an upset price of $400,000. In default of bids for the property so offered it is to be reoffered as follows: As a whole but with the privilege to the purchaser to abandon the operation of and to dismantle that part of the line extending from Auto Junction to Luce Line Junction, the upset price under these conditions to be $450,000. In default of bids under the terms just mentioned the property is again to be offered in two parcels at an upset price of $350,000. Under this offering either parcel may be disposed of independently of the other.

Nashville-Gallatin Interurban Railway, Nashville, Tenn.—The property of the Nashville-Gallatin Interurban Railway was purchased at receiver's sale recently by the Southern Trust Company, trustee for the bondholders. Application has been made for a charter for the Union Traction Company as the successor. The new company has an authorized capital stock of $300,000, divided into shares of $100 par value. The incorporators named in the application are H. H. Corsen, John A. Bell, W. G. Simmons, J. H. Reeves and Guilford Dudley.

New York (N. Y.) Railways.—A bondholders' committee consisting of Frank L. Hall, Charles P. Howland and George B. Leighton, representing the owners of $6,000,000 of 5 per cent gold income bonds of the New York Railways, has filed a petition in the Supreme Court asking permission to intervene in an action brought by the company against the Public Service Commission. The plaintiffs say that the bonds were issued in 1911 under the scheme of reorganization of the Metropolitan Street Railway, but that for the five years ended June 30 last the bondholders received only a total of 16.60 per cent and got nothing at all on June 30 last. They say this condition is due to the fact that by an order of the Public Service Commission made in 1911 the railroad company is required to set aside 20 per cent each year from the gross operating revenues, for depreciation and maintenance of the property, the unexpended balance being required to be added to the amortization fund. They contend that there has been unnecessary delay in the proceedings looking toward a review of the commission's order by the court.

Northern Electric Railway, Chico, Cal.—Involuntary bankruptcy proceedings have been begun against the five signers of the $5,000,000 note which was indorsed to finance the Northern Electric Railway at the time of the 1906-1907 business depression. The signers of this note were Leon Sloss, Louis Sloss, W. P. Hammon, Eugene de Sabla, Jr., and E. R. Lilienthal. The proceedings instituted on Sept. 27 had been anticipated in San Francisco The larger number of claimants preferred to test the strength of the combination in bankruptcy proceedings. When the note was signed it was thought that the signers would be able to sell bonds of the company and take up the notes, but the panic resulted in the famous "certificates of indebtedness" and nothing could be sold. It was announced that the reorganization of the Northern Electric Railway will finally be accomplished as soon as this suit is adjusted. A compromise with creditors is considered possible.

Providence & Fall River Street Railway, Swansea Center, Mass.—Karl Andrén, the purchaser of the Providence & Fall River Street Railway under foreclosure, granted a reprieve on Oct. 6, subject to the payment of a guarantee fund of $20,000, to A. H. Barney and others of Swansea, Mass., seeking to purchase the road from him, and subscriptions were at once collected to insure the continuation of the road in operation. As stated elsewhere in this issue it now seems probable that the road will be purchased from Mr. Andrén at a price of $90,000 and that service will be restored within a few days. The new owners will probably seek legislation at the 1918 session of the Massachusetts Legislature to permit a guarantee of 6 per cent dividends by the municipality of Swansea and also to reduce the road's taxation burdens.

St. Paul (Minn.) Southern Electric Railway.—Irving Todd, Jr., vice-president of the St. Paul Southern Electric Railway, is reported to have said that the company is just about breaking even on its operating expenses and that there is no money to pay interest on the bonds. He says that the officers of the road have done the best they could, but that there is not enough business to pay for the operation of the road and leave anything over for mortgage interest. He did not know what to advise. It is reported that owners of first mortgage bonds with interest in default have taken steps to foreclose. It is also reported that the holders of the second mortgage bonds have appointed a committee headed by W. W. Cuttler to inspect and make a report upon the status of the road.

Second Avenue Railroad, New York, N. Y.—A. E. Kalbach, receiver for the Second Avenue Railroad, announced recently that he was authorized to pay the interest on $3,140,000 of outstanding receiver's certificates, at 6 per cent for the six months ending Oct. 1, and to issue new certificates to such holders of the old as desire to exchange them. The new certificates are dated Oct. 1, 1917, and are redeemable on Oct. 1, 1918, at par and accrued interest.

Stroudsburg (Pa.) Traction Company.—A consolidation was effected of the Stroudsburg Passenger Railway and the Stroudsburg, Water Gap & Portland Railway on Oct. 1, as the Stroudsburg Traction Company. The roads are being connected physically at Seventh and Main Streets, Stroudsburg, and after Nov. 1, Water Gap cars will operate through to the Lackawanna station in East Stroudsburg, making a continuous interurban connection from Stroudsburg through to Sixty-ninth Street, Philadelphia. The officers of the Stroudsburg Traction Company are A. A. Holbrook, president; H. E. Sweeny, secretary and treasurer, and E. A. MacMillan, superintendent.

Electric Railway Monthly Earnings

Period	Operating Revenue	Operating Expenses	Operating Income	Fixed Charges	Net Income
AURORA, ELGIN & CHICAGO RAILWAY, WHEATON, ILL.					
1m., Aug., '17	$217,103	*$142,877	$74,226	$35,700	$38,526
1 " " '16	198,214	*125,332	72,882	35 933	36,949
8 " " '17	1,435,994	*1,027,928	408,066	286,086	121,980
8 " " '16	1,354,077	*896,334	457,743	290,560	167,183
BANGOR RAILWAY & ELECTRIC COMPANY, BANGOR, ME.					
1m., Aug., '17	$78 486	*$43,521	$34,965	$19,227	$15,738
1 " " '16	74,805	*42,000	32,805	17,884	14,921
12 " " '17	865,266	*492 238	373,028	223,977	149,051
12 " " '16	806,971	*438,398	368,573	211,851	156,722
CHATTANOOGA RAILWAY & LIGHT COMPANY, CHATTANOOGA, TENN.					
1m., Aug., '17	$142 801	*$101,878	$40,923	$29,871	$11,052
1 " " '16	100,238	*67 335	32,903	29,962	2,941
12 " " '17	1,379,817	*966,918	412,899	357,054	55,845
12 " " '16	1,204,145	*754,506	449,639	356,744	92,895
COLUMBUS RAILWAY, POWER & LIGHT COMPANY, COLUMBUS, OHIO					
1m., Aug., '17	$333,849	*$233,627	$100,222	$50,761	$49,461
1 " " '16	290 082	*176,785	113,297	42,863	70,434
12 " " '17	3,824,984	*2,598,042	1,226,942	543,857	683 085
12 " " '16	3,402,472	*1,984,418	1,418,054	506,995	911,059
COMMONWEALTH POWER, RAILWAY & LIGHT COMPANY, GRAND RAPIDS, MICH.					
1m., Aug., '17	$1 585,919	*$1,022,683	$563,236	$437,829	$125,407
1 " " '16	1,358 867	*765,087	593,780	419,647	174,133
12 " " '17	18,582,072	*11,031,354	7,550,718	5,156,724	2,393,994
12 " " '16	16,152,529	*8,629 990	7,522,539	4,926,315	2,596,224
CUMBERLAND COUNTY POWER & LIGHT COMPANY, PORTLAND, ME.					
1m., Aug., '17	$324,901	*$181,164	$143,737	$70,302	$73,435
1 " " '16	306,679	*167,037	139,642	69 178	70,464
12 " " '17	3 038,213	*1,997,428	1,040,785	813,884	226,901
12 " " '16	2,783,082	*1,679,684	1,103,398	798,642	304,756
EAST ST. LOUIS & SUBURBAN COMPANY, EAST ST. LOUIS, ILL.					
1m., Aug., '17	$317,838	*$214,640	$103,198	$65,175	$38,023
1 " " '16	251 981	*150 445	101,536	62,886	38,650
12 " " '17	3,484 103	*2 237,784	1,246,319	771,280	475,039
12 " " '16	2,807,253	*1,671,118	1,136,135	752,407	383,728
FEDERAL LIGHT & TRACTION COMPANY, NEW YORK, N. Y.					
1m., July, '17	$222,773	*$160 475	$62,298	$49,129	$13,169
1 " " '16	202,362	*136,381	65,981	48,070	17,911
7 " " '17	1,568,505	*1,079,385	489,120	342,463	146,657
7 " " '16	1,453,896	*987,595	466,301	340,931	125,370
GRAND RAPIDS (MICH.) RAILWAY					
1m., Aug., '17	$109 269	*$77,203	$32,066	$18,476	$13,590
1 " " '16	106,497	*73,977	32,520	16,838	15 682
12 " " '17	1,305,304	*871,233	434,071	209,954	224,117
12 " " '16	1,269,110	*835,957	433,153	174,780	258,373
LEWISTON, AUGUSTA & WATERVILLE STREET RAILWAY, LEWISTON, ME.					
1m., Aug., '17	$100,579	*$61,192	$39,387	$15,498	$23,889
1 " " '16	87,115	*53,180	33,935	15,075	18,860
12 " " '17	875,287	*645,783	229,504	185 464	44,040
12 " " '16	779,888	*518,633	261,255	190,633	70,622
NASHVILLE RAILWAY & LIGHT COMPANY, NASHVILLE, TENN.					
1m., Aug., '17	$200,686	*$133,775	$66,911	$41,374	$25,537
1 " " '16	199 574	*122,736	76,838	42,236	34,602
12 " " '17	2,431,327	*1,546,716	884,611	495,209	389,402
12 " " '16	2,316,748	*1,423,419	893,329	513,685	379,644
PORTLAND RAILWAY, LIGHT & POWER COMPANY, PORTLAND, ORE.					
1m., Aug., '17	$505,552	*$303,922	$201,630	$178,505	$23,125
1 " " '16	447,502	*255,342	192,160	181,701	10,459
12 " " '17	5,785,649	*3,142,497	2,643,152	2,166,386	476,766
12 " " '16	5,423,882	*3,067,277	2,356,605	2,185,086	171,519

*Includes taxes.

Traffic and Transportation

"Pay for Distance" Fare Request

Bay State Street Railway Applies for Approval of Zone or Mileage Rates for Rural Fares

Following an exhaustive investigation and study into the method of basing interurban electric railway fares on substantially equal short distances, the Bay State Street Railway on Oct. 9 filed a petition with the Public Service Commission of Massachusetts asking approval for a new schedule of fares on its rural or interurban lines, covering approximately 370 miles of track.

In a large measure the new schedule has been drawn to conform with suggestions made by various town and county officials who have appeared before public service and legislative investigating commissions at hearings relative to the decreasing revenue and increasing costs of operation and materials to the electric railway.

The distance rates of fare asked will apply only to the interurban routes as distinguished from the urban or suburban lines and are located in less populous districts. This means that the fare units now effective in the larger cities and suburbs will remain unchanged, but that fares between points in the country will depend upon the number of miles traveled, with a minimum charge of 6 cents.

It is proposed that a tentative 3-cents-a-mile rate shall be established along some of the non-paying lines, and on others where the conditions are not so alarming a 2½-cents-a-mile rate. In other sections the rate will be 2 cents a mile. In every instance an initial fare of 6 cents to pay for transportation over the first 3 miles, or any part thereof, will be collected. It is to avoid the necessity of discontinuing and perhaps scrapping its rural lines that the Bay State Company has petitioned the Public Service Commission for approval of this mileage system.

At present a fare of 6 cents is charged for a ride over any part of certain established long and short distances, with an extra 6 cents if the passenger merely enters the second district no matter if the ride in the second district is only a few hundred feet. This means that many patrons of the road who are obliged now to pay two fares—12 cents—for a ride which takes them only part way through two contiguous districts will, under the new schedule, pay an initial fare of 6 cents, and then an additional 2 cents for each mile traveled in the next zone. Many who now pay 12 cents between certain points will be able to take the same ride for 8 or possibly 10 cents, as the case may be, under the new schedule.

The proposed change will not affect present fares in the larger cities and suburbs.

Fare Increases in Australia

Because of the rising cost of supplies and higher wages railway rates were generally increased in the State of New South Wales on Aug. 8. The new rates provide for 10 per cent, and in certain cases 15 per cent, increase over those previously existing. There is a 10 per cent increase on passenger fares and periodical tickets, including workmen's tickets, and 10 per cent increase on parcel rates. Freight rates on hay, straw and chaff are advanced 10 per cent. Coal carried in the railway's trucks is increased 10 per cent and coal carried in owners' trucks 15 per cent.

The street railways in Sydney, which are owned by the State government, have been included in the advance. The charges on these lines have been 2, 4 and 6 cents, according to the distance traveled. The minimum charge of 2 cents has been raised to 3 cents, the charge for the longer sections remaining the same.

Through passenger fares between Sydney and Melbourne and Sydney and Brisbane have not been altered, but necessary adjustments have been made in the rates for intermediate stations.

Publicity Policy Explained

Southern Public Utilities Company Sets Forth Its Purposes in an Editorial in Its Own Magazine

The publicity policy of the Southern Public Utilities Company, operating an extensive system of electric railway and lighting properties in Charlotte, N. C., and other cities, was discussed in an editorial in the October issue of the *Southern Public Utilities Magazine*, published by the company. The editorial was as follows:

WHAT THE OUTSIDER THOUGHT

"'Just what are your duties?' asked the managing editor of one of the largest newspapers on Southern Public Utilities Company territory of the editor recently.

"'I have watched the news columns of this newspaper and those of other papers published in cities in which you operate and it is very seldom that I see a news item relative to the activities of your company. Knowing the very friendly personal relations existing between you and the newspaper men, I expected to find a superfluity of matter relating to your company. I should like to know just what are your duties and what is your attitude toward the newspapers.'

"This editor has asked a question which it is a pleasure to answer.

"There was a time when the 'press agent' for any interest was expected to have in every issue of every newspaper published in his territory some reference to that interest, regardless of whether that reference was of any news value. That may still be true in certain sections. But it is the policy of this company to offer to the newspapers only such matters as are of interest to the general public, and that in a straightforward, businesslike way, unvarnished and unornamented.

POLICY OF PAID ADVERTISEMENTS

"It is the policy of this company to announce to the public, through paid advertisements in the various newspapers, changes affecting the operation of any and all departments in which the public may be directly or indirectly involved, and to offer the news department only such information as possesses a real, live and legitimate news value.

"The publicity department of the company is always open to the newspaper men for such information as they may desire, and in no instance is any item of news withheld from the press. This is borne out in the matter of accidents. The facts, as they are secured by the company, are given to the newspaper men just as they come to the department, and without any effort to minimize the gravity of any situation or condition or to mislead the newspapers as to the exact facts.

"Information concerning the development of the company, changes in the personnel of its officers or employees in which the public may be interested and which the newspapers may desire to publish, is gladly furnished, but it is not our policy to 'load' the newspapers with such matter for the sake of keeping the name of the company before the public.

POLICY OF SUPPRESSION NEVER PREVAILED

"The old-time policy of suppression of information concerning any activities of a company does not now prevail nor has it ever prevailed in the offices of the Southern Public Utilities Company. On the other hand, this company does not desire, nor will it allow itself to be placed in the attitude of seeking 'free publicity' concerning its activities, and to this end we prefer to deal with the public through the newspapers just as any other legitimate business concern in the cities in which the Southern Public Utilities Company operates.

"The company magazine is published primarily for the information and pleasure of the employee body of the company, but any individual interested in the affairs of the company may secure a single copy, without cost, or may be placed on the regular mailing list of the publication so that anyone so desiring may keep in direct touch with our activities and operations and get the same information that goes to every officer and employee of the Southern Public Utilities Company."

Philadelphia & Western Fare Increase

Table Presented Which Compares Present and Former Rates for One-Way and Ten-Trip Tickets

Brief references were made in the ELECTRIC RAILWAY JOURNAL of Sept. 29, page 601, and Oct. 6, page 644, to the matter of hearings before the Public Service Commission of Pennsylvania with respect to the recent fare advances by the Philadelphia & Western Railway. It was inadvertently stated in the first of these items that the hearing was concerned with a proposed increase in the unit fares from 5 cents to 6 cents. This was in error. The operation of the Philadelphia & Western Railway is similar to that of steam railroads in that it has regular stations along its line. The one-way and ten-trip tickets are the only classes of tickets affected by the increase. The company also sells sixty-trip monthly tickets, fifty-trip tickets good for one year and forty-six-trip school tickets. These are unaffected by the change in rates. A comparison of present and former rates for one-way and ten-trip tickets, including a comparison with steam railroad rates, follows:

	ONE-WAY TICKETS					TEN-TRIP TICKETS				
	Philadelphia & Western				Steam	Philadelphia & Western				Steam
	Old Rate, Cents	Inc. in Cents	Inc., per Cent	Price*		Cost per Ride	Inc. in Cents	Inc., per Cent	Price†	
W. Overbrook	5	0	0	10	..	..	..	..	..	..
Penfield	5	1	20	11	..	5	..	..	1.00	..
Beechwood	5	2	40	12	..	5	..	..	1.00	..
Wynnewood Rd.	5	3	60	13	..	5	..	..	1.00	..
Ardmore Junct.	5	4	80	14	..	5	..	..	1.00	..
Ardmore Avenue	8	2	25	15	..	8	2	33	1.30	..
Haverford Coll.	8	3	37.5	16	24	8½	1½	21	1.35	1.86
Haverford	8	4	50	17	24	9	2	28	1.40	1.86
Bryn Mawr	10	3	30	18	26	10	2	25	1.50	2.06
Rosemont	10	4	40	19	28	11	2	22	1.60	2.20
Garrett Hill	13	2	15.5	20	..	13	3½	37	1.80	..
Villa Nova	13	3	23	21	31	13½	3	29	1.85	2.42
Radnor	15	5	33	25	33	15	2½	20	2.00	2.62
Ithan	15	6	40	26	..	16	2½	18.5	2.10	..
St. Davids	18	4	22	27	35	18	4	28.5	2.30	2.78
Wayne	18	5	28	28	37	19	4	26.5	2.40	2.92
Sugartown Rd.	20	4	20	29	..	19½	3½	22	2.45	..
Strafford	20	5	25	30	39	20	3	17.5	2.50	3.10
Gulph	20	3	15	28	..	19½	4½	30	2.45	....
DeKalb Street	25	1	4	31	..	20½	½	2.5	2.55	....
Bridgeport	25	2	8	32	43	22	2	10	2.70	3.44
Norristown	25	5	20	35	43	22½	2½	12.5	2.75	3.44
COLUMNS	A	B	C	D	E	F	G	H	I	J

NOTE: Compare columns "A" and "F."

*5 cents added for fare on Market Street elevated in Philadelphia. †50 cents added for fares on Market Street elevated.

One-Man Cars on All Calgary Lines

City Has 60,000 Population and It Is Largest on Continent to Operate Exclusively with One-Man Cars

By a vote of seven to five the City Council of Calgary, Alta., has decided to order the use of one-man cars on all city lines. Although A. G. Graves, street railway commissioner, stated to the Council that he believed he already had authority to put the one-man system into operation, he preferred to have action by the Council favorable to such procedure. He wished to use one-man cars throughout the city partly on account of the shortage of men and partly because the one-man cars already in operation were saving the city several thousand dollars a month. He said that on the Crescent Heights line, on which some of the Aldermen wished two-man operation to be continued, a saving of nearly $20 a day would result from one-man operation with six cars.

Thomas H. McCauley, superintendent of the railway, reports that the electric railway department will now proceed to install one-man cars on the entire system. They will serve a population of 60,000. Thus Calgary will have the distinction of being the largest city on the continent to date to operate exclusively with one-man cars. Mr. McCauley explained the situation in regard to one-man cars in Calgary in an article in the special issue of the ELECTRIC RAILWAY JOURNAL for Sept. 22. This issue reached Calgary on the eve of the action by the Council, and the leading paper, the Calgary *Daily Herald*, printed an extended abstract of several of the articles in support of the campaign for one-man operation.

Key Route Fare Requests

Two Applications for Fare Increases by the San Francisco - Oakland Terminal Railways Before California Commission

The San Francisco-Oakland Terminal Railways, Oakland, Cal., has filed with the Railroad Commission two applications for fare adjustments, one by the Traction division, asking an increase of fares in the electric railway service of the Key Route in Alameda County and between points in Alameda and Contra Costa Counties, and the other an amended application by the Key division for a raise and adjustment of rates in the trans-bay passenger service.

The Traction division's application is a new one and recites that the value of the going concern of this part of the company's property is not less than $12,000,000; that the gross revenue for the year ending June 30, 1917, for the Traction division was $3,242,849, and that the operating expenses were $2,522,373, leaving an operating income of $720,475 out of which to pay fixed charges, such as interest on bonds and return to stockholders. The Key Route recites that it will be put to an extra expense of $240,000 if it grants the demands of its platform men on the Traction division, who are now seeking additional wages.

The first application of the Key division of the San Francisco-Oakland Terminal Railways is now before the commission, hearings having been held and a further hearing being set for Nov. 12. At present the question of a raise in wages of the motormen and conductors of the Key division is being arbitrated.

In the amended application filed on Sept. 28 it is shown that the gross revenue of the Key division for the year ending June 30, 1917, was $1,229,436, and the operating expenses were $1,217,700, leaving a net return of $11,735 with which to pay fixed charges such as interest on bonds and interest on unsecured debts. The application also says that the company sustained a loss of $261,623 because of the abandonment of the old Key division trestle last year.

Auto License Income for Road Building

A $60,000,000 Bond Issue for Constructing 4000 Miles of Hard Surface Roads in Illinois Will Probably Be Financed by an Automobile Tax

The bill passed by the State Legislature of Illinois last winter, providing for the building of about 4000 miles of hard surface roads throughout the State from the proceeds of automobile taxes, exclusively, bids fair to be passed by referendum vote at the November elections. The plan, if approved at the referendum, will give the people of the State a very extensive system of good roads passing through every county and connecting all the leading towns. All this will be accomplished without any part of the burden being placed against the general tax.

Governor Lowden was opposed to increasing the tax burden, and after an extended study became convinced that as a State-wide system of highways would be used so extensively by automobiles and trucks the cost of the improvement should be borne by the owners of such vehicles. The bill as passed by the State Legislature provides that the State license tax, which ranges from $3 for cars of 10 hp. or less to $10 for 50-hp. cars, shall be increased 50 per cent in 1918 and an additional 50 per cent in 1920, so that the present tax will be doubled at that time. It is estimated that this will bring a sufficient income in the twenty year period of the $60,000,000 of bonds to pay the principal and interest on the issue and maintain the State-aid roads which are now provided for out of the automobile license income. A State law provides that if the fees from this source are not sufficient to take care of this bond issue, any deficit must be made up out of general tax funds.

Proposal of Skip Stop Opposed.—Mayor Litty of Memphis, Tenn., has declined to approve of the purpose of the Memphis Street Railway to put a system of skip stops into effect. Club women objected to skip stops on behalf of working girls.

Fare Increase Protested.—The borough of Pottstown on Oct. 8 filed objections against the proposed increase of fare within the borough by the Reading Transit & Light Company, Reading, Pa., from 5 cents to 6 cents. The borough charges that the service is inadequate, that the cars do not maintain the schedule and that there are no local cars, notwithstanding development of sections of the borough because of iron and steel activity.

Thirty Persons Hurt in Subway Accident.—Two trains collided on Oct. 9 on the Jerome Avenue elevated extension of the subway division of the Interborough Rapid Transit Company. Thirty persons are reported to have been slightly injured. The accident happened at 8.30 o'clock in the morning about 100 ft. north of the tunnel entrance at 157th Street. A northbound three-car train was stopped by a new trip signal and the train behind crashed into the rear of the stalled train.

Springfield Jitneys to Test Ordinance.—Jitney drivers of Springfield, Mass., are making a test case on the constitutionality of a new ordinance requiring them to file a bond of $1,000 and accept passengers for only the seating capacity of their cars. They will protest the bond requirement and demand permission to carry running-board passengers during rush hours. When the ordinance went into effect more than 200 drivers retired from the business for the time being because they were unable to put up the required bond. The jitneys were operating along the lines of the Springfield Street Railway.

Reroutings Authorized by Council in Detroit.—The Common Council of Detroit, Mich., has authorized further rerouting of the car lines of the Detroit United Railway in the downtown section. Just when the plan will go into effect depends largely on the settlement of the Farmer Street track matter, the several routes as laid out in the general plan being considerably interwoven and dependent one on the other. The rerouting plan now being tried as a result of the Council's agreement is working out splendidly with a considerable reduction in the amount of traffic congestion in the heart of the city.

Discussion of Jitney With Passengers Urged.—Paul Shoup, president of the Pacific Electric Railway, Los Angeles, Cal., has written a letter to the employees of the company in Pasadena, requesting them to discuss the jitney question with patrons of the road. The letter states that the company does not earn interest on its original investment in Pasadena, due to the competition of jitney buses. If necessary the company will take up the subject of having the city of Pasadena require the buses to operate in districts the railway does not serve, thus eliminating direct competition of jitneys with the electric railway.

Conduct Rules for Trainmen.—The Birmingham Railway, Light & Power Company, Birmingham, Ala., has recently issued a pamphlet addressed to the trainmen of the railway department entitled "How to Treat the Public." It contains a series of rules on courtesy, collecting fares, making change, serving passengers, etc., based to some extent on the rules of the Twin City Rapid Transit Company, as published in the issue of this paper for July 22, 1916, but modified to suit Birmingham conditions. The rules are published in full in the bulletin for October, issued by the United Gas & Electric Engineering Corporation, which controls the Birmingham company.

Free Rides Curtailed in Dallas.—Under the ruling of City Attorney Callaway of Dallas, Tex., many city employees who have heretofore been riding on the electric railways free have been deprived of that privilege. Mr. Callaway holds that under the State anti-pass law only regular salaried members of the police department are entitled to free transportation. This excludes sanitary officers, meter readers, inspectors of various kinds, and all special officers who have heretofore used their badges as passes in riding on cars. The city departments deprived of the right of free transportation for their employees have bought tickets which they issue to the employees as needed.

Personal Mention

W. B. Page has resigned as superintendent of the Interstate Public Service Company, Columbus, Ind.

M. W. Kirkwood, superintendent of the Galt, Preston & Hespeler Street Railway and the Lake Erie & Northern Railway, Galt, Ont., has been appointed general manager of both companies, succeeding the late Martin N. Todd.

I. N. Smith has been appointed superintendent of the Charleston (W. Va.) Interurban Railroad to succeed S. M. Gallaher, resigned. Mr. Smith has been connected for about fifteen years with the Diamond Ice & Coal Company of Charleston.

R. Niver, superintendent of the traction department of the City Light & Traction Company, Sedalia, Mo., has been made superintendent of all departments of the company. In assuming charge of the ice and gas departments he will succeed C. A. Knight, resigned.

William F. Heinemann has accepted the position of superintendent of overhead and block signals with the Chicago, Lake Shore & South Bend Railway at Michigan City, Ind. Mr. Heinemann heretofore held a similar position with the Kansas City, Clay County & St. Joseph Railway.

Herbert B. Reynolds, formerly connected with the Interborough Rapid Transit Company, New York City, as assistant engineer in the motive power department, has been appointed mechanical assistant to the superintendent of motive power of the United Railways & Electric Company, Baltimore, Md.

M. Milne Todd, heretofore assistant to the superintendent of the Galt, Preston & Hespeler Street Railway and the Lake Erie & Northern Railway, Galt, Ont., has been elected president of the former company, succeeding his father, the late Martin N. Todd. He was elected vice-president of the Lake Erie & Northern Railway.

Robert W. Woolley has been nominated for membership on the Interstate Commerce Commission to succeed the late Judson C. Clements. Mr. Woolley was formerly director of the mint, which position he resigned to take charge of publicity for the first Liberty Loan. His experience has been principally that of a newspaper man.

L. M. Brown has been appointed superintendent of the Interstate Public Service Company, Columbus, Ind., to succeed W. B. Page, resigned. Mr. Brown began railway work twelve years ago with the Indianapolis, Columbus & Southern Traction Company. He served as conductor and dispatcher and later was promoted to the position of trainmaster, which he has held until the present time.

Charles B. Hart, formerly new-business manager of the light and power department of the Fort Wayne & Northern Indiana Traction Company, Fort Wayne, Ind., has been placed in general charge of this department. It was reported in error in this paper last week that he had been appointed electrical engineer of the company. Mr. Hart has been with the company for the last twelve years, having started in as a cashier.

Dean McLaughlin, city superintendent of Jackson for the Michigan Railway, has been made superintendent of the city lines of Jackson, Lansing and Owosso, and the Southern and Northern interurban divisions. The former comprises the interurban lines from Kalamazoo to Jackson and the latter comprises the interurban lines between Jackson and Lansing and between Owosso and St. Johns. Mr. McLaughlin's headquarters will be in Jackson.

O. A. Voepel has resigned as master mechanic of the Kansas City, Kaw Valley & Western Railway, Bonner Springs, Kan., to enter government service. Mr. Voepel has been with that company for four years. During this period he designed high-tension lines and 38 miles of overhead construction, installed three substations and a step-up station to change from 6600 volts to 33,000 volts, besides making changes in the motor equipment of the cars.

Clyde B. Aitchison, solicitor for the valuation committee of the National Association of Railway Commissioners, has been nominated for appointment to the Interstate Commerce Commission. Mr. Aitchison was formerly chairman of the Railroad Commission of Oregon and was one of the authors of the Oregon railroad commission law, which was adopted in February, 1907. Prior to 1907 Mr. Aitchison practised law in Council Bluffs, Iowa, and in Portland, Ore.

George W. Anderson, United States district attorney for Massachusetts, has been nominated for appointment to the Interstate Commerce Commission. Mr. Anderson has practised law in Boston since 1890. He was appointed a member of the Public Service Commission of Massachusetts upon its creation in 1913 and resigned in November, 1914, to become United States district attorney. Last winter he was appointed special assistant to the attorney general of the United States in charge of an investigation of matters pertaining to the prices of food supplies.

D. J. McGrath, special assistant to President M. C. Brush of the Boston (Mass.) Elevated Railway since the summer of 1916, has received a commission as first lieutenant in the sanitary corps, U. S. Reserves. He has left Boston to take up executive duties in connection with the production of gas masks. Mr. McGrath is widely known in the electric railway industry for his work in the field of fare research. He is joint author with Prof. D. C. Jackson of the Massachusetts Institute of Technology of a book which sums up the fare investigations made by the research division in the electrical engineering department of the Institute.

L. W. Gent, traffic manager of the Arkansas Valley Interurban Railway, Wichita, Kan., has resigned. He will go to Philadelphia to accept the position of traffic manager of the American International Shipbuilding Company. Mr. Gent entered the employ of the Arkansas Valley Interurban Railway in December, 1915. He has had supervision of the passenger, freight, express, advertising and claims departments. Prior to his connection with that company he was assistant traffic commissioner of the Kansas City Commercial Club and Board of Trade. He has also been identified with traffic departments of several steam lines in the West.

J. D. Kent, electrical engineer of the Union Railway and other roads controlled by the Third Avenue Railway, New York, N. Y., has resigned to accept a position as captain, engineers, in the Officers' Reserve Corps, where his splendid engineering ability will stand his country in good stead. Mr. Kent has been connected with the New York lines for many years. He has contributed articles to the technical press at different times, the most noteworthy of which is an article describing the various types of overhead line maintenance motor trucks as used on the Third Avenue Railway System. This contribution from Mr. Kent appeared in the ELECTRIC RAILWAY JOURNAL for July 15, 1916.

William Elmer, formerly in the employ of the Atlantic Coast Electric Railway, Asbury Park, N. J., has been appointed superintendent of the Schuylkill division of the Pennsylvania Railroad. Mr. Elmer is forty-seven years of age. After leaving the State Model School at Trenton he was graduated from Princeton University where he took a course in electrical engineering. He afterwards became a motorman on the Atlantic Coast road. In 1896 he entered the employ of the Pennsylvania Railroad and was for a time a fireman on the New York division. He then made tests of the Mount Holly electric branch and was also in charge of the power plant of the West Jersey & Seashore Railroad. Later he was appointed general foreman of the electric car service at Atlantic City and was finally made assistant engineer of motive power.

William S. Richhart has been appointed electrical engineer of the Fort Wayne & Northern Indiana Traction Company, Fort Wayne, to succeed E. S. Myers, who resigned recently to take charge of the Vicksburg Light & Traction Company, Vicksburg, Miss. Mr. Richhart is a native of Indiana. He was graduated from the electrical engineering department of Purdue University in 1905. Thereafter he became connected with the Allis-Chalmers Bullock Electric Company at Cincinnati and was later occupied in research work at Purdue University with Prof. W. F. M. Goss. He served as instructor in electrical engineering at the University of Pennsylvania for five years and was associated with the Westinghouse Electric & Manufacturing Company for an equal period. In this latter connection he handled technical engineering work in connection with the erection and trouble work from the district offices. For the last year Mr. Richhart has been associated with the Public Service Commission of Indiana as engineer. He is a member of the American Institute of Electrical Engineers.

Earle N. Milliken, local manager of the Cape Breton Electric Company, Sydney, N. S., has been appointed manager of the Houghton County Traction Company and the Houghton County Electric Light Company, Houghton, Mich. Mr. Milliken was born at Biddeford, Me., in 1888, and was educated at the University of Maine, from which he was graduated in 1908 with the degree of Bachelor of Science in Electrical Engineering. After his graduation he was engaged in the statistics department of the Stone & Webster Management Association, Boston, Mass., and entered the service of the Cape Breton Electric Company, which is managed by Stone & Webster, in November of that year. During the first year of his connection with the company he was clerk to the manager and the next two years he was superintendent of distribution and electrical engineer. He served also as superintendent of light and power. In May, 1912, he was appointed manager of the company, the position he held for the last five years. Mr. Milliken was elected a member of the executive committee of the Canadian Electric Railway Association last June.

S. M. GALLAHER

S. M. Gallaher has accepted a position as manager of the Monongahela Valley Traction Company, Parkersburg, W. Va. This Parkersburg-Marietta division of the Monongahela Valley Traction Company was formerly the Parkersburg, Marietta & Interurban Railway. In 1915 the name was changed to the Kanawha Traction & Electric Company and last July it was leased to the Monongahela Valley Traction Company, Fairmont, W. Va. The property consists of approximately 60 miles of line including the city lines in Parkersburg and Marietta, Ohio, the interurban line between the two cities and one between Marietta and Beverly, Ohio. The company supplies light and power to Parkersburg, Marietta and adjacent towns in the two States and operates two water-power plants on the Muskingum River. It has a new central station at Parkersburg on the Ohio River, designed and constructed by Sanderson & Porter, engineers, with an ultimate capacity of 10,000 kw., half of which is installed at the present time. Mr. Gallaher, after his graduation from Princeton University in 1908, was associated with the Monongahela Valley Traction Company at Fairmont and Clarksburg for four years. He acquired a wide practical experience while serving in the office, car shops, power plant, substations and electrical engineering department and also in the construction department, both on track and overhead work. He spent also about nine months on special railway and power work at the Westinghouse Electric & Manufacturing Company, East Pittsburgh, in 1911. In July, 1912, he was appointed superintendent at Clarksburg, from which position he resigned in May, 1913, to become general manager of the Charleston (W. Va.) Interurban Railroad. During the four years of his management there Mr. Gallaher rebuilt most of the city and interurban lines, and constructed a 17-mile interurban line from Charleston to Cabin Creek Junction. He installed a modern turbine generating plant and substation, converted old cars into cars for prepayment operation and put on all-steel cars as well as the light-weight "one-man" car. He constructed terminal stations at Cabin Creek Junction and St. Albans and a main terminal at Charleston, consisting of the company's offices, passenger and freight departments and engineering department.

W. S. FINLAY, JR.

Walter S. Finlay, Jr., as noted recently in these columns, has been made superintendent of motive power of the Interborough Rapid Transit Company and the New York Railways, New York City, as successor to the late H. G. Stott. Late in 1916, during the illness which resulted in his death the following January, Mr. Stott designated Mr. Finlay chairman of the staff to carry on the work of the department. This arrangement was continued until Mr. Finlay's recent appointment as superintendent of motive power. Mr. Finlay was born in Hoboken, N. J., in 1882. His preliminary education was received in the public schools of Brooklyn and at Cornell University, from which he was graduated in 1904 with the degree of mechanical engineer. Soon after his graduation he entered the employ of the Interborough Rapid Transit Company as an assistant on the staff of Mr. Stott. His early work in the company was identified with the construction of the Fifty-ninth Street power station. After the plant was placed in operation he did some experimental and research work in connection with methods for its development and the promotion of its efficiency. He was later placed in charge of construction work involved by the requirements of increasing the plant load. In 1909 Mr. Finlay left the company and continued in engineering work with J. G. White & Company, Inc., and the New England Engineering Company. Subsequently he became associated with his father, W. S. Finlay, in commercial work, returning to the Interborough in 1915 to take charge of the installation of turbines and auxiliary mechanical equipment necessitated by the extensions which are being made to the subway and elevated systems.

Horace E. Allen, assistant general superintendent of the Michigan Railway, Jackson, Mich., has resigned to accept the position of assistant general manager of the Springfield (Ill.) Consolidated Railway. Mr. Allen has been connected with the Michigan Railway for about one year. He is a graduate of the Massachusetts Institute of Technology. After completing his electrical engineering course there, he accepted a position with the Westinghouse Electric & Manufacturing Company, East Pittsburgh, Pa., and in 1910 he became connected with the Toledo Railways & Light Company, Toledo, Ohio, under J. F. Collins, then assistant general manager. When Mr. Collins, now vice-president and general manager of the Michigan United Railways and the Michigan Railway, resigned to go to Jackson, Mr. Allen received entire supervision of the Toledo, Ottawa Beach & Northern Railway and the Maumee Valley Railway & Light Company, which, together with the Toledo Railways & Light Company, are controlled by the Toledo Traction, Light & Power Company. He assumed the position of assistant general superintendent of the Michigan Railway in September of last year.

Obituary

John C. Welch, foreman of the electrical engineers of the New York, New Haven & Hartford Railroad, died on Oct. 7 at Stamford, Conn. Mr. Welch was a graduate of Iowa State College, class of 1900. He was a native of Des Moines.

Frederick H. Treat, president of the Washington-Virginia Railway, Washington, D. C., died recently after an illness of several weeks. Mr. Treat was born in Westfield, Mass., in 1854. He went to Philadelphia in 1870 and later became identified with several commercial concerns. In 1892 he moved to Wayne, Pa., and through his interest in public affairs became responsible in large part for the development of Wayne, St. Davids and Devon. Mr. Treat was also president of the New Jersey Gas Company, a director of the Washington Utilities Company, and was interested in several other corporations.

Construction News

Construction News Notes are classified under each heading alphabetically by States.

An asterisk (*) indicates a project not previously reported.

RECENT INCORPORATIONS

***Northern Electric Railway, San Francisco, Cal.**—Incorporated with a capital stock of $10,000. Directors: G. B. Davis, E. Coe and W. J. Hayes.

***Gary (Ind.) Street Railway.**—Incorporated to construct a street and interurban railway. Capital stock, $10,000. Directors: Thomas W. King, B. B. Clark, M. Arnold, M. H. Shiel and M. Riley.

***Union Traction Company, Nashville, Tenn.**—Application for a charter has been made by the Union Traction Company to succeed the Nashville-Gallatin Interurban Railway, recently sold under foreclosure. Capital stock, $300,000. Incorporators; H. H. Corsen, John A. Bell, W. G. Simmons, J. H. Reeves and Guilford Dudley.

FRANCHISES

Oakland, Cal. — The Peninsular Railway has asked the Railroad Commission for permission to build a track at grade from its track on University Avenue extension, near Palo Alto, across the westerly side of University Avenue extension and across a spur track of the Southern Pacific Company.

San Francisco, Cal.—The Municipal Railways of San Francisco has received a franchise from the Board of Supervisors for the construction of a new line from the west portal of the Twin Peaks Tunnel to Twentieth and Taraval Streets. The Supervisors also set aside $90,000 of the municipal railroad fund to be employed in the construction of the extension.

Galesburg, Ill.—The Galesburg Railway, Lighting & Power Company has received a franchise from the City Council to construct an express track and switch on the northeast part of the public square.

Muskegon, Mich.—The Muskegon Traction & Lighting Company has received a thirty-year franchise from the City Council of Muskegon for the operation of its electric railway.

St. Johns, Newfoundland.—The St. Johns Street Railway has asked the City Council of St. Johns for permission to extend its car lines in several directions.

Cincinnati, Ohio.—Mayor George Puchta recently signed the ordinance granting a twenty-five-year franchise to the Cincinnati, Newport & Covington Street Railway for the operation of the Green Line cars in Cincinnati.

Cleveland, Ohio.—Councilman Dittrick has prepared a franchise ordinance to be introduced in the City Council soon, which will authorize the Cleveland Railway to extend a single-track line in West 117th Street from Clifton Boulevard to Bellair Road, S. W., about 4 miles. If the road is built, it is the intention to have a double track, but one side of the street is in Lakewood and a franchise for the track on that side must be secured from the Lakewood Council. The extension would give access to the village of Lindale.

Chattanooga, Tenn.—The Chattanooga Traction Company has received a franchise from the City Council on Market Street between the new bridge and Water Street.

TRACK AND ROADWAY

Birmingham Railway, Light & Power Company, Birmingham, Ala.—Plans are being made by the Birmingham Railway, Light & Power Company to construct an extension to a new plant of the Tennessee Coal, Iron & Railroad Company, west of Fairfield.

Douglas Traction & Light Company, Douglas, Ariz.—An extension will be built by the Douglas Traction & Light Company to Pirtleville in the near future.

Pacific Electric Railway, Los Angeles, Cal.—Surveys have been made for improvements in the Pacific Electric Railway Company's roadbed on Santa Monica Boulevard in Sawtelle that mean an outlay of $130,000. New and heavier rails will be laid the entire distance from the westerly to the easterly city limits, and the roadbed given a heavy rock ballasting and paved with oil and macadam.

Tampa (Fla.) Electric Company.—It is reported that this company will extend its Hyde Park line to the city limits by the first of the year.

Illinois Traction Company, Peoria, Ill.—This company will soon begin some extensive improvements in Hillsboro, Ill. Its tracks on Main, Wood and Hamilton Streets will be abandoned and a freight and passenger station will be established at the west end of Wood Street. The cost of these changes will aggregate $15,000.

Union Traction Company of Indiana, Anderson, Ind.—This company will improve its tracks in College Avenue from Forty-second to Forty-eighth Streets.

Chicago, South Bend & Northern Indiana Railway, South Bend, Ind.—This company reports that it is now paving and rebuilding 2 miles of double-track with 125-lb. A. S. C. E. rail between South Bend and Mishawaka.

Cincinnati, Newport & Covington Railway, Covington, Ky.—This company will reconstruct its tracks on Ludlow Highway, Ludlow, in connection with paving to be done by the city.

Shelbyville & Frankfort Realty Company, Shelbyville, Ky.—At a conference at Shelbyville on Oct. 3 a contract was entered into between the Shelbyville & Frankfort Realty Company, a corporation organized to promote the construction of an electric line between Shelbyville and Frankfort, and P. C. Phillips, Philadelphia, whereby the latter agreed to organize a company which will build, equip and operate a road between the towns before Jan. 1, 1920. This will be formally ratified as soon as deeds to all the property necessary for the right-of-way have been executed. The company is to have a free right-of-way, with necessary terminal facilities, and the contract shall become void if the company fails to begin work by March 1, 1918, and continue it without undue interruption until it is completed by the date specified. The proposed line will connect the Louisville & Interurban Railway with the Kentucky Traction & Terminal Company's line. [Sept. 29, '17.]

Lewiston, Augusta & Waterville Street Railway, Lewiston, Me.—The Public Utilities Commission of Maine has dismissed the petition of the municipal officers of the city of Augusta for the removal of the double tracks of the Lewiston, Augusta & Waterville Street Railway from Water Street and replacing them with a single track, dismissing the petition on the grounds of recent changes made in the running schedule by the company which seems to do away with the annoyance of congestion in the street as complained.

Boston (Mass.) Elevated Railway.—An agreement has been reached between the Boston Elevated Railway and the Massachusetts Waterways Commission whereby a connection will be built between the new South Boston $1,000,000 Fish Pier and the Boston Elevated Railway. Work will be begun on the line at once. The commission will construct the line and lease it to the Boston Elevated Railway to operate.

Duluth (Minn.) Street Railway.—Announcement has been made by the Duluth Street Railway that operation on its Kenwood line would be begun about Oct. 15.

United Railways Company of St. Louis, St. Louis, Mo.—A new cross-town line, to be known as the West St. Louis line, is being planned by the United Railways Company of St. Louis to connect Suburban Garden with Benton, south of Forest Park. The new line will be an extension of the present Hamilton Avenue line to the south and a consolidation of the Hamilton and Hodiamont lines north of Plymouth Avenue.

Claremont Railway & Light Company, Claremont, N. H.—This company is installing new girder rail on Pleasant Street and it is expected that the work will be completed within the next few weeks.

Point Pleasant (N. J.) Traction Company.—A report from the Point Pleasant Traction Company states that the company will reconstruct practically its entire line, which connects Point Pleasant and Bay Head.

New York (N. Y.) Railways.—The proposal made by the New York Railways to abandon a portion of the line of the Bleecker Street & Fulton Ferry Railroad, hearings upon which are in progress before the Public Service Commission for the First District of New York, is being opposed by one of the minority stockholders of the road. The portion of the line which it is proposed to abandon has been operated for horse-car service only. The last such service was operated was late in July and it was proposed that such portions of the line as were used for the horse-car service should be abandoned. The opposing stockholder, George F. Morgan, has advanced to the commission the proposition that if the New York Railways, which now holds the Bleecker Street & Fulton Ferry Railroad under lease, were obliged to relinquish the line to the owners, that they would not possess a line which could be operated, because it would consist only of several disconnected segments of trackage.

Cleveland (Ohio) Railway.—Work will be begun this fall by the Cleveland Railway on the construction of an extension from the present terminal of the Cedar Avenue line up Cedar Road to Coventry Road.

Youngstown & Sharon Street Railway, Youngstown, Ohio.—Work has been begun by the Youngstown & Sharon Street Railway on the construction of the east hill electric railway on Spruce Street from George Street to King Street, east on King Street to Stambaugh Street and over Stambaugh Street to State Street.

Philadelphia, Pa.—Preliminary work on the subway delivery loop has been begun west of Tenth Street on Arch Street, and on Arch Street just east of Thirteenth Street. At these points shafts will be sunk and tunneling begun. The work is in charge of the Keystone State Construction Company. Ground for the Locust Street section of the loop was broken when the work of opening Locust Street at Eighth for the relaying of two sewers was begun. One square will be completed at a time to avoid hampering owners of property along Locust Street too seriously. The paving for a distance of 45 ft. at each end of the street will be kept intact during the operation. The delivery loop will extend from Broad and Arch Streets under Arch to Eighth Street, under Eighth to Locust Street and under Locust Street to Broad Street.

Chattanooga (Tenn.) Traction Company.—Negotiations have been practically completed between the Market Street Bridge Commission and officials of the Chattanooga Traction Company for the lease of the car tracks on the bridge, which are the property of the county. The company proposes to construct its own tracks on the approaches and will ask the county for a franchise for tracks on the north approach and the city commission for a franchise for tracks on the south approach.

Dallas (Tex.) Railway.—The immediate construction of five electric railway lines and extensions is planned by C. W. Hobson, president of the Dallas Railway. Steel and other materials for these lines have been ordered. Plans for these extensions and new lines must be submitted to the Board of Commissioners for their approval before the work can be commenced. The lines contemplated will be constructed to serve Second Avenue, Oakland Cemetery, City Hospital, Oak Lawn and Dallas University and a line in Oak Cliff. A rearrangement of the two Oak Cliff lines will be made.

Seattle (Wash.) Municipal Railway.—The Seattle City Council recently passed a bill adopting a plan for an extension of the city car lines by connecting up the Lake Burien and Division A lines. The plan proposes the construction of an elevated railway on Washington Street, Railroad Avenue, Whatcom Avenue and Spokane Street, and extending from First Avenue South to the West Waterway, at an estimated cost of $350,000, to be paid for by the sale of utility bonds, interest and principal payable from the revenues of the street car system. In order to connect the lines, it is proposed to utilize the tracks of the Seattle & Rainier Valley line on Stewart Street, Fourth Avenue, Fourth Avenue South and Washington Street by a common user agreement. This would extend the Division A line now ending at Third Avenue and Pine Street, to the West Waterway. Connection with the Lake Burien line will be brought about by the extension of that line from Riverside across the new temporary bridge across the West Waterway.

Tacoma (Wash.) Municipal Railway.—The City Council of Tacoma has refused the offer of the Tacoma Railway & Power Company to operate the line to the tideflats at cost for two years. The line will be operated by the city of Tacoma.

SHOPS AND BUILDINGS

Pacific Electric Railway, Los Angeles, Cal.—A temporary building 75 ft. x 220 ft. has just been completed by the Pacific Electric Railway on its big carhouse site at Torrance, in which 300 freight cars contracted by the company for immediate delivery will be constructed. Work on the permanent buildings of the huge plant projected by the company will proceed as rapidly as building materials are available. Contracts for the steel work and much of the equipment have been let, the necessary trackage has been laid, and the grading of the site has been completed. The Torrance plant is being built on a plot of 125 acres, which will meet all present needs and allow for 100 per cent future expansion, besides permitting ample storage for heavy freight service. The new shops are to have double the capacity now required for the company's equipment. Only heavy overhauling and new work will be regularly undertaken at Torrance, all light repairs being handled at the company's various division carhouses. A clubhouse and athletic grounds will be provided for employees. The principal buildings are to have steel frames, brick walls, reinforced concrete roofs, steel sashes and creosoted wood block floors.

New York Municipal Railway, Brooklyn, N. Y.—The public Service Commission for the First District of New York has awarded to D. C. Serber, the lowest bidder, at the figure of $69,084.69, the contract for completion of construction and station finish in the Fourth Avenue subway and Center Street loop subway. Several small construction items are included in this contract, among them being the changing of the wall panels on the platform of the former Gold Street station on the Fourth Avenue subway in Brooklyn to Myrtle Avenue to conform to the new name for the station recently adopted by the commission.

Cleveland (Ohio) Railway.—Negotiations have been closed by the Cleveland Railway for a parcel of land 503 ft. x 750 ft. at West 117th Street and Linnett Avenue, where a new carhouse and yard will be located. The improvement may not be made for two years, however.

Southeastern Ohio Railway, Zanesville, Ohio.—This company reports that it will construct extensions to its freight stations at Roseville and Crooksville.

POWER HOUSES AND SUBSTATIONS

Tuscaloosa Railway & Utilities Company, Tuscaloosa, Ala.—A report from the Tuscaloosa Railway & Utilities Company states that it will construct an extension to its power house and carhouse.

Washington Water Power Company, Spokane, Wash.—Another power line, costing approximately $200,000, will be built into Coeur d'Alenes by the Washington Water Power Company. The line will be started early in the spring and finished during the summer, according to C. S. MacCalla, manager of the company. It will extend from the company's plant at Post Falls, Idaho, 45 miles to Cataldo through Fourth of July Canyon.

Ashland Light, Power & Street Railway Company, Ashland, Wis.—Work has been begun by the Ashland Light, Power & Street Railway Company on a $100,000 power plant at the mouth of Montreal River on the boundary line between Michigan and Wisconsin. A 1200-hp. plant will be built and tied up with the company's lines connecting Ashland, Mellen and Ironwood. A line will be built directly from Montreal River to Ashland, across the Bad River Indian reservation at a cost of $50,000.

Manufactures and Markets

Discussions of Market and Trade Conditions for the Manufacturer, Salesman and Purchasing Agent

Rolling Stock Purchases Market Quotations Business Announcements

Conditions of Supply and Demand Along Atlantic Coast

One-Man Car Equipment and Fare Boxes in Good Demand, Buying of Other Equipment Is Deferred

Roads in the Middle States territory in and about New York City are buying equipment, supplies and accessories in a careful way, owing, primarily to the non-settlement of the fare-increase application. Favorable action on that matter in any state would greatly stimulate purchases among the railways affected. In the meantime purchases are confined largely to those of actual necessity along the line of maintenance.

Deliveries on general supplies are normal to two or three months behind, according to the character of the specifications. No advance in prices has been announced within the past two weeks. Spot deliveries on gears and pinions may be had if standard sizes are ordered. On special goods, if castings and blanks are available, shipments are within thirty to sixty days. Material of this description ordered in January last is just now coming to hand. The finished merchandise, as rapidly as received, is allotted to buyers in a ratio to meet and partly satisfy rush orders. Trolley accessories are in a good position on the question of deliveries. Fare boxes of the improved type are in steady demand, and several sizable orders are pending practical tests of economical utility. On some classes of raw material, mills are accepting rush orders at government prices on metals.

Generator deliveries are from eighteen months to over two years, depending on size. Controller deliveries are also longer than normal. All prices are subject to change within fifteen days without notice. Government orders are given preference when placed direct, but if incidental to another buyer's needs are subject to further consideration by the manufacturer as to priority of execution and delivery. Prices on material are such as to create a profound feeling of uneasiness. Future supply and the requirements of customers are being carefully revised before ultimate acceptance. The attitude of labor is embarrassing, to say the least, and the difficulties constantly arising in the factories in this respect are dealt with in no arbitrary manner. In short, everything is costly and difficult from various points of view. The patience of customers, under the trying conditions is generally mentioned as admirable in every quarter.

MOTOR DELIVERIES DEPENDENT ON SIZE

Railway motor deliveries depend on size, ranging from four to seven months. No stock is being kept and manufacture is begun only on order.

An order placed for trolley poles eighteen months back is now being delivered, and shipments to customers are going forward promptly. Trolley wheels and accessories are in fair condition as to deliveries; but the immediate future is not promising as to the carrying out of contracts for definite shipments. Brushes at present are six months in arrears on reaching their destination, and no definite delivery dates for future orders will be accepted.

Car heaters are slow, very little new business being placed, and no order is booked for delivery under ninety days. Considerable repair work has been done on heaters, railway companies making strenuous and determined efforts to use old equipment in this class to the uttermost degree of usefulness. Porcelain for all purposes is in bad shape, and no improvement in deliveries is in sight. Bolts, nuts, and spikes are reported by manufacturers, with whom orders are generally placed direct, as in a favorable position for deliveries. Business has been rather quiet, but a revival has occurred within the last ten days. Specifications, however, are not large, but an improvement is expected. On rails the demand exceeds the supply and the factories are sold up for the remainder of this year and 1918. No heavy shipments will be forwarded unless the mills should make excess rollings.

Angle bars are hard to get, with tie plates fair in delivery, at thirty to sixty days. Rail joints are in fair demand but moving slowly. A number of roads that have track material on hand are unable to use it, as labor has been scarce all summer; in some instances practically no labor has been available for this work. The army has absorbed an appreciable number of section hands and the munition factories, with the allurement of abnormally high wages, the remainder. The railways in New York State and New Jersey are particularly affected.

RAIL BONDS HIGHER

Rail bonds, of the flexible type, flat wire and cable, were advanced from 10 to 17½ per cent Oct. 1, delivery in thirty days. The demand is steady. The government has taken over the entire shovel output, and no private orders are accepted under sixty days, providing the Washington officials will release enough material. As the government price on steel prevails in the shovel plants no advance for finished goods has been formulated.

Chairs and seatings were advanced from 10 to 20 per cent the first of the month. Deliveries are made in six or eight weeks without difficulty. The demand is quiet in common with other lines of car equipment. Another advance in wool waste of 2 per cent becomes effective Nov. 7.

Snow plows and sweepers, for which orders were placed in July, are beginning to be delivered. Subsequent engagements cannot be shipped before Feb., 1918, according to one manufacturer. A number of belated orders offered were withdrawn on account of the high price. In fact the selling figures are 100 per cent higher than last year. Labor conditions at the factories and the uncertainty of obtaining material are such that no orders offered at present could be promised delivery for an indefinite time. In other words, manufacturers and agencies in the car building line are unable to guarantee deliveries at specified periods.

On complete car equipment an advance, ranging from 10 to 20 and 35 per cent, was announced Oct. 1. Safety car devices—one-man equipment—were marked up 12½ per cent at the same time, with the manufacturers loaded up with orders until the first of the year.

A land-office business is being done in railroad lamps of the flood-light projecting type, not so heavy for railway purposes as on government orders, to be installed at the army cantonments and naval bases. Deliveries are prompt at present, but the future is uncertain. No change in price has occurred since July and none is anticipated, unless the factory finds it necessary to assume a different attitude, which sometimes occurs unexpectedly and without much ceremony.

Following the readjustment in copper wire of last week, prices are firm except for weatherproof which showed a softening in the local market of half a cent or more. Most manufacturers are working on a 35-cent base with a few at 34 cents. Local distributers are feeling the effect of the government order to copper producers to hold up deliveries until government needs are determined and provision made therefor. Inquiry on Monday for a quantity of wire brought forth either no desire to bid or bids away too high. Many wire manufacturers are living from hand to mouth on copper supply and the curtailment of supply finds the local market destitute of certain sizes in many places. The situation is expected to clear up shortly as the government early this week allowed producers to make shipments on contracts.

One of the high spots is the request for bids by the

Brooklyn Rapid Transit Company for 250 new cars. Almost everybody is bidding on the order. Bids will be held open until Oct. 15.

Progress of Chilled Car Wheel Standardization

Annual Meeting of the Manufacturers' Association Held This Week in New York City

The annual meeting of the Association of Manufacturers of Chilled Car Wheels was held on Tuesday of this week in New York City. The matter of standardization progress of the chilled car wheel was dwelt on rather fully by George W. Lyndon, president of the association. Extracts from his address follow:

"It is needless for me to tell you that the chilled iron wheel stands on a firm foundation. You do not see the criticism in the press of the limitation of chilled iron for car wheel purposes.

"The recognition of a standard 850-lb. chilled iron wheel by the Master Car Builders' Association will dispel the illusions of our competitors with respect to the limit of the carrying capacity of chilled iron.

"It is now a well-established fact that the load that can be carried on a chilled iron wheel is only measured by the ability of the rail to support it. It has taken a long time to bring this about, and the work we have accomplished this year is the result of persistent effort and close association with all the leading organizations in the country that study the wheel question, and we have also followed up with individual railroads the introduction of new standards.

"We must pay the closest attention to the quality of our product.

"While we have accomplished two-fifths of our program, we should not rest until we have secured the other three-fifths. We must see that the interior of the 625 and the 725-lb. wheels receive recognition in the matter of increased plate thicknesses, which can only be obtained by additional weight. We must have a reasonable factor of safety when measured by excessive stresses encountered in service and these heat stresses are now rcognized everywhere due to our educational campaign.

"We are not influenced by commercial considerations in asking for heavier wheels. We know the increased weights are necessary."

The following officers were re-elected for the ensuing year: President and treasurer, George W. Lyndon; vice-presidents, E. F. Carry and J. A. Kilpatrick; secretary, George F. Griffin; consulting engineer, F. K. Vial; board of directors: J. M. Buick, vice-president American Car & Foundry Company; J. A. Kilpatrick, president Albany Car Wheel Company; W. S. Atwood, chief engineer Canadian Car & Foundry Company; Charles A. Lindstrom, assistant to president Central Car Wheel Company; F. K. Vial, chief engineer Griffin Wheel Company; E. F. Carry, president Haskell & Barker Car Company; A. G. Wellington, president Maryland Car Wheel Works; W. C. Arthurs, president Mount Vernon Car Manufacturing Company; J. D. Rhodes, president National Car Wheel Company; F. B. Cooley, president New York Car Wheel Company; A. J. Miller, general manager Ramapo Foundry & Wheel Works; William F. Cutler, vice-president Southern Wheel Company.

Shippers Should Utilize Full Capacity of Every Car

The commission on car service, committee on national defense, American Railway Association, is admonishing all shippers to utilize to the full capacity every car which is sent over the road. The commission feels that even the full capacity of all the facilities of the carriers of freight will not meet the demand, but that a practice of loading every car to its full capacity will help materially to alleviate the car shortage existing. From its knowledge of the transportation and commercial conditions of the nation, the commission considers it most unpatriotic of any shipper to fail to make the maximum use of any car assigned to him.

Car Prices Not Likely to Come Down to Pre-War Mark

Conclusion of War Will Leave Many Permanent Effects, Tending to Hold Prices Up Higher than Those Prevailing Before the War

BY GEORGE H. TONTRUP

General Manager American Car Company, St. Louis, Mo.

The many electric railways which are holding off on equipment purchases in the hope that prices may again return to the low figures which prevailed before the war are in a good way to find disappointment. This will not be because of any concerted action on the part of the car builders to maintain present high prices, but simply because the war has brought about new conditions, many of which are permanent and which will continue to keep up prices even though the war should cease to-morrow. Principal among these is the labor situation.

A general establishment of the eight-hour law; the depletion in the ranks of the laborers through loss in battle, through extensive migration to the native lands to take part in the war and through the practical cessation of immigration, and the general elevation of the plane of living of the laboring man due to his present prosperity—all these influences are working against a lowering of the present labor cost. At least the wage scale will not likely decline to its former level.

In the material market, it is reasonable to expect that the demand for materials during the reconstruction period after the war will be of such extent as to hold the prices up for perhaps two or three years. And certainly no one anticipates any drop worth mentioning as long as the war is in progress.

Hence it cannot be anticipated that there will be any marked lowering in the cost of rolling stock from the present prices for at least two or three years, and the possibility of a complete return to the prices of two or three years ago is negligible. The prospect of better purchasing conditions, then, seems so remote that it emphasizes the losses which are being taken while an operating company holds off on purchases and thus during the war and reconstruction period loses the earning power of cars which are really badly needed.

NEW YORK METAL MARKET PRICES

	Oct. 3	Oct. 10
Prime Lake, cents per lb	23½	23½
Electrolytic, cents per lb	23½	23½
Copper wire base, cents per lb	35	35
Lead, cents per lb	8	7.60
Nickel, cents per lb	50	50
Spelter, cents per lb	8⅝	8¼
Tin, Straits, cents per lb	60½	61
Aluminum, 98 to 99 per cent, cents per lb	42½	42

OLD METAL PRICES—NEW YORK

	Oct. 3	Oct. 10
Heavy copper, cents per lb	23½	23½
Light copper, cents per lb	20½	20½
Red brass, cents per lb	19	19
Yellow brass, cents per lb	16¼	16¼
Lead, heavy, cents per lb	7	7
Zinc, cents per lb	6	6
Steel car axles, Chicago, per net ton	$41.00	$41.00
Old car wheels, Chicago, per gross ton	$25.00	$28.00
Steel rails (scrap), Chicago, per gross ton	$30.00	$35.00
Steel rails (relaying), Chicago, per gross ton	$55.00	$55.00
Machine shop turnings, Chicago, per net ton	$16.00	$15.50

RAILWAY MATERIALS

	Oct. 3	Oct. 10
Rubber-covered wire base, New York, cents per lb.	35	35
Rails, heavy, Bessemer, Pittsburgh	$38.00	$38.00
Rails, heavy, O. H. Pittsburgh, per gross ton	$40.00	$40.00
Wire nails, Pittsburgh, per 100 lb	$4.00	$4.00
Railroad spikes, 9/16 in., Pittsburgh, per 100 lb.	$7.00	$7.00
Steel bars, Pittsburgh, per 100 lb	$4.50	$4.50
Sheet iron, black (24 gage), Pittsburgh, per 100 lb.	$8.85	$8.85
Sheet iron, galvanized (24 gage), Pittsburgh, per 100 lb.	$9.55	$9.55
Galvanized barbed wire, Pittsburgh, cents per lb.	4.85	4.85
Galvanized wire, ordinary, Pittsburgh, cents per lb.	4.65	4.65
Cement (carload lots), New York, per bbl	$2.22	$2.22
Cement (carload lots), Chicago, per bbl	$2.31	$2.31
Cement (carload lots), Seattle, per bbl	$2.65	$2.65
Linseed oil (raw, 5 bbl. lots), New York, per gal.	$1.22	$1.18
Linseed oil (boiled, 5 bbl. lots), New York, per gal.	$1.23	$1.19
White lead (100 lb. keg), New York, cents per gal.	11	12
Turpentine (bbl. lots), New York, cents per gal.	47	50

ROLLING STOCK

Nashville (Tenn.) Railway & Light Company is reported as turning a number of its open trailers into new side-door inclosed trail cars. Each of the rebuilt cars will have twelve electric heaters.

Bay State Street Railway, Boston, Mass., will rebuild nineteen cars for one-man operation, as it has received permission from the Massachusetts Public Service Commission to use one-man cars on several routes, as noted on page 638 of the ELECTRIC RAILWAY JOURNAL of Oct. 6.

Seattle (Wash.) Municipal Railway, through C. B. Bagley, chairman of the Board of Public Works, has awarded contracts for six one-man cars for use on Division A of the road, as follows: B. R. Stare & Company, representing the St. Louis Car Company, received contract for car bodies at $3,620 each; for air brakes, at an estimated cost of $665.50 each; and for motor equipment costing $1,413 for each car. The total cost of the new type of car will be $5,698.40. In order to provide sufficient money to pay for the one-man cars, a bill has been introduced in the city council appropriating $10,000 addition from the municipal railway bond issue, making $35,000 in all appropriated for that purpose. The preliminary announcement relative to these cars was made in this paper on Sept. 1.

Honolulu Rapid Transit & Land Company, Honolulu, Hawaii, noted in the ELECTRIC RAILWAY JOURNAL of Sept. 29 as having purchased ten cars from The J. G. Brill Company, has specified the following details for this equipment:

Date order was placed	Sept. 25, 1917
Date of delivery	March 25, 1918
Builder of car body	The J. G. Brill Co.
Type of car	14-bench center aisle open car
Seating capacity	56
Weight, car body and trucks	26,000 lb.
Bolster centers, length	29 ft. 7 in.
Length over bumpers	47 ft. 0 in.
Length over vestibule	46 ft. 3 in.
Height, rail to trolley base	11 ft. 7½ in.
Body	Wood
Interior trim	Ash and cherry
Headlining	Agasote
Roof, arch or monitor	Arch
Air brakes	G.E.
Axles	Ordinary hammered steel
Bumpers	Brill angle iron
Car trimmings	Brill—Bronze trim
Control	Westinghouse, type K
Couplers	Brill channel iron
Curtain fixtures	Acme
Curtain material	Pantasote
Hand brakes	Brill vertical wheel, with Ackley attachment
Headlights	Golden Glow incandescent
Journal boxes	Brill
Lightning arresters	Westinghouse
Motors	West. 546J—2 per car outside hung
Paint	Cars painted at destination
Registers	International
Sanders	Brill Dumpit
Seats, style	Am. Car Co.'s reversible—Wood slat
Seating material	Wood
Springs	Brill
Step treads	Wood
Trucks, type	Brill 39E1
Wheels	Furnished by purchaser
Trolley base	West.

TRADE NOTES

Automatic Trolley Lock Company—Incorporated in New York on Oct. 9, with a capital of $100,000. The incorporators are H. D. Junge, L. F. Roggenstein and J. M. Ruhl.

Asbestos Protected Metal Company, Pittsburgh, Pa., announces the appointment of Ole K. Olsen, 822 Perdido Street, New Orleans, as sales agent for the State of Louisiana and the southern portion of Mississippi.

The Hoeschen Manufacturing Company, Omaha, Neb., has received from the Detroit United Railway an order for six wigwag crossing bells without batteries. This brings the total number of this type of crossing signals installed on the D. U. R. up to over eighty.

Walter A. Zelnicker Supply Company, St. Louis, Mo., has recently secured the services of W. H. Bramman, who is acting as assistant to the president. Mr. Bramman was formerly connected with the American Carbon & Battery Company.

C. F. Lomont, until recently with the McGraw-Hill Publishing Company in Chicago, has accepted a position with the Electric Service Supplies Company as its representative in the North and Northwest, with headquarters in Minneapolis. Mr. Lomont was graduated from Purdue University in electrical engineering. Before joining the forces of the McGraw-Hill Publishing Company, he was engaged in public utility valuation and later was for a time in the employ of the Chicago & Western Indiana Railroad on construction work in Chicago.

Railway Improvement Company, New York, has just received an order by telegraph for 375 Rico coasting recorders to be shipped by express to the Chicago Elevated Lines, comprising the Metropolitan West Side Elevated Railway, the Northwestern Elevated Railway, the South Side Elevated Railroad and the Chicago & Oak Park Elevated Railroad. The order is signed by Britton I. Budd as president of the first three railways and by Samuel Insull as receiver for the Chicago & Oak Park Elevated Railroad. The coasting recorders will be delivered in time to take care of the winter load and also will help to avoid the high rate for power which applies when the peak load contracted for is exceeded.

NEW ADVERTISING LITERATURE

Coats Machine Tool Company, Inc., New York, N. Y.: A bulletin has been sent out describing the Prestwich fluid gage of this concern.

Fire Gun Manufacturing Company, New York, N. Y.: In a leaflet, now going through the mail, the company's fire gun is illustrated and described.

Worthington Pump & Machinery Corporation, New York, N. Y., sales agent for Henry R. Worthington, is distributing bulletin W-400, descriptive of the Worthington outside-packed plunger pattern pump, designed for general service.

New Publication

Street Railway Fares, Their Relation to Length of Haul and Cost of Service. By Dougald C. Jackson and David J. McGrath. McGraw-Hill Book Company, Inc., New York. 169 pages, price $2.50.

This book constitutes the report of the investigation carried on by Professor Jackson and Mr. McGrath, in the research division of the electrical engineering department of the Massachusetts Institute of Technology. It is officially known as research division bulletin No. 14 but is published in book form on account of its size and to permit wider circulation. Some portions of this study have been published in the ELECTRIC RAILWAY JOURNAL in the form of articles by Mr. McGrath, but the book under review gathers these and other researches made by the authors into one complete whole with their conclusions. One of the most important of these is that to meet increasing costs of service and properly prepare for extensions of existing systems, the street railways of the United States, both urban and suburban, will sooner or later be forced to adopt a system of rates based more nearly on the length of haul. This, for urban systems, would involve a zone system with possibly, in some cases, a limited central area served at less than 5 cents.

The general conclusions are stated in the first chapter. The rest of the book is devoted to an elaboration and exposition of these conclusions.

Chapters 2 and 3 are devoted to a discussion of density of traffic in which the authors develop the unit of "investment per revenue passenger" and also bring out clearly the close relation between the length of haul and traffic density, namely, the longer the average haul the less the traffic density as measured in fare passengers per car-mile. Chapter 4 discusses the relation of the rate of fare to the growth of traffic, the conclusion being that higher fares reduce traffic. Chapter 5, shows that in Massachusetts the average rate of return is undergoing a steady decline. Chapters 6 and 7 are devoted repectively to the division of the nickel and the Cleveland fare system, and chapter 8 describes the Milwaukee zone system. Chapter 9 compares British and American practice as regards fares and shows that while the cash revenue per car-mile is not greatly different the American passenger pays a higher rate per mile, and the wages in this country and the investment per passenger are much higher. The latter fact, the authors explain, is due in part to the higher density of traffic in Great Britain, in part to the shorter average haul of passengers and in part to the fact that the majority of the British systems have no investment in power plants. The later chapters of the book develop the idea of the zone system for urban and interurban roads and suggest methods for fare collection.

The book is well illustrated with diagrams, and the subject treated is of such live present interest as to make the volume an important contribution to electric railway literature.

Electric Railway Journal

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New Developments in the Gasoline Car

THE tremendous development of the automobile in recent years has often given rise to the question, why are not gasoline motor cars used to a greater extent in suburban and interurban railway service? The reason is their initial and operating cost. Where the car service is at all frequent, no one has yet found any means of car propulsion cheaper or more reliable than electrical energy, which is capable of being generated in large quantities economically, is easily distributed and requires simple mechanism only on the car itself. When the period between cars becomes greater, however, the advantages of centrally produced power becomes less, so that on lines of light traffic there is undoubtedly a demand for an independent motor. For such service the gasoline motor seems much better adapted than steam because of the greater lightness and simplicity of the equipment. Automobiles are now so common that almost anyone can run a gasoline car, and there are so many mechanics who understand the construction of the automobile engine that it is not difficult to get repairs made. Several of the illustrations of Far-Western gasoline cars given in an article in this issue show bodies which are much more like those of an ordinary motor bus or suburban trolley car than that of a steam coach. For certain classes of service we do not see why cars of this kind should not be well adapted, and it may be that the development of gasoline cars of this type will open up a new field of transportation on rails, although such a field will be limited in extent.

French and British Tramways Have Their Fare Troubles, Too

"Trouble, trouble everywhere, and no fare increase to help."

THIS parody upon lines from Coleridge is not a jest at the seriousness of the financial situation now confronting electric railways in this country, but rather an observation in regard to the similar plight of companies elsewhere. As we are noting on another page, the East Parisian Tramways, whose experience is said to be typical for France, has been confronted with rising costs, but has not, like enterprises in other industries, been allowed to meet them with increased rates. Likewise, in Great Britain, the tramways have felt the need of financial relief, but some have been restrained by the statutory maximum. Others are uncertain as to whether more revenue can be gained from raising fares or lowering them, and, as shown by the recent annual conference of the Municipal Tramways Association, opinion is divided as to the wisdom of restricting the now liberal class concessions to workmen and children. Thus in other countries than our own the attention of railway men is being given to the diminishing earning power of the industry and to the most advisable means of bolstering it up, and as here opinions in regard to method differ. These facts, however, only emphasize what we said last week—*i.e.*, that the time is ripe for a careful, scientific analysis of the whole fare question by electric railway men themselves. No source of data regarding any sort of fare increase, here or abroad, should be slighted, for only through an exhaustive study can there be laid for future electric railway fares a cost basis—the only basis sanctioned by modern business principles.

The Need for Co-operation in the Liberty Loan Campaign

THE principal issue in this country during the coming week is to make the sale of Liberty bonds a success. Readers of this paper are citizens before they are railway men, so that this issue will rank in importance in their minds until the campaign is closed even higher than that of increased fares. Railway companies can do much to promote the sale of these bonds, just as they did during the first campaign four months ago, by assisting their employees to purchase by the loan of credit on easy terms. Many, if not most, electric railway companies have already announced their willingness to co-operate with their men in this way, but the crucial time of the loan will occur during the week ending on Oct. 27. Those companies which have not already made an announcement to their men to this effect have yet time to do so, and those which have a plan of this kind in force can well review the extent to which the men have participated to determine whether renewed interest in it cannot be stimulated. The terms of the present issue are such as to make them appeal to the small holder. This was done intentionally as the records of the first Liberty Loan showed that of the 4,000,000 subscribers, 3,960,000 subscribed in amounts of $10,000 or less, and the aggregate of such subscriptions was approximately $1,300,000,000 or 65 per cent of the first offering. We are in this war to win. Many electric railway men have gone to the front or are in military training ready to go. Others are assisting the government in this country both individually and through association work, as in the compilation of data such as the Central Electric Railway Association has just completed. But these efforts will be of little use unless the government has the financial means to carry out its undertakings against the enemy. The interests of every electric railway company require that the last week of the liberty loan campaign should be crowned with success.

Personal Touch Plus Good Wages

TWO fundamental requisites in maintaining honestly good relations with trainmen and labor generally are a sense of personal contact between the men and the management and the payment of good wages. Neither one alone is conducive to a loyalty which will withstand the influence of unscrupulous agitators. The combination is necessary.

Good wages may hold the men on the job, but without a sense of the humanness of the corporation for which they are working the service they render will be indolent and furtively destructive to equipment and to the reputation of the company with the public, and their presence will represent a constant potential crisis needing only some plausible excuse to bring it into reality. On the other hand, the existence of very pleasant relations may induce a feeling of interest and pleasure in working for the company. But if the wages are low, agitators have a tremendous leverage with which to influence the men against the company, and while the men will feel reluctant to walk out against a friendly company, they will nevertheless do so when the lowness of their local scale in comparison with that of other companies gives an indication that more money can be got. There needs to be a man-to-man contact, plus good wages.

The personal touch is an indefinable something, usually simmering down to the personality of the "big boss," which makes the men feel that the company has some special interest in them, that it would be a friend indeed in case of trouble, and that they are glad to be working for that company and that man. Building and loan associations, pension systems, insurance plans. sick and accident benefits and hospital service, etc., are appreciated by the men (at least by the best element among them), and are worth while in helping to establish the interest of the company with its employees—

If there is a ring of sincerity and personal interest in the words and acts of the chief as these are related to the welfare work;

If there is no tendency to use this welfare work for publicity purposes and effect upon the public mind; and,

If there is no attempt to interpret these benefits in terms of wages, or, in other words, to put them forth as part of the pay to the men. Actually these benefits should be considered in any fair comparison of wages, but if stress is laid on them in that connection there is a tendency for the men, or at least some of them, to feel they would rather have the money.

Where these conditions to the success of welfare work have not been kept and friction has developed we are inclined to criticise the method of directing this work rather than to condemn the welfare work itself as a failure.

There is an obligation on the part of every employer to look after the welfare of his employees, and in this work the sense of obligation and not the selfish idea of influencing the men should be the predominating motive. If a railway goes strongly into all manner of welfare schemes with the idea that this alone or principally will be a permanent cure-all for the troubles between company and employees, or if a railway grants an increase in wages, and assumes, therefore, that this removes the need for particular attention to the human side of the relations, that company had better conserve its resources for difficulties ahead. The motive for welfare work must be somewhat altruistic as well as selfish.

There is, in our opinion, much good to be derived from welfare work. If the motives are unselfish and the men realize this, the results will be more significant and more permanent. But the personal touch, plus wages, must not be neglected, and the welfare work must not be misused, lest it operate psychologically to antagonize rather than to conciliate the men.

Getting the Economy Idea Across

AT the conference of the American Electric Railway Association held in New York last week a medal was awarded to R. E. Danforth for a paper on economy which he presented at a meeting of the Public Service Railway Company section. In view of the fact that this paper was selected from among a number because in the opinion of the committee on awards it had of those submitted the greatest value to the industry, the paper itself and the topic which it discusses deserve more than superficial attention. An extended abstract of the paper is printed elsewhere in this issue, and it is worth a very careful reading. This paper is an attempt by a railway executive to interest his men by telling them in a rather intimate way what economy means in the case of the particular property on which they are employed. A frank statement of this kind cannot but result in stimulating a responsive co-operative spirit.

Mr. Danforth has given several such talks during the past few years, and at first probably surprised the men by his readiness to tell them just what it was costing to run the property. They are not surprised now, but they appreciate the confidence just the same. Mr. Danforth's plan happened to be mentioned at a meeting of another company section recently when one of the members arose and asked why the members of that section could not have the same kind of information. The general manager, who was present, replied that the management would gladly furnish them with full details of operating costs, and arranged to do so forthwith. The general manager is the best man in the organization to preach economy, first because of all officers he feels the necessity for it most keenly, and second because he knows the facts most intimately. It would seem to be a wise plan to utilize the company section organization for frank talks by the managers every few months somewhat along the line followed by Mr. Danforth. A little knowledge is a dangerous thing, but full information by employees of operating conditions on a property should be both safe and profitable.

Canadian Northern's Electric Terminal at Montreal

MORE than five years have elapsed since the Canadian Northern Railway commenced boring a tunnel under Mount Royal in Montreal, Quebec, for the purpose of connecting its 10,000-mile trunk line system with the business center of that city. War conditions have hampered progress on the electrification of the tunnel and its approaches, but at last the project is completed with the exception of a few months' work in the heart of the city. During these five years there has been a tremendous advance in steam railroad electrification, the Norfolk & Western Railway, the Chicago, Milwaukee & St. Paul Railway and the Philadelphia terminal of the Pennsylvania Railroad being the most conspicuous electrifications, although the extension of the New Haven system to New Haven should also not be forgotten. It is interesting to note that the electrifications mentioned are of three radically different types, but all are operating with excellent satisfaction. Moreover, progress in the case of each type has not by any means ceased. In the light of this threefold development, however, there seems to be no reason to believe that the arguments which led the Canadian Northern to adopt the 2400-volt direct-current system for the Mount Royal tunnel several years ago are not equally valid for this case to-day. It will be remembered that at that time the three-phase and single-phase systems were carefully considered and, in spite of the fact that the only high-voltage direct-current electrification operating under comparable conditions, that on the Butte, Anaconda & Pacific Railway, had been completed but a few months before, the general reputation of direct-current apparatus and the experience on the Butte, Anaconda & Pacific were such as to warrant the adoption of the same system in this case.

The fundamental facts favoring direct current at Montreal were, first, that power conditions in the vicinity made it economical to purchase energy in the local standard form, three phase, 60 cycles; second, that there were no heavy grades to be surmounted, and, third, that for the length of trackage which it was proposed to electrify 2400 volts was a pressure high enough for economical distribution, requiring but one substation. Since the railway's decision was reached and announced, much experience has been gained in high-voltage direct-current operation under steam railroad conditions at 2400 volts on the Butte, Anaconda & Pacific and at 3000 volts on the Chicago, Milwaukee & St. Paul. With this experience available the Canadian Northern's operating department can throw the whole load onto the terminal next spring with entire confidence that no unexpected difficulties will arise. Excepting a greatly increased traffic, commercial operation will not be substantially different from the smoothly running construction work now going on.

The high-voltage direct-current system is so new that it is still necessary to connect two electric generators in series to produce the desired voltage. Judging from analogous electrical development the time may come when the full voltage can be produced in one machine, say in a rotary converter. The tendency, however, in all of this high-voltage, direct-current matter has been to make haste slowly, connecting in series generators or motors of proved reliability at lower voltages. Possibly it may prove economical in the long run to use two machines in series just as it has in some cases to use two or more in parallel.

The Canadian Northern at Montreal has been fortunate in this electrification in making it at least partly pay for itself by rendering a large territory, a tract which is owned by the railway company, available for suburban residence purposes. "Model City" beyond the mountain is already being built up in prospect of quick service to the business center next summer. Thousands of acres of delightful country will thus be brought within easy commuting distance of the city. The company's substation, located in what will be the heart of the new real estate development, was designed architecturally to fit into the surroundings. As far as appearance goes it might be a library or municipal building of some sort. It is a delight to the eye and will undoubtedly set a standard for the surrounding residences, as substations are doing in other parts of Canada and in the United States.

Cutting Off Coal to German Utilities in South America

UNDER the "trading with the enemy" act, which has just been put into operation, it is unlawful for any resident in the United States to trade with any person, no matter where he resides, who can reasonably be believed to be acting on account of or for the benefit of the enemy. We have been interested to note that, in the full exercise of this act, government departments are considering an embargo upon coal to German-owned utilities in South America. It is alleged that their earnings have been used to disseminate pro-German propaganda and also to establish large credits in South America and northern neutral countries for the purchase of supplies for Germany. In South America many of the tramways and other utilities have been financed principally by Germany, and it is said that no less than $500,000,000 of German money is invested in utilities and factories in Uruguay, Argentina, Brazil and Chile alone. Hence, if the foregoing allegation is true, considerable aid is probably being rendered to the enemy through the operation of these enterprises. In the face of such a condition, it would be quite proper to suspend coal shipments to them. It could reasonably be supposed that the constantly increasing anti-German feeling in South America would make the governments there glad to take over, under post-bellum payments, any German-owned utilities that were obliged to default in fulfilling their franchise obligations. Such occurrences, too, might offer excellent opportunities for the needed introduction of more United States capital. The question of a coal embargo to South American utilities, therefore, seems to merit full investigation and probable action.

Gasoline Motive Power on Far Western Railways

Many Gasoline-Driven Motor Cars Designed to Operate on Rails Are in Service in the Far West—Widely Different Types Are in Use, but the Tendency Is Toward Small Size and Light Weight

ELECTRIC railways and steam railroads have a common problem in providing service at reasonable cost on lines through thinly populated territory, this condition obtaining particularly in the far Western States. Here some companies have rebuilt automobiles so that they could be operated on rails, while others have purchased gas-electric cars weighing 50 tons. Straight gasoline cars of even larger size are in use, and examples are to be found of almost every type and weight of equipment.

It is notable that, at first trial, practically none of the companies found the car that would exactly fit their particular requirements, and in many cases changes have been so numerous that definite data and operation costs cannot be compiled. However, since the use of such cars is so widespread, the ELECTRIC RAILWAY JOURNAL has secured statements from a number of motor-car users to the end that an idea may be given in regard to the economic possibilities of this form of rolling stock.

DETAILED COSTS FROM NEVADA ROADS

Among the most successful motor cars in service in the far West are two that are operated by the Nevada Copper-Belt Railroad. These are of Hall-Scott make.

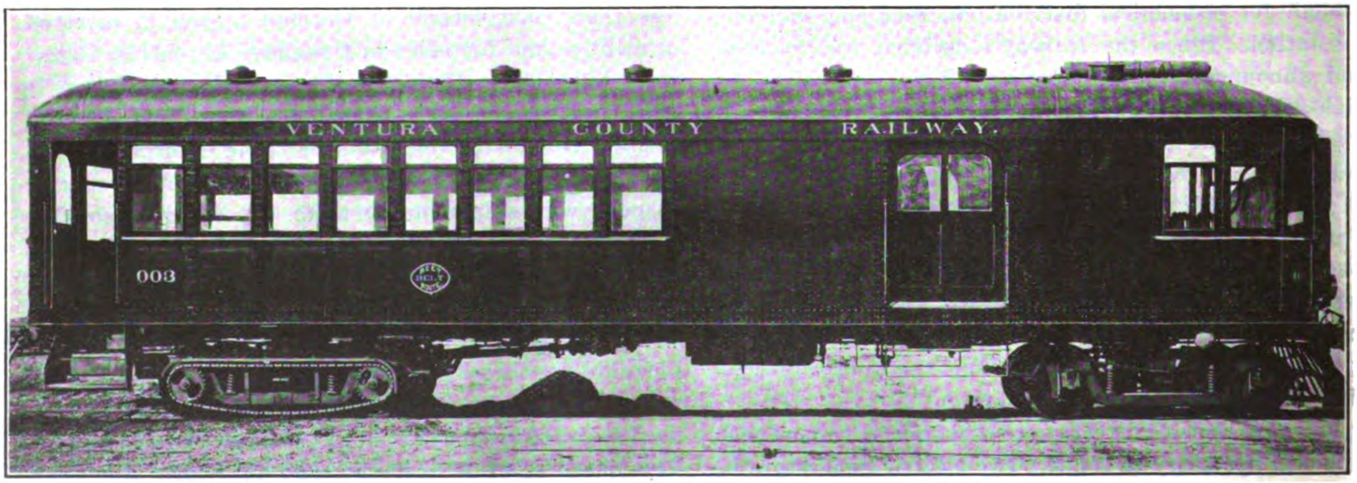
One of them, according to information furnished by P. H. Cook, superintendent and traffic manager of the railroad company, has been in service since 1910. This is a wooden-frame, 36-ton passenger car with a 150-hp. six-cylinder engine driving through a shaft to the front wheels of the rear truck. The car is 54 ft. long, seats forty-eight passengers, and space for baggage is available in the engine room.

This was the only motor car used by the company from 1910 until February, 1916, during which time it handled all the auxiliary freight and passenger business and covered about 200,000 miles, or an average of 3800 miles per month. As first put in service, it was not entirely satisfactory and required some strengthening. After this it gave good service in every way. During the last twelve months in service the distance traveled was 42,861 miles; the average gasoline consumption, 2.96 miles per gallon, and the average per pint of lubricating oil, 8.50 miles. During this twelve-month period repairs cost $1,574, of which 75 per cent was labor. This was unusually high. The operating costs for the period, including fuel, oil, repairs, crew wages, and depreciation at $70 per month, averaged 22.08 cents per mile.

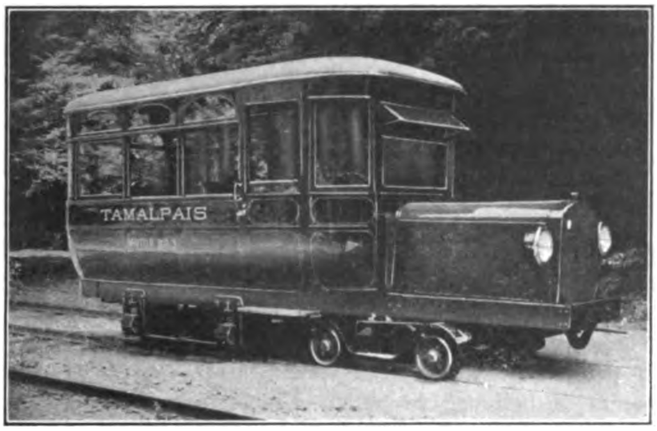
This car served two lines. On one, a 14-mile run, there was only one stop, a maximum grade of 1 per cent and a maximum curvature of 13 deg. From Mason to Ludwig, on the other, a 24-mile run, there were two stops, a maximum grade of 3.27 per cent, and a maximum curvature of 16 deg. The daily run usually included three round trips over the 14-mile line and one round trip over the 24-mile line.

For two years carload freight was handled by this motor car over 0.9 per cent grades, as much as three cars of stock having been handled at a time, but company officials realize that such service puts a strain on the equipment for which it was not designed. During one month the company used the car regularly to handle from three to four cars of merchandise per day over the 14-mile line.

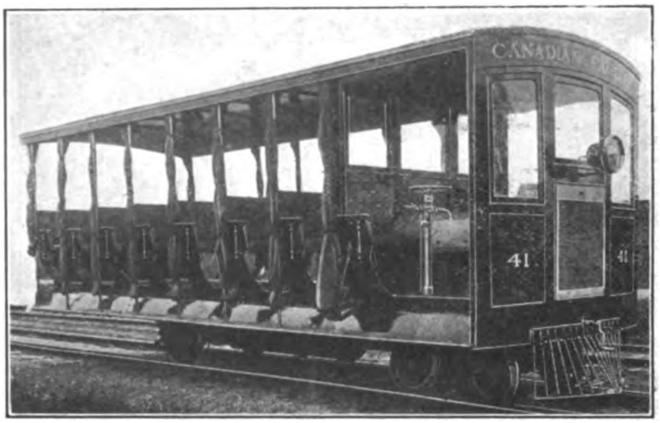
The second car purchased by the company was similar to the first except that it was 60 ft. long and weighed 40 tons. This car was built for another railroad in



WESTERN GASOLINE CARS—PASSENGER CAR THAT SERVES ALSO AS FREIGHT LOCOMOTIVE AND HANDLES ENTIRE SERVICE ON 21-MILE LINE



WESTERN GASOLINE CARS—MOTOR CAR WITH FOUR DRIVING WHEELS FOR MOUNTAIN SERVICE



WESTERN GASOLINE CARS—LIGHT-WEIGHT CAR FOR NARROW-GAGE MOUNTAIN ROAD OPERATED ONLY IN SUMMER

1913 and was bought by the Copper Belt line in 1916, since which time it has been in constant service.

In seven months of operation this second car traveled 24,280 miles and cost $420 for repairs, most of which was in labor. The average run per gallon of gasoline was 3.082 miles, and the average per pint of lubricating oil 7 miles. These three items, plus the wages of two operators, gave a total average operating cost per mile of 16 cents.

LIGHT-WEIGHT CANADIAN PACIFIC MOTOR CARS

The Canadian Pacific Railway operates four gasoline-engine-driven motor cars on a 2½-mile branch line in Alberta. Two of these are for passengers and two for freight service. All four are equipped with 66-hp. Pierce-Arrow automobile engines. The passenger cars are designed to seat thirty-five and weigh, without load, 6.63 tons. The passenger car bodies were built by the railway company and the freight bodies by the American Locomotive Company.

The line on which they operate has a 3-ft. 6-in. gage, and the grades range up to 4.5 per cent, averaging 3 per cent, with a maximum curvature of 30 deg. The rear truck has only two wheels, the driving gear being attached to the front four-wheeled truck. The cars are equipped with Westinghouse air brakes, and auxiliary hand operated brakes are provided for emergencies.

These cars operate from June until November. In addition to passengers they carry construction materials and supplies, including large quantities of coal. The distance traveled daily during the season averages 80 miles per car, and the total annual cost for repairs on all cars amounted to $4,000 during the past year, as given by C. H. Temple, superintendent motive power, Western Lines, Canadian Pacific Railway.

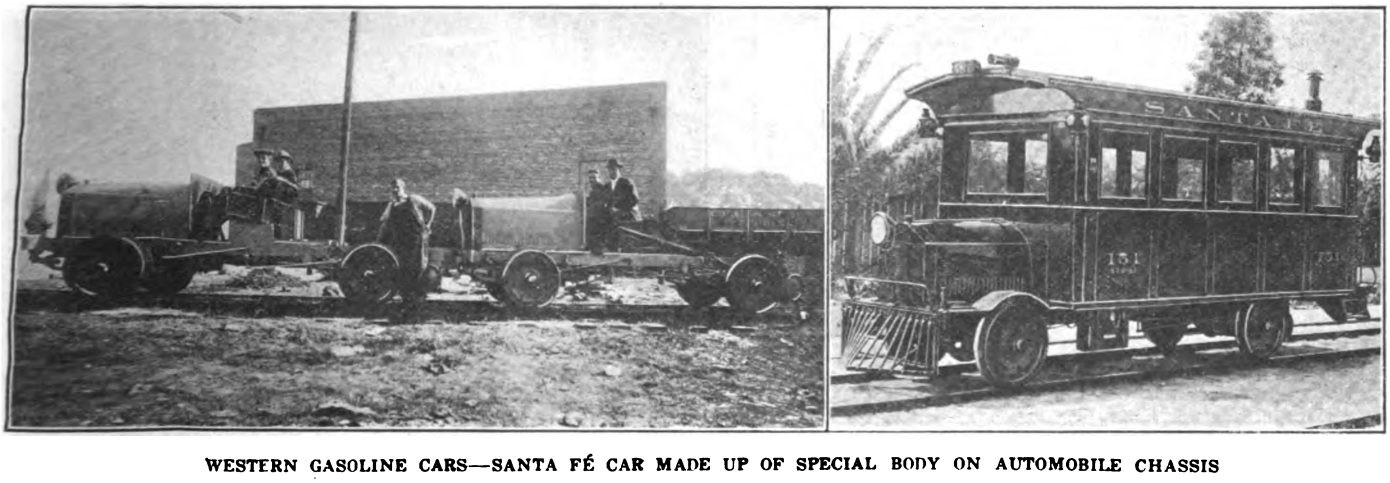
AUXILIARY SERVICE OVER STEEP GRADE

The Mount Tamalpais & Muir Woods Railway, operating between the town of Mill Valley, Cal., and the summit of Mount Tamalpais, elevation 2300 ft., recently put in service a gasoline motor car built specially for the local service in the town of Mill Valley, but also to make the trip to the summit on occasion. Ordinarily it makes nineteen round trips daily over a 1¼-mile run which calls for about ten stops per round trip. On this run the grades range up to 4.2 per cent and there is one 32-deg. curve.

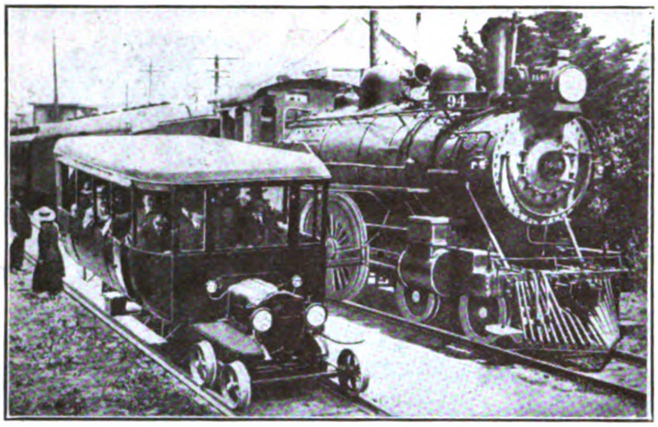
The car seats nineteen passengers and is equipped with a six-cylinder automobile engine made by the Kissel Company and rated at 65 hp. The drive is by means of chains from the main drive shaft to each of the four wheels of the rear truck. The car was designed by Harold S. Johnson of Mill Valley.

The heaviest service on this line occurs during the months of June, July and August. In these months last year one or two trailers were operated part of the time. The average total daily cost was $8.64. This was divided as follows: Wages of two operators, $6.50; fuel, $1.18; lubricating oil, 20 cents; maintenance, 76 cents.

An interesting point about these figures is that the company was able to compare them with the corresponding costs of giving the same service with the steam locomotive (gear drive) and car (of the type used for the mountain trip) which were used prior to the con-



WESTERN GASOLINE CARS—SANTA FÉ CAR MADE UP OF SPECIAL BODY ON AUTOMOBILE CHASSIS



WESTERN GASOLINE CARS—DEMONSTRATION OF RAILWAY AUTO ON BRANCH LINE OF SOUTHERN PACIFIC SYSTEM

struction of the gasoline motor car. The cost of the steam train averaged $23.24 for the months of February, March and April, 1916. This was divided as follows: Wages, four men, $13.50; fuel, $5.50; lubricating oil and waste, 50 cents; water, $1.70; maintenance, $2.04. Thus the company figures that the daily saving is $14.60 per day.

MANY CALIFORNIA ROADS HAVE MOTOR CARS

A considerable number of motor cars weighing 30 tons or more have been put in service in recent years by smaller California railways. The Chowchilla Pacific Railway uses a 30-ton motor both for heavy freight cars and in passenger service. It is equipped with a 75-hp. engine and operates over 1 per cent grades. For the freight service the car has been found to be rather light for the work assigned to it.

Two Hall-Scott motor cars built for passenger and express service have been used for several years by the Holton Interurban Railway, their run being between El Centro and Holtville, a distance of 11 miles practically without grades or curves, and on a leased line of similar construction extending 15 miles west of El Centro. This company has decided that it is not profitable to operate these cars unless they can be kept fairly well filled. Where passenger business is somewhat limited it is believed a smaller car would be less expensive and would give equally satisfactory service.

A 70-ft. combination passenger and express car weighing 50 tons and equipped with an eight-cylinder, 250-hp. engine was put in service August, 1916, by the Fresno Interurban Railway. It has been covering a 19-mile run out of Fresno on 3½ per cent grades with curvature up to 13 deg. On this run about twenty-five stops are made. The cost of engine distillate required by this car in regular operation is reported as 7 cents per mile.

During the fruit season last year the Fresno company handled between August and December over 1600 loaded and empty cars. This was accomplished without delay and without any other equipment other than the motor car. The cost of repairs has been found to depend largely upon the ability of the motorman to handle the car properly. Next to this, however, the secret of low repairs is believed to be constant care of equipment during service rather than special attention after the failure of some part.

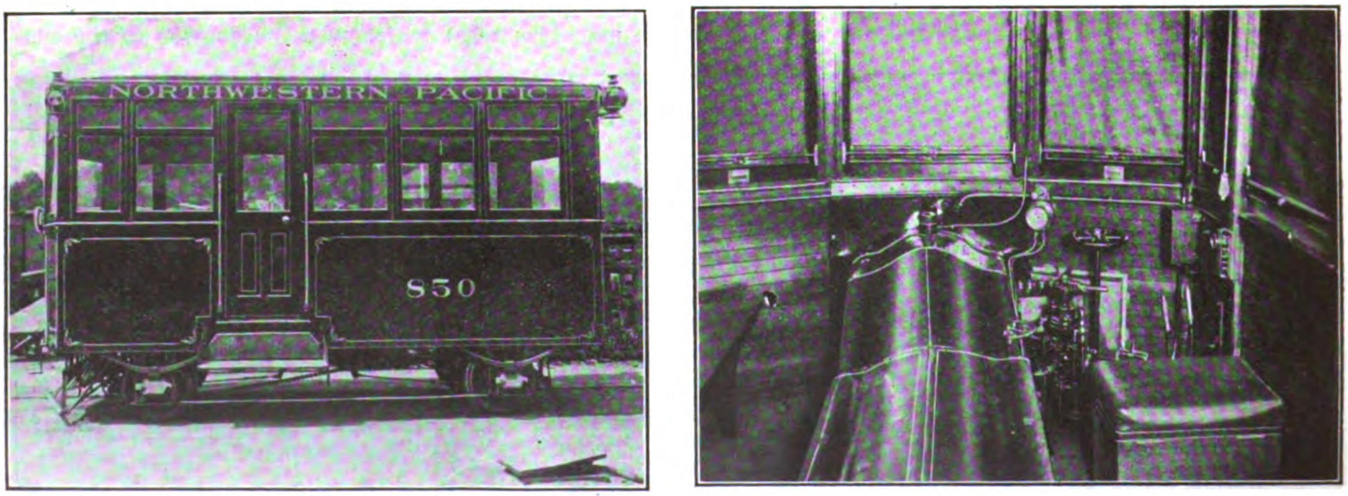
Another motor car, which might almost be said to be in a class by itself because it weighs only 10 tons, has recently been put in service on the lines of the San Diego & Southeastern Railway in southern California, and it is being watched with much interest by Western railways facing the need of similar equipment. Comment on this car appeared on page 747 of the ELECTRIC RAILWAL JOURNAL for April 21, 1916.

RECENT DEMONSTRATION ON SOUTHERN PACIFIC

On July 15, 1917, occurred a demonstration of a White railway auto on a branch line of the Southern Pacific Company between San Francisco and San Bruno. On this line the maximum grade is 3½ per cent, the heaviest on the entire Southern Pacific system. Twenty-eight passengers were carried on the trip and the operating expenses were said to be at the rate of 10 cents per mile, including fuel, oil, repairs, driver, interest, taxes, State license, insurance and depreciation. An accompanying illustration shows the auto operating beside a steam train making the same run at a cost of not less than $1 per mile.

The chassis of this car is of standard White construction and it is equipped with a 30-hp. engine. A pony truck constructed under M. C. B. requirements was added. The weight complete is 2 tons. The car used in the demonstration has been purchased by the Virginia & Truckee Railroad, with headquarters at Carson City, Nev., which will operate it between Carson and Virginia City to meet jitney competition.

The Chicago, Milwaukee & St. Paul Railway has



WESTERN GASOLINE CARS—EXTERIOR AND INTERIOR VIEWS OF NORTHWESTERN PACIFIC SHOP-BUILT CAR three cars of the General Electric Company's gas-electric type operating in the Puget Sound district. These cars weigh about 50 tons, have a seating capacity of about eighty and a length of about 70 ft. Two are of the center-entrance and one of the rear-entrance type. The car body is divided into four compartments, engine room, baggage room, main passenger section and smoking room. Officials of the road state that the center entrance type is the most suitable to the class of service being handled and that these cars are very popular with the public. The only change in design found to be necessary was an increase of cross-section for the crankshafts. As originally supplied the cranks were too light and broke in service. This defect has been remedied by the manufacturer.

Two of these cars are now on the regular run between Seattle and Everett. They double the 101-mile stretch of road between cities every day, maintaining a schedule average of 27 m.p.h. The average number of stops is 100 per round trip, while the maximum grade is 2 per cent and the maximum curvature 16 deg. The motors use engine distillate for fuel.

According to figures submitted by Frank Rusch, general master mechanic Puget Sound Lines, Chicago, Milwaukee & St. Paul Railway, under whose supervision the cars are operated, the average cost of the cars on the Seattle-Everett run amounts to 20.38 cents per car-mile. This total is subdivided approximately as follows: Wages of train crew, 9.86 cents; distillate fuel, 4.84 cents; gasoline for starting, 0.04 cent; lubricants, 0.96 cent; supplies, 0.1 cent; repairs, 3.77 cents; cleaning, 0.55 cent.

CARS FOR MISCELLANEOUS SERVICES

A novel form of gasoline-propelled car, which was built in the shops of the Northwestern Pacific Railroad in October, 1915, is shown in two of the accompanying illustrations, one of these being an interior view showing the forward end of the car with curtains lowered and giving an idea of the operator's position in the car. The equipment provides seating capacity for sixteen persons, the length over all being 17 ft. The power plant is a four-cylinder, 60-hp., 1907 model, Thomas automobile engine, and it gives a maximum speed of 35 m.p.h. Hand and air brakes are provided, the latter being furnished with compressed air by a chain-driven compressor operated from the shaft of the main engine. The weight of the car complete and ready for service is 11,200 lb.

On the Ventura County Railway a single gasoline-driven car serves as the entire equipment of motive power for the whole 21-mile system. This car is of all-steel construction and its considerable weight, due to a length approximating 50 ft., permits it to be used as a locomotive for handling freight. The car body, however, is provided with a large passenger compartment in addition to a baggage compartment and engine room. The drive is of the shaft type and is connected direct to the front pair of wheels on the rear trucks, this pair in turn being connected by chain to the rear wheels of the truck. This car does all of the freight and passenger business upon the line and it has even hauled a fourteen-car freight train. The work that is regularly done includes a considerable amount of switching, but it has been found that the car can conveniently handle this work in addition to making regular runs in passenger service.

A wholly-different type of car has been used by the Atchison, Topeka & Santa Fé Railroad on its lines operating out of San Bernardino, Cal. As shown in one of the accompanying illustrations these cars have been made up by building bodies upon standard motor-truck chassis, the body design providing for a short rear platform and a rear entrance. The engines are of the six-cylinder type and develop 40 hp., giving the cars ample speed for the suburban service in which they are operated.

War Troubles in Paris

East Parisian Company Has Not Been Allowed to Make Needed Increase in Fares to Offset Various Burdens of Operation

WHAT *The Electrical Review* says is a typical instance of the difficulties with which French tramway companies have to contend under the conditions of the war is afforded by the experience of the East Parisian Tramways (Tramways de l'Est Parisien). The gross profits of this company in 1916 were less than in the preceding year, and it succeeded in equalizing the expenditures in 1916 only as a result of the gross profits which were realized on the manufacture of munitions of war.

While the normal working conditions upon which the fares fixed by the company's concessions were based have been completely changed, and while the sale prices in industry have increased at a rate corresponding to the advance in cost prices, the company is prohibited from making any modification in fares. The steps taken by the directors to secure a change on the part of the local authority which granted the concession have had no effect, and the intervention of the government has been manifested only in the direction of increasing the company's burdens by enforcing the grant of war bonuses to tramway workers. Such bonuses, it is contended, should have been simultaneous with the giving of permission to raise the fares.

In addition, the conceding authority, persistently ignoring the state of war, has applied the penal clauses of the concession contract by inflicting daily fines upon the company for the non-observation of the time tables in operation in peace times, whereas the present conditions render it impossible to adhere to these time tables absolutely. Moreover, despite numerous applications, the company has not yet been authorized to bring into operation certain advantageous arrangements in the concession contract which only require the fulfilment of certain formalities which were concluded some time ago.

The company has had to bear higher costs for materials, coal and labor. Although it was eventually empowered to extend the use of female labor in the working of the cars, it has not been possible to maintain the effectives without trouble, and the maintenance staff in particular has not been adequately reconstituted. The scarcity of specialized labor, and the impossibility of obtaining all necessary raw materials and spare parts for the maintenance of the rolling stock and tracks, have compelled the company to limit its efforts to the execution of the most urgent works.

Mobilizing the Electric Railways for War

Important Work Done by Central Electric Railway Association—Committee on Military Efficiency and Defense of Great Value to Government and to Railways as Well

THE magnitude and significance of the work of the Central Electric Railway Association committee on military efficiency and defense can scarcely be appreciated without a study of the map and the compilation of valuable data which have been made. The map cannot be legibly reproduced within the space limits of the pages of this journal, and the data collected are so voluminous that more than a summary and analysis of it, which are planned for a later date, could not be printed herein. In brief, the work of the committee was an attempt to place before the governmental authorities a definite picture of the capacity of the electric railways to assist in the great war transportation problems and thus to put the electric railways on the map, so to speak, as an important part of the nation's transportation facilities. It was quite the feeling of the committee, and not without concrete evidence, that the electric railways did not now enjoy that recognition, and that the authorities were not aware of the ability of these railways to be of tremendous service to them in relieving the existing congestion on the steam railway trunk lines. This realization perhaps gave added impetus to the work of the committee as it determined to make known the capabilities of the electric railways of the North Central territory.

The map and data compilation together form the most comprehensive inventory of the electric railway plants as a group that has ever been undertaken. They portray the minutest detail of track and roadway, trolley and transmission line, power house and substation, shop and rolling stock construction, equipment and capacity for practically all the electric interurban railways in the C. E. R. A. and surrounding territory in a manner which makes possible an analysis of existing conditions and the possibilities of greatly extending the utility of these roads in their present field. They also offer a means of determining the possibilities for greater standardization in all branches of the industry.

The committee of the C. E. R. A. under whose supervision the work was done was appointed by President C. N. Wilcoxon on motion of the association at the March 8 and 9 meeting in Indianapolis and comprised the following members:

Arthur W. Brady, president Union Traction Company of Indiana, chairman; Frank R. Coates, vice-president and general manager Toledo Railways & Light Company; John F. Collins, vice-president and general manager Michigan Railway; George Whysall, general manager Columbus, Marion & Bucyrus Railway; W. A. Carson, general manager Evansville Railways; Will H. Bloss, Ohio Brass Company; S. D. Hutchins, Westinghouse Air Brake Company, and L. C. Parker, Cleveland Frog & Crossing Company. Mr. Bloss was elected by the committee to serve as its secretary because of the vision and enthusiasm he had for the future of the electric railways. He has been very largely responsible for the progress of the work of the committee and has devoted an immense amount of time and thought to it. All members of the committee, however, and the executive committee of the C. E. R. A., have closely co-operated and given much time to make the work attempted of significant importance to the government and to the railways.

HOW THE DATA WERE COLLECTED

Upon beginning its work, the committee endeavored but was unable to secure information from the military authorities as to what the government would want from the traction lines. In talking with army officers, it was learned that their principal interest was in the movement of troops and government freight and that they could not see where the electric railways would be of any great value to them. There was also other evidence manifest that they thought of the electric railway systems only as elongated street car lines. The committee was therefore forced to proceed under its own initiative and without direction or advice from army or government officials. Nevertheless, the results of its labor will certainly stand as a monument to the members because of the great value to both the government in case of future need and to the railways themselves now.

The first work attempted by the committee was the drawing up of a map which would show the physical properties of the various railway systems in the Central Electric Railway Association territory and also in a few surrounding states. The C. E. R. A. territory includes the states of Ohio, Indiana, Michigan and part of Kentucky, while the additional states included in the work of the committee comprised New York, Pennsylvania, West Virginia, Illinois and Wisconsin. Except for the case of Ohio and Indiana, which are made up on one tracing, the map is divided up by states and bound in atlas form, though arranged with register lines for pasting together if it is desired to have the whole map in one piece. By means of this map, all the electric railway lines from the Mississippi River to New York in the North Central states are shown. In gathering information from which to make up the map the committee was fortunate in having from the first the co-operation of C. F. Handshy, president of the Illinois Electric Railway Association, and many individual companies who were not members of this association or the C. E. R. A., but who were glad to serve this patriotic end and supply the information concerning their own properties.

The map is drawn up to the scale of 8 miles to the inch, which necessitated very arduous labor in taking care of the great amount of data which is found there, but also making it necessary to file even a greater amount of data which could not be provided for. The map shows, in addition to the traction lines, the location of power houses, their capacity, the location of storerooms, machine shops, stock rooms, bridges more than 100 ft. in length, high-tension lines with their voltage, feeder systems with their capacities, location of substations, forts, military camps, storerooms and soldiers' homes. The lines of paralleling and intersecting steam railroads and the points at which they intersect with the electric lines are shown, as are also the track connections of the electric lines with boat lines on lakes and rivers. The portions of the lines which are double track are so indicated on the map, and the location and lengths of the sidings are given. In addition to the information pertaining directly to the traction lines, the high-tension lines of electric light and power companies, the location and capacity of central stations, water-power plants, and the substations of the different power companies on extensive systems were also placed on the map, so that practically the complete electrical information for the territory covered is shown.

Copies of the completed map will be supplied by the association to the proper persons at each cantonment, aviation field, military fort, the adjutant general of each state in the territory included, and to the proper officials at Washington without charge, for such use as they may find for the information therein contained. The executive committee of the association has also decided that maps may be secured upon order of the executive officers of electric railway companies, electric railway associations and similar officers of power companies whose lines are shown on the map, and to such other persons as may be directed by the president of the C. E. R. A. While this association has absorbed the cost of preparing the map, it was decided that a charge as given in the table below would be made for copies in order that it might be possible to keep an accurate record of its distribution, and also to guard against too large a distribution.

CHARGES FOR C. E. R. A. MILITARY MAP

Blueprint paper map	$7.00
Blueprint cloth map	26.00
Blue line on white background, paper	50.50
Blue line on white background, cloth	67.50
Black line on white background, paper	58.00
Black line on white background, cloth	79.50

SUPPLEMENTARY DATA ALSO COMPILED

In addition to the information which is shown on the map, the committee has collected a vast amount of data which goes into minute detail on the various electric railway plants. These data sheets constitute what is really a mobilization record of cars, material, powerhouse equipment, and in general all apparatus and supplies used by the electric railways for the purpose of successfully meeting any contingency which might give rise to the destruction of existing plants or the inability to secure new supplies. The detail dimensions, clearances, types of equipment used, etc., for trolley lines, telephone lines, high-tension lines, third-rail, signal lines and complete description of signal installations, etc., are included. The detail data on track construction, including type and weight of rail, description of special work, bonding system and types of bonds used, special track tools available, number and location of gravel pits and stone crushing plants and their capacities, minimum radii of curves and whether single or double guarded, amount and location of grooved, girder-type rail used in interurban lines, number of portable cross-overs available, width of devil strip on double track in city streets, and obstructions through cities or elsewhere to the movement of M. C. B. freight equipment over the tracks, etc., form a part of these data.

A general summary of the various equipment installed in the railway shops, giving the number of machines and capacity of each, description, floor space covered, floor area in various departments of the shop, amount of storage track under roof, capacity of each department of the shop and an itemization of special wrecking equipment and derrick cars with the capacity of each are included. There has also been collected a detailed summary of the rolling stock of each road, which includes a tabulation of the principal car dimensions, capacity in number of seated passengers or pounds of freight, type of truck, wheelbase, make, the details of motor and control equipment, axle dimensions, wheel dimensions, type of couplers, air brake equipment, etc. A similar summary of the city cars, the motors of which could be used for interurban service, was also made.

In the power-house summaries, there is a tabulation of the various equipment including the number, capacity, type, rating of generating units, turbines, engines, transformers, exciters, boilers, pumps, etc., and the capacity of coal bunkers, surplus coal carried, daily consumption of coal, etc., whether or not there is space available within the station for the installation of additional units, source of water supply, etc. A similar summary is made of the equipment in substations.

At points in villages or cities through which the electric lines pass, where there are obstacles to the movement of standard M. C. B. freight equipment over the electric lines, the committee has collected information providing a detailed plan for eliminating or overcoming this obstruction. For instance, a short radius curve in a city might be overcome by providing a short cut, frequently possible, by connection with a steam road track for a short distance through this city. In such a case the committee has collected data providing for the electrification of a certain section of the steam road track and the installation of the necessary track and special work, and has had prepared bills of material required to complete this work. The information also indicates where this material could be secured in the event that it was impossible to purchase it, the approximate time required to complete this work with present operating forces, the increase or decrease in mileage over the present line, etc. There is nearly always a local industry track or some other source of material near at hand which would supply the necessary amount of overhead, signal, bonding and track and roadway materials necessary in the event of emergency, and the location of such sources of materials and the amount available at each location, have all been tabulated. Usually a simple map showing the suggested cut-off around the obstacle accompanies the data sheet on such work.

All of these data are being accumulated and placed in tabular and other convenient forms for reference purposes and filed in the secretary's office of the Central Electric Railway Association. In the summarized data sheet, each railroad is given a key number which is carried through all the various divisions of the data for that road. As the cost of printing or duplicating this information for distribution among railway men would be prohibitive, only the original copies will be made at the present time, but these will be available for reference purposes to members of the association or other railway executives as well as to military officials of the government.

When these data are finally completed, it will be a simple matter for the railway companies to provide quick relief from any emergency by commandeering equipment and materials from another plant not so badly needed to replace destroyed or broken down equipment, provided the necessary military or government authority was behind the order. The data and map show that by building an 18-mile section of line from Ridge Farm to Paris, Ill., or a 40-mile section of line from Danville, Ill., to Crawfordsville, Ind., together with a 32-mile section of line between Little Falls and Fonda, N. Y., an electric railway system would be completed whereby it would be possible to interchange rolling stock over electric lines from St. Louis to New York City, and plans have been prepared to show the cost and the material necessary for filling in these gaps should they be needed in case of serious interruption or depletion of the steam road facilities.

This map and compilation of data will also be of great value to the electric railways themselves, since it is the first time that a complete survey of the electric railway plant and facilities has been made. It will be possible for the railways to see at a glance where power systems might be interconnected to the mutual advantage of companies, and also for any company quickly to learn where it might be possible to purchase an old type of equipment not badly needed in another company's plant to replace the worn out or broken down similar unit in its plant. It will also be possible to summarize by the process of elimination what the most commonly used types of equipment and supplies are, to the end that it will give a very definite help in promoting standardization work. There is no question but that the railways will find very extensive use for the map and data which have been prepared by the committee, and that if the emergency comes this will also prove of extreme value to the military authorities.

Three Electricians for Twenty-eight 2400-Volt D.C. Locomotives

The Experiences of the Butte, Anaconda & Pacific Railway in Maintaining High-Tension Locomotives Since 1913 Under Extremely Arduous Conditions Are Described in Detail

THE Butte, Anaconda & Pacific Railway is notable as furnishing the first proof that 2400-volt direct-current is ample to care for great tonnage, for it is doubtful whether any other railway in the world has so heavy a freight service per mile as this company's section between the copper fields of Butte and the great smelter at Anaconda. It is not uncommon to haul westward from Butte a train of seventy-five ore-laden cars, each averaging 68 tons or more. In May, 1917, the average train-load west on an average grade of 0.3 per cent and a maximum of 0.6 per cent was 4456 tons. The average eastward train of empties weighed 1519 tons. The heavy trains are run up to 15 m.p.h.

The same locomotives, but geared 28:80 (3.2) instead of 18:87 (4.83) to give a maximum running speed of 55 m.p.h., is used for the 26-mile passenger run between Butte and Anaconda. An average passenger train consists of three or four coaches weighing 93,000 lb. each and a 127,450-lb. baggage car. The run is made in one hour. Two trains are so operated that each locomotive covers 120 miles one day and 162 miles the next day, this being done to equalize the work of the train crews. This arrangement also makes a reserve engine unnecessary, because one locomotive is free at Anaconda after 2.30 p. m., while the other is open for attention every morning and up to 3 p. m.

The 2400-volt d.c. General Electric locomotives are too well known to require description. They now number twenty-eight, six new ones having been received during the spring of 1917. They are run singly for passenger service and in tandem for freight service. The freight locomotives weigh 82 tons each, and the others 80 tons each.

In addition, the company has had since 1913 three tractor trucks (called "calves" by the operators) which weigh about half as much as a locomotive.* Their use gives 50 per cent more tractive effort in switching and spotting service, at about one-third reduction in speed, when one is connected in series with a single locomotive. Their use has overcome the need for abusing resistor grids. Each of the eight motors per double unit is rated on the hourly basis at 320 hp., or 2560 hp. in all.

ONLY THREE MEN FOR ELECTRICAL MAINTENANCE

The electrical maintenance force of all the locomotives and tractor trucks comprises exactly two electricians and one helper! Furthermore, these men care for the car heating and lighting equipment and for the power, heating and lighting of the steam-electric locomotive and car shops. This force does all rewinding—in fact, only one commutator was ever sent to the factory, this being for a railway motor in the early days before commutator upkeep equipment had been installed. A number of machinists are employed, of course, for mechanical maintenance; but this force is less than half than with all-steam operation although some steam locomotives are still in use beyond Anaconda or are being repaired for sale.

Aside from being frequently operated, in these copper-boom times, beyond capacity rating, the locomo-

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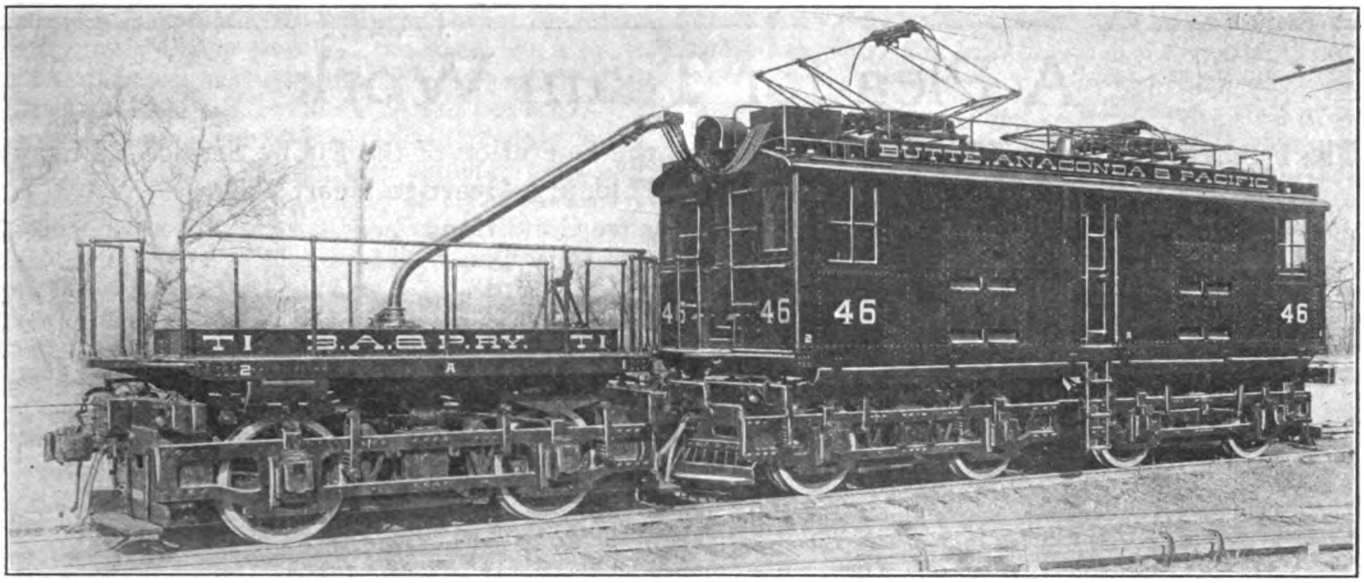
*See ELECTRIC RAILWAY JOURNAL, June 13, 1914.



FORTY-TON TRACTOR TRUCK ON B. A. & P. RY., COUPLED TO STANDARD LOCOMOTIVE TO INCREASE TRACTIVE EFFORT IN SPOTTING

tives must also contend with the possibility of leakage and short-circuits due to local flue dust which settles on both rheostat and contactor insulation.

Passenger locomotives are inspected electrically and mechanically every fourteen days, although this period could safely be raised to thirty days. A passenger locomotive which was out for three years was completely overhauled in four and one-half hours. Until lately freight engines were inspected electrically every thirty to forty days; but now forty days is the minimum interval between electrical inspections. Actually, not more than one hour is required per unit by one electrician and helper. Such a record is all the more remarkable when it is considered that these freight engines are often in practically continuous service with only thirty minutes' cooling time between changes of locomotive crews.

The overhauling period is really determined by the interval between renewals of wheel tires, say after mileages of 45,000 to 47,000. The examination of nuts, bolts and hub liners, aside from tires and brakes, is about all that is necessary mechanically. Even the tire renewals are not carried out completely, as drivers No. 1 and No. 2 get more flange wear than the others.

SOME EQUIPMENT RECORDS SUMMARIZED

The original type General Electric grade F pinions give 90,000 to 115,000 miles' wear. At least four times that mileage is expected from the double-drive gears, as not one gear rim has yet been worn out nor a tooth stripped. During the first year's operation tight keyways at top and bottom caused some broken pinions, but this difficulty was quickly remedied.

Ninety-five per cent of the contactor tips have run for four years and many of them are expected to give service for two or three years more.

The arcing horns in the arc chutes are just beginning to require replacement.

Not a controller finger has been changed.

The main motor brushes which are under a tension of 7 to 7½ lb. average 18,000 miles. Compressor brushes are just beginning to require renewal after four years.

No armature troubles of any kind have occurred between Jan. 1 and May 30, 1917.

No armature has ever fallen on a pole piece.

No other motor troubles have been experienced except a few flashovers, these having been due to the effect of rough cross-overs and not to overloading.

All motor brushes, which are General Electric grade D electro-graphitic, show no perceptible wear on commutators except a little on dynamotors due to the entrance of metallic dust. No commutator has been reslotted.

Occasional cases of open circuit in grid resistors due to overloading constitute the principal cause of delays on the road.

The only replacement of original equipment was the installation of sturdier compressor relays within the first eighteen months. The location of the air compressor governor caused some of them to chatter.

The Hyatt roller bearings for the pantographs outwear two to three contact tubes; and each tube is good for about 50,000 miles.

No lightning trouble is experienced although lightning is common in this territory. Each locomotive is protected by General Electric electrolytic arresters consisting of ten aluminum cells in series placed in the cab between the main fuse and the choke coil in the line leading to the main switch.

Equipment defects are so few that they are not classified by transfer from the daily log. To quote Electrical Superintendent Bellinger, "Days and days go by, when we never have to put a thing in this book."

The following table covers mileage costs for January, 1917, a particularly heavy month, based on the operation of 83,702 miles by all classes of equipment. The maintenance costs include damage from accidents.

	Cents per Mile
Electrical equipment (including machine shop and materials and depreciation	9,400
Locomotive engineers	8.032
Engine house, electric (including wiping and housing)	1.267
Electrical energy	17.674
Lubrication	0.405
Other supplies	0.576
	37.363

A Plea for Team Work

The Effect of the Present Business Situation on the Operation of the Public Service Railway Is Clearly Stated—Train Men Are Told, in a Heart-to-Heart Talk, How They Can Improve Conditions

By R. E. DANFORTH

Vice-President and General Manager Public Service Railway, Newark, N. J.

This is an abstract of the address for which Mr. Danforth received last week the medal awarded annually by the American Electric Railway Association for the best paper or address given during the previous year before a company section. It was delivered at Camden on March 22, 1917, at a meeting of the company section of the Public Service Railway. In his talk Mr. Danforth quoted some figures on costs of supplies to the Public Service Corporation which are omitted from this abstract because they were published in large part in Vol. 48, page 1227 of this paper. His comments on the way in which the men can help the railway to save and on the general economic conditions are of general application and should be of value to the men on every electric railway system.

IT has been my practice to talk to the boys in Newark at least once a year about the operating expenses of the railway, and the members of the company section there have been looking for such a talk this year. The necessity for economy has struck home rather forcibly this year because of the war. We are already feeling the effect to a very marked degree. Most of the European nations have been buying on an immense scale foodstuffs, clothing, shoes, automobiles, railroad locomotives, cars and supplies. In fact, everything we produce or manufacture in this country has been going abroad by the boat load. This has meant busy times in this country. Factories that formerly worked eight or nine or ten hours a day have been working twenty-four hours a day and even at that have been unable to keep up with their orders. This has made, in one sense, good times. Every man and every woman who wanted work could easily get a job. The establishments manufacturing munitions have been getting big prices for their output and have been paying big wages. They could afford to pay big wages, and in order to fulfill their contracts within the time specified they have been compelled to bid high for labor. The result has been that our company, as well as all other railways, has lost good men because they could earn more than the railway companies could afford to pay them. As a result we have been handicapped, and although we have carried more people and have had more business, we have paid pretty big prices for all our railway and other supplies.

A most serious effect of the war has been the curtailment or cutting down of constructive work. By that I mean there are fewer people manufacturing or otherwise producing articles that are of general use to the world. The loss is due to the fact that millions of people are engaged in destruction instead of construction, and that there are millions more "non-producers" to be fed than in normal times. Have you ever stopped to think that with fifteen millions or more of men serving with the armies in Europe, none of whom is producing anything to eat, the whole burden of production falls back upon the rest of us? This is a tremendous economic loss, and we are forced to pay for it. Then the destruction of millions of dollars worth of materials, whole cities wiped out, railroads and buildings destroyed and even farm lands rendered worse than useless constitute a further loss that we cannot help but feel. All this naturally adds to the cost of living.

While conditions are unsatisfactory here they are very bad in Europe. Thousands of old men, women and children are practically starving and are only being kept alive upon the charity of Americans and others. There are children in Europe who don't get in a week as much food as one of your children get at a meal. All of this has to do with us in a way. With the price of potatoes up three or four times what it normally has been because of the shortage due to excessive demands and also to the lack of acres and acres of farm land in Europe which had formerly been used to produce them but are now battlefields or trenches or totally devasted, you and I are directly feeling one of the effects of the war.

As to the future. When the war is over, practically the whole of Europe will be filled with starving people. What is left of the armies will be back at home, with the miles and miles of ruined country to struggle with and work back to tillable soil. There will be a great many individuals, particularly those now engaged in the munition plants, who will be making materials of peace. They will manufacture articles to send over here to our markets at prices far below any our manufacturers can meet. Where our mechanics in the shops and manufacturing establishments are making $3 and $4 per day, over there workmen will be glad to work for 50 cents a day, and they will turn out much more than our men do, in order to hold their jobs. They have learned how to work fast, and they have had to work fast to protect their countries. Such are the men we shall have to compete with; men who will work for a meagre living to try to capture American trade. Our boom times will be over. A great many men who are making big money to-day will be walking the streets looking for any old kind of a job. It will be hard to get a job, too, because so many will be looking for the few that will be available. It will be a general scramble for a chance to make a living.

We have in this country today a great many persons whom I call spendthrifts. And they are not the wealthy. They are wasters. Men who two years ago supported their families, had what they needed, sent their children to school and got along on $60 per month, have gone to work in munitions plants and have been making $150 per month and have been spending every single dollar of it. After two years of spending $150 per month, when the factories close, don't you think those fellows are going to get a good hard bump if they have to take a job at $1.25 per day? During the temporary boom times they have not acquired the habit of saving, and they are going to pay for their thoughtlessness or indiscretion. Many of these people you know. A lot of them are your neighbors. You see their families wearing expensive clothing, including $12 shoes. They go to the movies every night. Some of them are buying automobiles. It will be a rather hard drop when they have to come down to where they were a few years ago. Rather a gloomy picture, I admit, but I have been thinking very deeply about the subject for a long time and have been watching the trend of the times. I am amazed at the foolishness of the American people. Neighbors of mine who only two years ago I saw walking to and from the train now ride in a limousine with a liveried chauffeur. They made their money manufacturing war materials. Whether they will be able to keep that game up I don't know, but they certainly have taught their families habits that will be hard for them to break if the occasion requires.

So far as the railway is concerned, we still have to carry passengers for 5 cents. We haven't been able to go up to 10 cents or 15 cents to keep pace with our neighbors in the manufacturing business. Our employees are paid a rate of wage which is all the business can stand and which it will be hard to maintain for many years unless prices of materials come down. Now, granted that other men are making big pay just now on account of the war, when the war ceases who will be in the better position? The railway man will have his job and his pay—the other fellow will be idle. Trolley cars will keep on running whether or not the shops close down. We may not carry so many people, but people will still have to ride. Our pay will go on, and the prices of food stuffs and all other supplies are bound to come down. That is going to put us in a position of being able not only to live comfortably but to help out some of the poor and needy of our neighbors in this country and the others across the water, so that I say the man is wise who sticks to the job that has fifty-two pay days per year; the job that does not close for two weeks or more for inventory and does not shut down every time some foreign nation ships in a lot of material that can be sold cheaper that it could be made in this country. This war is not going to last very much longer. As I size it up we shall have pretty busy times and things will stay just about as they are this year and next, but along about 1919 they will begin to slow down, and you will experience the beginning of a period of readjustment that will lead to hard times. I would advise those of you who are fortunate enough to have any money left at the end of the week after you pay your bills, to save it.

Now, you might ask what has this to do with the railway business? It has a great deal to do with it. If our business is to keep this railway going with the conditions as I am outlining them to you tonight, we must save every penny we can, and I have asked you to save your own penny first so as to get in the habit of saving the company's penny. Your bread and butter and mine depend upon Public Service. Public Service must make good, serve the public, earn money to pay its bills (our wages included) and when hard times come, be strong enough to weather the storm. Now I am going to try to give you a little idea of the conditions affecting our business.

HOW THE RAILWAY IS AFFECTED

We had a very good increase in business last year—about 9½ per cent over the preceding year. The operating expenses went up 9.93 per cent—almost 10 per cent—so that they were a little ahead of the earnings. We had not begun to feel high prices last year because contracts made at former low rates helped us out. Our car miles increased 5.8 per cent; car hours increased 5.9 per cent, which indicated the cars were slowed down a little bit and that we did not keep to our former schedule. Wages of platform men, raised on July 1, last, increased operating expenses about $175,000 for the six months period. The cost of operating per car mile was 20.374 cents which is about one-third cent a mile more than we had hoped it would be, and ½ cent more than the year before. We carried 451,700,000 passengers, which is almost 1,250,000 a day. In 1915 it cost us $1,289 a mile for track maintenance. This year, because we could not get the men to do the work, we only spend at the rate of $897 per mile. I have heard the track men say they have noticed the difference in the track bolts and in some of the paving. The power consumption on the basis of kilowatts per car mile was 3.867. The year before it was 3.75, so that there was an increase in the current consumed which amounted to about $50 per year for every motorman on the road. Let me be clear. The increase was not in the cost of current but in the increased quantity used at the same cost price; $50 per year—just a little bit of slackness in the matter of coasting, because it would be no trick at all for every motorman on the road to save $300 per year if he used his controller right. By that I mean not to keep the power on the notch and then shut off and slam on the air, but shut off the power and coast the car before it comes to the braking point. If Public Service could effect such a saving in power bills it would have more money for the payrolls. Just bear that in mind.

Now, as to the matter of accidents. Accidents increased 15.70 per cent while the number of claims went up 28 per cent. These figures mean that more people made claims on the company, the ratio of increase in claims over accidents being almost two to one. Automobile accidents have gone up in numbers very rapidly. In 1908, throughout the State we had only 336 automobile accidents. In 1916, eight years later, we had 3936, or eleven times as many such accidents. The amount of money spent in settling those accidents has been tremendous. The Southern Division, last year, I am very glad to say, showed quite an improvement in the matter of accidents. The number came down to a marked degree, but not as far as we had hoped to see it. It was, however, a very satisfactory improvement for the year. The automobile accidents increased in 1916 over 1915 from 2700 to more than 3900. The Claim Department paid in settling such claims nearly $97,000 more than it had paid the year before. This emphasizes one of the serious problems which you and I have to consider. The number of automobiles running up and down the highways is growing every year, and no matter how reckless the owners or the drivers of such machines are, we must be extremely cautious and careful to avoid colliding with them. Many drivers of automobiles are reckless. Some of them have no road sense and are not fit to run a wheelbarrow. Our cars operate on rails and we cannot dodge the automobiles. All we can do is to stick to our rails and avoid hitting them if possible, and at that it is usually a pretty hard matter to prove that the motorman was not at fault and that the "other fellow" was. Bad as it is at best, you make it worse for the claim agent if you do not furnish him with the means of good witnesses.

To give the same amount of service in 1917 as was given in 1916 will cost $1,025,000 more than last year. I have not included in this estimate damage claims, increased cost of power and taxes. I have just covered the things that had to do with the running of the railroad.

As to power, the same element of increase in wages and cost of materials applies there as it does with the shop and track. And what couldn't I say about the high price of fuel and the alleged reasons therefor! As you know, coal is scarce. One reason for the scarcity is that several hundred thousand foreigners went back to the old countries to fight and left us short-handed at the mines. Then the steam plants and factories working overtime—some of them twenty-four hours a day—are using two or three times as much coal as they ever did before. Again, we are shipping coal abroad and, on top of all this, coal cars which formerly were used for nothing but the hauling of coal from the mines to the market are hauling steel and munitions and materials of all kinds; hauling them to seaboard to be loaded on ships. Sidings are jammed with freight cars, many of them coal cars, which lie there week after week waiting for ships to haul the stuff away. All this time such cars are out of service, and the result directly affects Public Service and all other large users of coal. If the company should be compelled to keep up the rate it has been paying for coal it would stand to lose about $3,000,000 in a year. The railway uses 40 per cent of the power generated, and the increased cost of coal would mean $1,200,000 out of the railway earnings. Last year our revenues were $18,255,000; our operating expenses, $11,577,000. This year we shall probably take in $19,500,000, and we are going to spend $13,250,000 for operation. What is the answer to all this? Three things: First, let us stop all waste; second, spend no money needlessly, and third, let us go after new business. You all know there is plenty of room on the cars in the middle of the day that can be put to use.

HOW THE TRAINMEN CAN SAVE

As to the first item—there are thousands of dollars wasted. Every department has different methods of wasting and you can make a very large saving by stopping it. For instance stop wasting power by coasting. You can save $150,000 per year if every motorman does his best. It sounds like a big item when you talk about it and you may say "what is the use of coasting when somebody else does not?" but you have to coast mighty little to save the amount I mention. A saving of $150,000 would bring back the kilowatts to what they were last year.

Take no chances; avoid accidents, and you can easily save $100,000 a year. But this means constant attention to duty; it does not mean sizing up every pretty girl that passes on the streets. We must pay more attention to what to many might seem like little items, such as conductors starting cars with doors open so that somebody attempts to board the car after it starts and is thrown; or motormen starting cars with a jerk. Our general claim agent tells me that one of these so-called "little" accidents cost us $7,500 when a woman was thrown getting off a car. It does not seem possible that we could cause so much damage, but carelessness comes easy and costs much. If you just keep your eye on the car you can avoid a lot of these accidents.

Stop loafing. There are 7000 men on the property, and every man could do one-fifth more work than he has done without hurrying the least bit. To be conservative let's call it one-tenth more. Each man can save an hour every day. It costs us more than $5,000,000 a year in payrolls. Nine men could do the work of ten if they would and make up for some of this shortage of labor. Shopmen all know that wherever there is piecework a job is done two and one-half times as fast as the same job would be done by day workers and the pieceworkers are not any more tired than the others. This shows that where the man is working for himself he keeps pounding away all the time he is on the job. It is easy enough to lose one hour a day, and it is just as easy for motormen and conductors to do their little bit in saving by just speeding up 10 per cent. Why we have gone back almost 10 per cent on our schedule on this property in the last year and most of you know the time can be made up if the crews will only try.

In the waste of materials in the offices, shops and car houses, I could, if I had the time, tell you where $10,000 could be saved, while the transportation department could, by united effort on the part of every man, make a further saving in wasted time, wasted car hours, missed fares, and fares on the sidewalk, which would amount in a year to $1,000,000.

You notice I speak of those people on the sidewalk who would ride if the cars were on time and the crews courteous and agreeable. You go into a store, and if the clerks are grouchy and inattentive, you go out and don't want to go back again. If, on the other hand, the clerks are bright, courteous and agreeable, you are pleased to go back again and buy again. We are in the commercial business—the same as the store and the same conditions in getting and keeping business apply to us. Let's keep that in mind.

Now concerning expenditures: It cost us $1,300 last year to maintain a mile of track and $450 to keep a car up. To maintain switches and crossings last year cost us $48,000. Taking the items together it shows that maintenance cost us $600 per mile of track which is more money than the average steam road spent in the maintenance of its whole right-of-way. As track materials increased about 60 per cent in cost, we are going to pay $1,000 per track mile next year. Now we can cut this $600 or $1,000 materially by being careful in the matter of putting the special work in the ground; careful about slowing down and careful in running cars over special work. Flat wheels also make needless expenditures. Car wheels ordinarily run 45,000 miles. We are getting only 25,000 miles out of our wheels because the tread has to be ground off or because the flanges have been broken by fast running over special work. To grind out a flat spot the size of a silver dollar takes 5000 miles off the life of the wheel, and every time you flatten a wheel it means $5 lost. During the winter I think the flats on the property are costing $1,000 per day. Most of you know how easy it is to flatten a wheel and how easy it is to cut down these useless expenses. I shall ask you to cut down.

HOW TO DEVELOP NEW BUSINESS

Concerning the third item, that of going after new business. We are a live and going concern; we cannot stand still; we must either go ahead or go backward. Our responsibility to the public is to furnish safe, convenient and adequate service. But we must make it so convenient to the public that the public will ride on the cars instead of walking or using their own automobiles at much greater cost to themselves. Wages go up; prices of materials go up; taxes jump up, and the population increases very slowly. If we want an increase in business faster than the population bring it we must go after it, just as John Wanamaker does. We must advertise, and if we advertise we have got to deliver the goods just as Wanamaker does. Just think of the thousands of people who daily walk to and from work, or downtown shopping and home again. We need their nickels; we should try to get them. Our best "ad" is in having comfortable cars, running right on time, operated by good-dispositioned, good-natured, courteous trainmen. I want you all to help make our lines popular. Talk them up. Don't knock the company, nor your business, nor the line. Certainly don't knock your fellow employees. If you will boost the concern that you work for and boost the line, the friends you talk to will do their share of boosting. Just as soon as you get the public boosting the company, you will increase the number of riders. I know because I have had it tried. Some years ago I was connected with a company which operated in a town where everybody was damning the railway. How they did pound it. It was criticised by people and the press. Nothing was satisfactory. Everybody was pounding. The men had the blues, they were disgusted. I got them together and told them to start advertising by telling their friends that conditions had changed, that cars were keeping better time and the service was better. It was not long before we had the most popular railroad in that state. It was just that 'boost' spirit put into practice that brought about the change in public sentiment. It would have been just as easy to start somebody knocking and upset the whole business. In that particular town the receipts were doubled in four years. We had 800 trainmen and it was the exception when we hired as many as 100 men in a year. And we paid 22 cents an hour. I say to each of you: Be A Booster. Let us all strive to make this company of yours and mine secure against any trouble that might come and let us build it up as the greatest street railway in the world, not only in property but in the hearts of its united workers."

The Levis (Quebec) County Railway has extended its freight service and is now delivering freight to any part of Levis for 10 cents per 100 lb. with a minimum charge of 10 cents for each consignment.

British Companies Need Higher Fares

Delegates at Municipal Tramways Conference Discuss Upward Revision of Fares and Restriction of Class Concessions

THAT electric railways in the United States are not alone in their need for increased revenues was well illustrated by the papers and discussions at the annual meeting of the Municipal Tramways Association of Great Britain on Sept. 20-21. The Mayor of Blackpool, where the conference was held, stated in his opening remarks that sixteen tramways in the country were not able to turn the corner financially, and that twenty systems made a profit of no more than 6d. per 100 passengers.

According to a joint paper on "Tramway Finance," the usual rate stipulated in the acts of Parliament is 1d. a mile, and in some cases this rate is in operation. How, then, could the revenue be increased? By lowering the rates more riders might be attracted, but this could only be done by reducing the penny zone to a half-penny one—a course to which the authors were most strongly opposed—or by lengthening the zones. In either case a considerable increase in the number of passengers carried would have to take place before the previous revenue could be obtained, and local conditions must decide whether a sufficient increase would take place to insure a larger revenue. The only alternative was to increase the rate per mile, which would require the sanction of Parliament. This question, it was said, was receiving the attention of the executive councils of the association and the Tramways and Light Railways Association. Many undertakings which had been charging less than the statutory limit had increased their fares, with satisfactory results.

The paper stated that workmen's fares were subject to a maximum of ½d. per mile, and undertakings which charged that rate could not increase the revenue from this source without statutory authority. Even where a profit was shown on the whole, it might be found that the early morning passengers were being carried at a loss, and the passengers paying the usual fares were contributing to make up this loss. Moreover, in some instances children's fares were on too liberal a scale. Many concessions had been granted to various sections of the communities, and these should be withdrawn.

On the subject of expenditures the authors said that much energy could be saved by careful driving and systematic inspection of electrical equipment of cars. Car meters, with careful examination of the records, were strongly recommended. Some system of standardization of wages, with a properly constituted authority to settle differences and disputes, was also deemed desirable. Furthermore, it was held that the utmost economy was necessary in maintenance and repairs, but that provision should be made to repair the permanent way in the near future.

In a paper on "Differentiation in Fares," the writer pointed out that tramways—at least, in London—were meeting with keen competition in respect to speed and fares, coupled with enormously increased expenses. Differentiation in fares in favor of bona-fide workmen was compulsory, although it meant running at a loss, and such services were kept down to the minimum by the companies which first took up tramway work as a business enterprise. Municipalities, however, had increased them and reduced the fares, so that in London there was a continuous stream of workmen's cars between 3.30 and 8 a. m., and special cars between noon and 2 p. m., and again between 5 and 7 p. m., to cope with this traffic. A rate of 10 miles for 2d. (in one case 19 miles for 2d.) seemed to be about the average. Temperate comment on this state of affairs, the author remarked, was difficult.

Moreover, many tramway systems allowed all passengers boarding cars before 8 a. m. to purchase return tickets at workmen's rates, which involved a loss to the undertakings. Other concessions had been granted to school children, blind people, etc., and the whole system of differential fares and free traveling was utterly wrong. The only true basis for fixing fares, it was asserted, is the cost of providing the service rendered, all who avail themselves of that service being required to pay on a uniform scale. All municipal tramway undertakings, therefore, ought to raise workmen's fares to the legal limit, cancel all free passes and withdraw all special rates, or else have the municipality buy at full value tickets for the favored classes.

The discussion on these papers was of a varied character. One speaker said that everything had gone up except rain, fresh air and tramway fares, and he would abolish the fare precedents that were restricting the companies. In Glasgow, it was stated, a reduction in fares or increase in zone lengths had made the traffic go up by leaps and bounds, while in Walthamstow the abolition of workmen's halfpenny fares had been the means of turning a deficit into a profit and had set an example which was followed throughout the London area. Opinions as to the success of workmen's fares differed, some speakers alleging profits and some losses. One delegate blamed present concessions upon weak-kneed management in the past.

International Railway, Buffalo, has worked out a plan of routing workingmen cars during the morning and evening hours when factory labor is going to and from work so that this traffic may be divided from main arteries of travel and at the same time made more convenient for the men themselves. It was found that it was possible to relieve the main lines considerably and at the same time make distinct improvement in the service rendered.

Municipal Tramwaymen at War for Great Britain

A report submitted to the members of the Municipal Tramways Association of Great Britain at a recent convention showed that for eighty-four municipal authorities replying to queries, the number of tramway employees at normal times was 55,208, and that 29,268, representing 53 per cent, had joined the forces. The amount paid to dependents totalled £1,437,603, or an average allowance per man of 11s. 4½d. per week. The amount collected on the cars for various national and other objects was £84,509, and tramway employees had contributed £38,170 to various relief funds. On seventy-six systems women conductors were employed, the number totalling 11,757, and on eighteen systems there were women drivers numbering 611. Twenty-six undertakings employed auxiliary drivers, male, these totalling 564.

Liberty Loan Meeting at Publishing Office

A MEETING to stimulate subscriptions to the present Liberty Loan among the employees of the McGraw-Hill Publishing Company, Inc., was held at the office of the company at Tenth Avenue and Thirty-sixth Street (the Hill Building), at noon on Oct. 9. Arthur J. Baldwin, vice-president, explained the purpose of the loan, the need of the government, the conditions under which bonds could be obtained and the importance of a general subscription and also said that the McGraw-Hill Publishing Company would help to finance any purchases made by its employees by allowing them to pay for the bonds in installments. At the time of the Liberty Loan campaign last June, 425 employees subscribed for bonds, the aggregate amount of the subscriptions being $110,000. Application has been made by the company for $300,000 of the present issue of bonds in order to be ready to take care of subscriptions of this kind.

An interesting feature of the meeting was the unfurling at the end of the room of a "service flag" with forty-two stars, showing that forty-two members of the force had entered military service. Since the meeting, further calls to duty have necessitated the adding of four stars.

LIBERTY LOAN MEETING AT OFFICE OF MC GRAW-HILL PUBLISHING COMPANY ON OCT. 9. THE SERVICE FLAG WITH FORTY-TWO STARS INDICATES THAT FORTY-TWO MEMBERS OF THE ORGANIZATION HAVE ENTERED THE MILITARY SERVICE

American Association News

Sections Taking Up Active Work Again and Showing Keen Appreciation of Conditions Imposed by the War—Public Service Section Passes 400 Mark in Membership

Committee on Increased Revenue Meets

On Oct. 16 a meeting of the committee on increased revenue for electric railways met at the office of J. G. White & Company in New York City with Chairman J. K. Choate. Plans of procedure were discussed and some definite steps were tentatively decided upon. Details of these cannot be announced yet, but another meeting of the committee will be held in a few days to lay out the work more definitely. The meeting was attended by J. D. Mortimer, North American Company, New York, N. Y.; M. C. Brush, Boston Elevated Railway; J. H. Alexander, Cleveland Railway; Dr. Thomas Conway, Jr., University of Pennsylvania, Philadelphia, Pa.; E. B. Burritt, New York, N. Y., and the chairman.

Economy Again Discussed at Newark

The first meeting of Public Service Railway company section was held on Oct. 18 with an attendance of nearly 200. The principal speaker was R. E. Danforth, general manager. In addition A. J. Van Brunt, director of safety education, showed and explained a new film, "The Price of Hurry," and other moving pictures of company scenes. Secretary F. J. Davis stated that the membership is now 402, divided among departments as follows: Transportation 182, mechanical 37, auditing 31, engineering 52, distribution 24, claims 39, and general, 37. This is an increase of sixty-eight during the year, 130 men having joined and sixty-two having resigned. The average attendance at the eight meetings held was 170.

The following were then elected to office for the coming year: President George L. Walsh, claim department; vice-president, F. J. Davis, auditing department; secretary-treasurer, H. M. Ehlers, transportation department; director for three years, J. R. Cameron, transportation department; director for one year, S. G. Harvey, maintenance of way department.

Resolutions were passed expressing appreciation of the honor accruing to the section through the award of the company section medal to Mr. Danforth, and of the work of the retiring officers.

In his address Mr. Danforth reiterated the points made in his Camden paper abstracted elsewhere in this issue, and then proceeded to apply to local conditions the lessons already being taught by the war. He outlined the ways in which Public Service is assisting in the war, more than 200 men being in service to date. The war will bring tremendous burdens upon this company for in addition to the loss of men and increases in costs of materials which are general the railway must furnish unprecedented service to the war supplies factories which are concentrating in its territory. At Newark, Camden, Gloucester and other centers great numbers of workers must be transported to and from their work, and it will tax both the steam and electric railways to the limit to care for them.

Mr. Danforth scored the men who will leave permanent jobs with an essential public utility for a transient one at a slightly higher rate of pay, throwing abnormal burdens upon those who remain to try to furnish the transportation which is an essential element in the winning of the war. He pictured the plight of such men when the war is over and there is a plethora of workers and a reduction in work to be done. This brought up the necessity for economy in money, time and energy in order that as individuals, as employees and as an organization the burdens of the war may be carried by those at home "behind the lines."

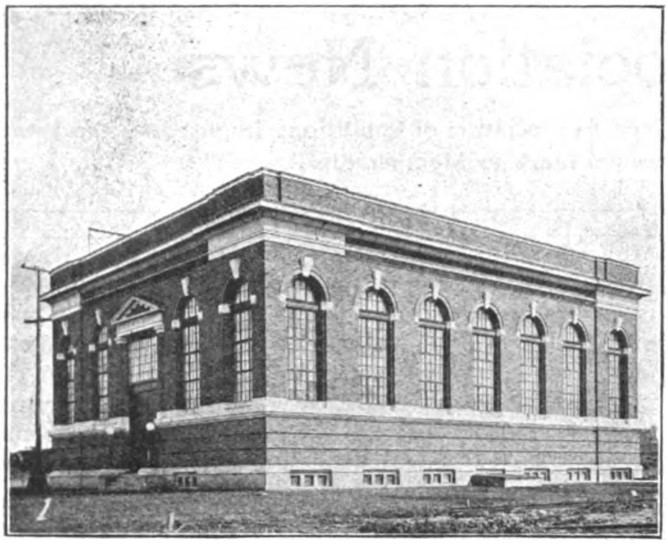
The speaker paid a tribute to the men in the organization who had already by practicing the principles of conservation enabled the company to make a creditable record in the face of tremendous obstacles. He also paid his respects to the jitneys, which he denominated "transportation pirates" for operating upon streets furnished with car tracks. On these streets, he said, the railway is under contract to furnish all needed transportation and is required by the utilities commission to do so. However, this competition must be met by co-operation among all departments in making the service so attractive that people will patronize the cars.

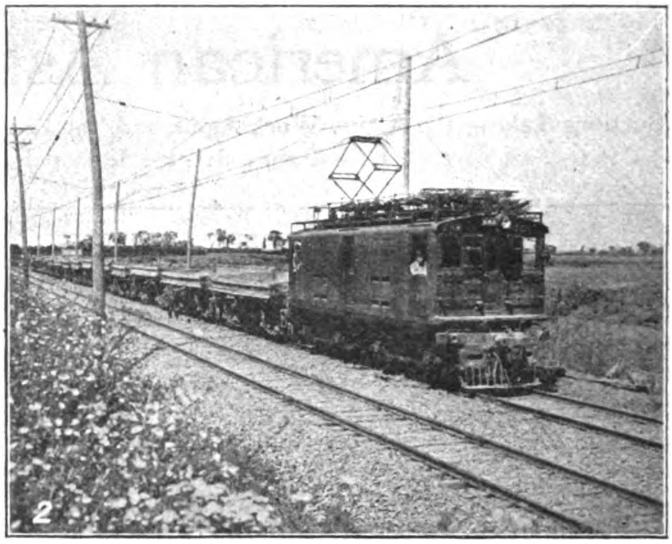
In the discussion of Mr. Danforth's address N. W. Bolen, general superintendent, emphasized the idea of co-operation in a practical way by explaining that if loyal men would explain the real conditions of employment in the railway and other industries, and the duty which each man owes to the public, there would be fewer men leaving the service.

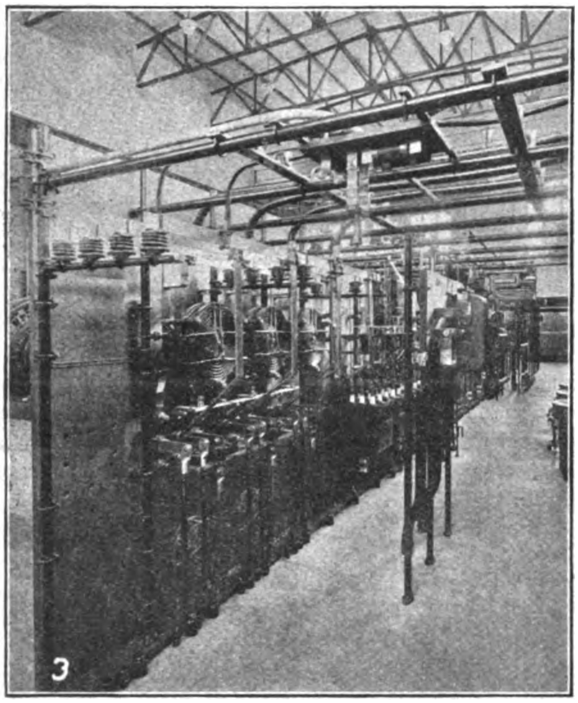
Section No. 8 Elects Officers

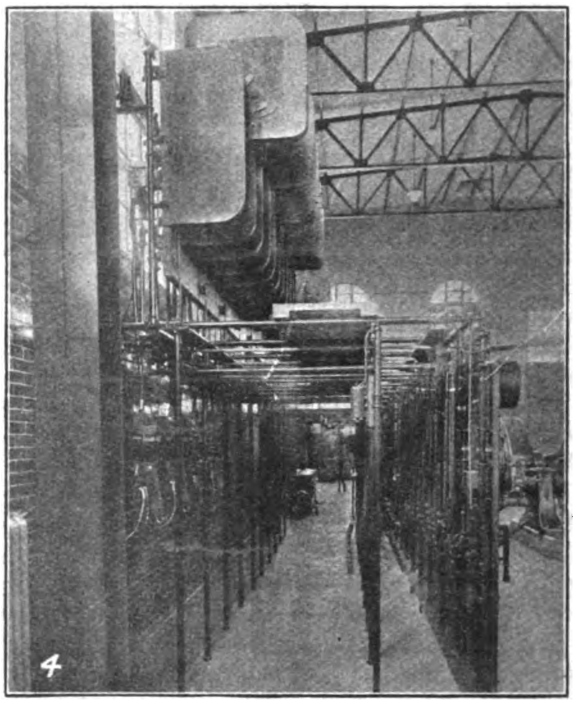
The Capital Traction Company section held its first meeting of the season on Oct. 11 with an attendance of ninety members and guests. The principal business was the election of officers for the ensuing year. Elon von Culin, superintendent of traffic, was elected president of the section, and William H. McCarty, master mechanic, was elected vice-president. J. E. Heberle and A. Wilkinson were re-elected as secretary and treasurer respectively. A. H. Sparshott was elected a director.

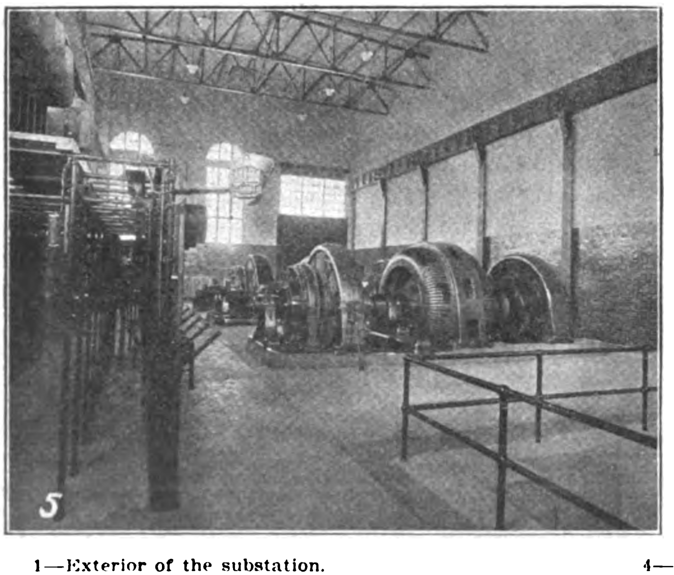
Major R. C. Marshall, U. S. Quartermaster's Department, gave a very interesting talk, illustrated with slides, on the construction of cantonments for the National Army. Major Marshall has been closely connected with this work and was able to give a comprehensive review of the problems involved. To point out the magnitude of the achievement, he presented figures to show that the total expenditures in each of the months of August and September were greater than the amount expended in building the Panama Canal during any one year of its construction. Corcoran Thom made an appeal to employees of the Capital Traction Company to buy bonds of the second Liberty Loan. J. H. Hanna, vice-president of the company, said that steps would be taken leading to the formation of a Capital Traction Company Liberty Bond Club.

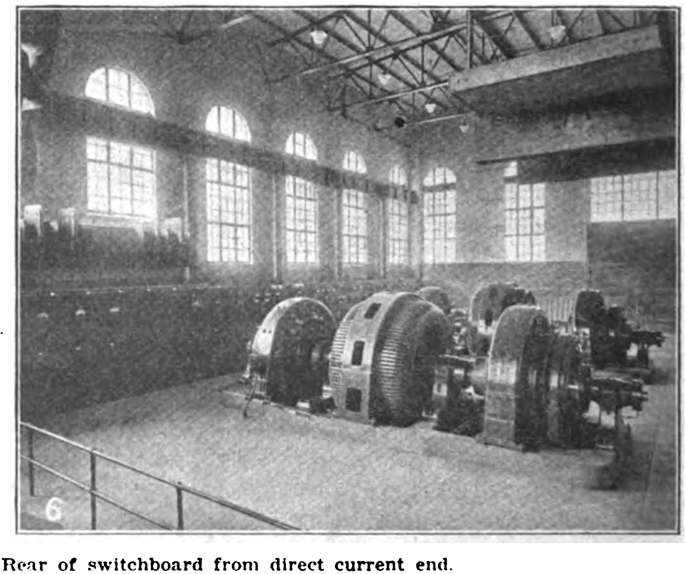












1—Exterior of the substation.
2—Locomotive with train of dirt cars.
3 Rear of switchboard from alternating current end.
4—Rear of switchboard from direct current end.
5—General view of substation interior.
6—View of substation interior selected to show face of switchboard.

RECENT VIEWS OF MOUNT ROYAL (MONTREAL) TUNNEL ELECTRIFICATION

EQUIPMENT and MAINTENANCE

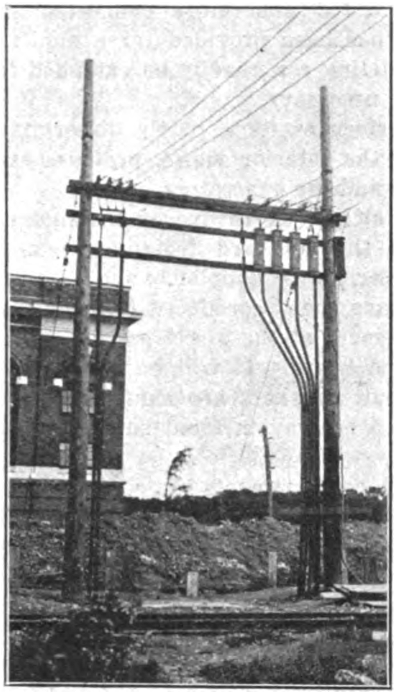
HAVE YOU A GOOD WAY OF DOING A JOB?
—Pass It Along

These Articles Have Been Selected to Provoke Thought and Stimulate Discussion. All of the Technical Departments Are Represented

Progress on the Mount Royal (Montreal) Terminal Electrification

All but Short Stretch of Track Now Electrified and in Use in Construction—Passenger Service Into Montreal Promised for Next Summer

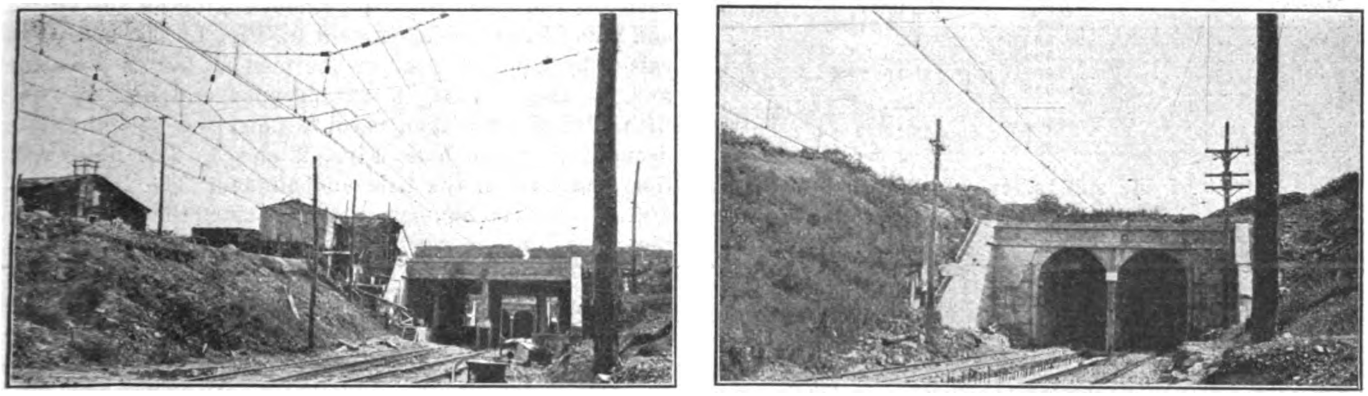
Since May, 1917, the new Mount Royal tunnel of the Canadian Northern Railway at Montreal, Quebec, has been operated electrically in construction work, and at the present rate of progress passenger service into the heart of the city will be inaugurated next June. The substation at the north portal of the tunnel is entirely finished and the operators have completed a period of training under practical conditions. At the same time the locomotive crews have been broken in through handling the locomotives at the head of dirt trains so that when commercial operation begins there should be no hitch in handling traffic smoothly from the start. The accompanying pictures show the appearance of the completed portions of the electrification. The incompleted portion is a 2000-ft. cut from the southern portal of the tunnel to the passenger station, the dirt from which is being hauled by the electric locomotives through the tunnel to a fill at Cartierville, 10 miles from the terminal. This fill is at the end of the electrified section, and is on the site of what will be an important freight yard. It is possible that the city cut may be roofed over later, but it will probably remain open for some years.


TRANSMISSION LINE TERMINAL STRUCTURE AT MOUNT ROYAL TUNNEL SUBSTATION

In articles published in the issues of the ELECTRIC RAILWAY JOURNAL for March 4, 1914, page 572, and Aug. 15, 1914, page 295, W. C. Lancaster, now electrical engineer of the Montreal Tunnel & Terminal Company, explained the circumstances surrounding this project. He outlined the results of studies made to determine the best system of electrification for this terminal, leading up to the decision to use direct current at 2400 volts with an overhead contact system. He also gave details of the rolling stock. During the three years that have elapsed the work has gone forward as rapidly as war conditions would permit, the tunnel having been completed in March, 1917. Five passenger locomotives, quite similar to those in use on the Butte, Anaconda & Pacific Railway, have been delivered and the overhead construction is complete excepting at the Montreal end, and this will be placed next March.

It is planned to give details of the design of the overhead in a later article. The illustrations, however, indicate its general appearance.

There is but one substation in the electrified zone, located nearly centrally in it at the portal of the 3 1/3-mile tunnel under Mount Royal. This is housed in a


TYPICAL OVERHEAD CONSTRUCTION NEAR WESTERN PORTAL OF MOUNT ROYAL TUNNEL, CANADIAN NORTHERN RAILWAY

beautiful brick building designed to harmonize with the residence neighborhood of which it will one day form a part. The building is divided longitudinally into two main sections, the motor-generator room and a group of smaller rooms and galleries for the alternating current busbars, switches, transformers, etc., used in connection with the motor-generator sets, the signals and the distribution of lighting and alternating-current power over the system.

Energy is purchased from the Montreal Light, Heat & Power Company at 11,000 volts and 60 cycles, three phase. Two synchronous motor-generator sets, rated at 1500 kw. each, are used to transform the power to the 2400-volt, direct-current form. Each set contains two 1200-volt, separately-excited generators connected in series. A foundation has been provided for a similar future set, and the building can readily be extended if further enlargement is necessary.

A group of motor-driven exciters, partly discernible on the background of the interior views, provides excitation for the motors and the generators.

The switchboard stretches lengthwise of the motor-generator room, with the standard instruments and switches. It is characterized by simplicity and accessibility. Photographs have been reproduced to show the details of rear arrangement at the direct and alternating-current ends of the board. It will be noted that the direct-current circuit breakers are mounted in an elevated position with a runway in front supported on the pipe panel braces.

In the isolated switch compartments the equipment is placed in the usual brick chambers, the single and double-throw disconnects being placed overhead, however, where they can be conveniently operated by means of hooks.

Substation Operating Results

While the duty on the electrification so far has not been very heavy, the records obtained give some measure of the ultimate steady operating costs. Six operators working in three shifts are required. Four locomotives are used regularly in the excavation work, with an additional spare, and one more locomotive is on order. The dirt trains now being hauled comprise twelve cars each, weighing 31 tons fully loaded. The locomotive weighs 85 tons.

The first four months of 1917 were occupied in getting the equipment into running order. The cost of operating the substation since that period has been as follows:

Month	Labor	Supplies	Repairs
May	$587	$50	...
June	583	28	...
July	592	20	...
August	607	16	...
September	586	26	$6.00
Average	$591	$28	$1.20

The output of the substation in kilowatt-hours during the past five months has been as follows: May, 144,580; June, 188,620; July, 199,250; August, 188,370; September, 172,000.

Locomotive Mileages and Costs

The locomotives made a mileage of 834 between January and April in preliminary operation. During the same period a total of $1,044 was spent upon them, $322 for labor and $722 for materials. Motors which were moist from standing out in cold weather had to be dried out, frozen air brakes required repair, fire extinguishers, safety-first signs, coolers, etc., had to be added. Since April the repair and inspection costs have been as carried in the accompanying table:

REPAIR AND INSPECTION COSTS—MT. ROYAL TUNNEL LOCOMOTIVES

	Air Brakes		Mechanical Parts		Electrical Parts		Supplies and Inspection	
Month	Labor	Material	Labor	Material	Labor	Material	Labor	Material
May	6.40	....	47.89	2.07	28.88	....	79.43	9.79
June	49.86	....	95.71	191.79	21.81	....	145.56	48.71
July	16.60	6.57	70.67	112.53	32.15	19.46	193.57	68.53
August	13.15	49.38	64.23	33.92	111.25	14.36	190.72	145.04
September	12.92	1.25	23.30	0.60	43.84	26.23	224.33	85.83

Setting Wood Poles for Seventy Cents Each

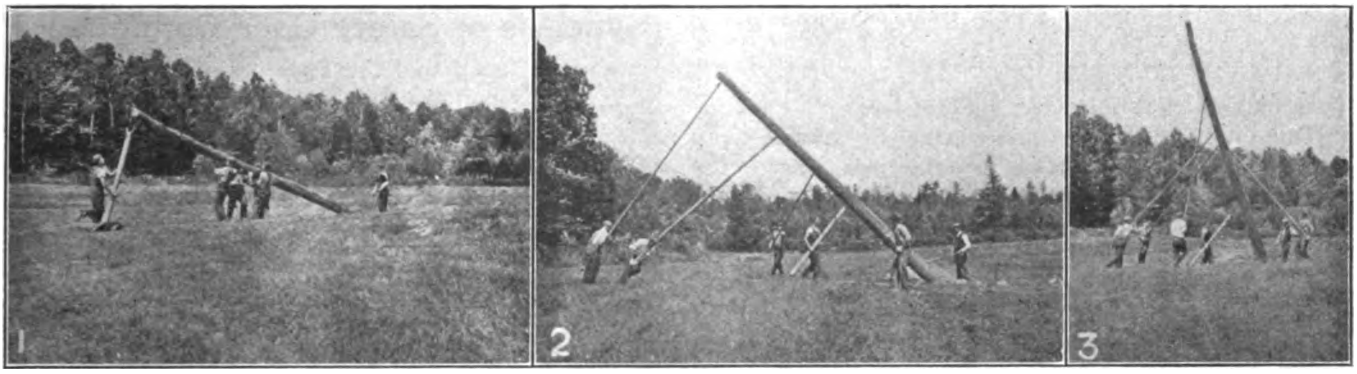
An Analysis of the Cost of Each Step in the Process Obtained by Time Studies Made on a Northern New England Job

BY ALLAN C. HASKELL
Principal Assistant Engineer Construction Service Company, New York City.

Observations have been made by the writer on the time required to set the poles on a 25-mile line in Northern New England. The time studies are on the setting of the poles only, the land having been previously cleared where necessary, the holes dug and the poles hauled and placed one beside each hole. The resulting costs are useful in that they can be used as a basis of comparison with other jobs, no matter for what purpose poles are being set or in what locality, so long as the conditions approximate these which I shall describe. An extra cost can be added for cartage and distributing depending upon the local methods and lengths of haul under consideration.

The poles were of cedar and 30 ft. long. The crew engaged in the work consisted of a foreman and six other men. All were well trained, young and industrious, the majority being native-born. Five of the six men were employed in the actual setting of the poles and the sixth did miscellaneous work, such as going ahead to bail water from the next hole, carrying forward certain of the tools, banking the poles after they were set, Fig. 6, and clearing up the cut-off tops, shavings, etc., around them.

The men first arranged the pole in such a position that when raised it would slide into the hole properly. The foreman then held an iron bar tightly on the side of the hole farthest from the pole, and as the latter was raised it slid along the bar without raking off the edges and side of the hole as it went in, Fig. 1. The pole was raised by hand by four of the men as far as possible and, as they raised, it was propped and held by the fifth. Pikes were then used to hoist the pole until it dropped into the hole, Figs. 2 and 3. The pole was then centered in the hole and aligned. The latter operation was accomplished by bracing the pole with the pikes, four men standing around the pole, 90 deg. apart as shown in Fig. 4. The foreman would first go about 30 or 40 ft. in a line at right angles to the pole line and by signalling with either hand indicate which way the pole should be adjusted to bring it into proper alignment. He would then take a position directly over the next hole beyond and get the proper alignment in that direction. The pikes were solidly braced so that



FIGS. 1, 2 AND 3—THREE STAGES IN RAISING A POLE WITH FIVE LABORERS AND A FOREMAN

once the pole had been properly aligned it would be difficult to jar it out of place.

In the process of backfilling four men used tampers and one shoveled, Fig. 5. The tampers were made up of rectangular pieces of solid iron of such size that they would easily fit in between the pole and the sides of the hole. While backfilling was going on, either the foreman or the sixth man or both would go ahead, bail the water from the next hole and carry forward such tools as were not being used. Then after the gang had moved on to the next hole this sixth man would go back and bank and clean up around the pole just set.

Abstracts from the time-study notes taken in the field and showing the method of gathering the data, follow:

9:10:00—Arrive at pole.
11:00—Pole in position.
13:40—Pole in hole.
18:15—Pole faced and aligned.
34:30—Pole backfilled.
35:10—Leave for next pole.

9:35:50—Arrive next pole (130 ft.).
36:35—Pole in position.
38:00—Pole in hole.
44:00—Pole faced and aligned.
58:30—Pole backfilled.
59:30—Leave pole.

10:00:20—Arrive next pole (130 ft.)
00:50—Pole in position.
01:35—Pole in hole.
05:25—Pole faced and aligned.
15:25—Pole backfilled.
06:30—Foreman goes to next hole and bails it.
10:20—Foreman finishes bailing.
11:40—Foreman goes back to last hole and gets scoop (280 ft. round trip).
16:15—Leave pole.

TABLE GIVING RESULTS OF TIME STUDIES IN POLE SETTING

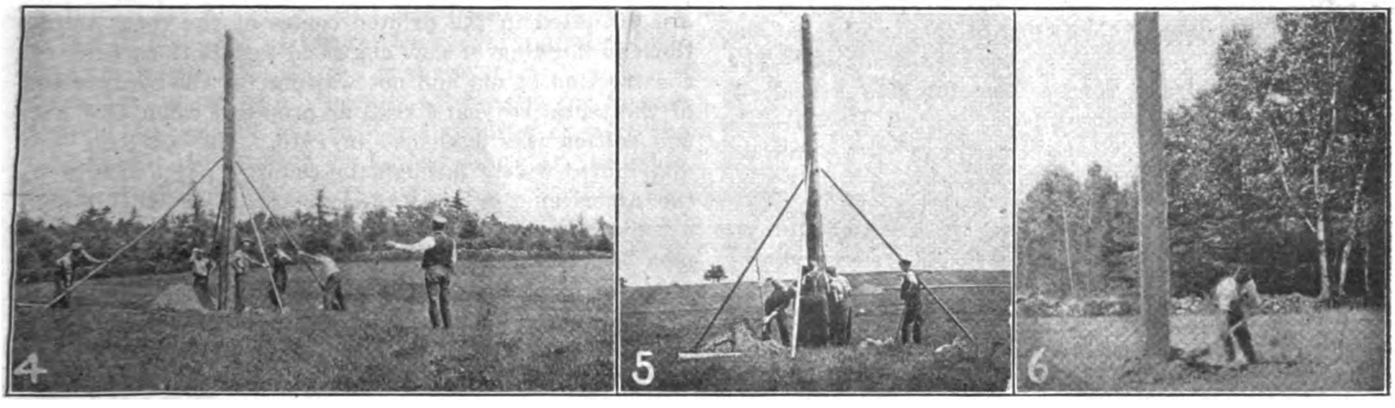
Getting Pole Into Position	Raising Pole Into Hole	Facing and Aligning Pole	Back-filling and Tamping	Collecting Tools	TRAVELING TO NEXT HOLE		Miscellaneous Delays
					Time	Dist.	
1:20	2:05	3:00	16:10	....	....	......	
0:43	1:22	2:25	20:25	0:35	0:20	65 ft.	
0:45	1:40	4:50	18:40	0:10	0:40	130 ft.	4:05 bailing
1:00	2:40	4:35	16:15	0:40	0:40	130 ft.	
0:45	1:25	6:00	14:30	1:00	0:50	130 ft.	
0:30	0:45	3:50	10:00	0:50	0:30	130 ft.	
0:15	0:35	3:25	12:45	0:30	0:45	130 ft.	
0:45	1:00	3:50	7:25	0:20	0:30	130 ft.	
0:45	1:00	3:50	8:10	0:25	0:30	130 ft.	3:10 bailing
0:45	1:00	3:50	7:25	0:33	0:40	130 ft.	
0:00	1:22	3:55	9:00	0:40	0:50	130 ft.	
0:30	0:30	4:00	16:55	0:20	0:40	130 ft.	
0:25	0:55	3:30	15:30	0:15	0:50	130 ft.	
0:55	0:55	2:30	9:10	0:20	0:30	130 ft.	
0:10	0:48	....	......	1:00	0:33	130 ft.	19:30*
0:17	0:55	3:50	9:40	0:25	0:35	130 ft.	
0:35	0:57	3:28	6:40	0:15	1:00	260 ft.	
0:15	0:30	4:30	15:00	0:20	2:15	390 ft.	
1:35	1:03	2:37	14:50	0:10	0:40	130 ft.	
0:25	0:55	3:40	12:35	0:10	0:35	130 ft.	5:00 ground wire
0:55	0:53	2:40	14:20	0:20	0:55	130 ft.	
0:10	0:50	4:35	11:55	0:10	0:40	130 ft.	1:30 bailing
0:30	0:25	4:10	11:25	0:20	0:45	130 ft.	
1:10	1:45	4:10	14:25	0:15	0:35	130 ft.	
0:15	0:35	4:05	8:55	0:20	0:40	130 ft.	
Total: 15:40	26:52	91:15	302:05	10:23	17:28	3445 ft.	32:75
Average†: 0.65	1.12	3.80	12.59	0.43	0.73	......	1.39

*Delay caused by having hole dug larger to get proper alignment.
†Average time is in minutes.

The complete field notes reduce to the table at the top of the next column, which shows the time in minutes and seconds required for each operation.

On this work the laborers were paid on the basis of \$2 for an eight-hour day and the foreman \$3.50. Therefore the cost of a man-minute = $\frac{\$2.00}{480}$ = 0.42 cent, and the cost of the laborers for each operation was as follows:

Getting pole ready	0.65 × 6 × 0.42 =	1.6 cents
Raising pole	1.12 × 6 × 0.42 =	2.8 cents
Aligning pole	3.8 × 6 × 0.42 =	9.6 cents
Backfilling and tamping	12.59 × 6 × 0.42 =	31.7 cents
Picking up tools, etc.	0.43 × 6 × 0.42 =	1.1 cents
Traveling	0.73 × 6 × 0.42 =	1.8 cents
Delays	1.39 × 6 × 0.42 =	3.5 cents
Total	20.71 × 6 × 0.42 =	52.1 cents



FIGS. 4, 5 AND 6—ALIGNING THE POLE, BACK-FILLING AND TAMPING IT AND BANKING AFTER IT IS BEING SET

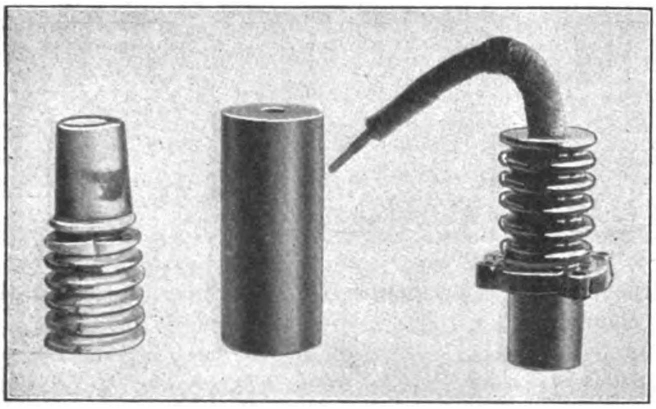
The cost of the foreman's time per minute was $\frac{\$3.50}{8 \times 60} = 0.73$ cent, or 20.71×0.73 cent $= 15.1$ cents per pole, making 67.2 cents per pole.

This total of 67.2 cents does not include any allowance for preparatory time, that is, for the time to get to the job, to get ready to begin work, etc. This, of course, is not the same on any two jobs. In some cases the men travel to and from work on their own time, sometimes on the employer's time, or to the job on their own and from it on the employer's, etc. And the location and arrangement of tools on the job make a difference in the length of time in getting ready to begin actual work. Whatever these conditions may be, it must not be forgotten to add an allowance for them.

On this particular work it was observed that week in and week out a very fair average for preparatory time was one-half hour per man per day, which would amount to 180 man-minutes and 30 foreman-minutes, and add a cost per pole of 3.3 cents, making a total 70.5 cents per pole.

Porcelain Insulators Fail on Spokane Locomotives

The porcelain insulators in the circuit breakers on the 6000-600-volt a.c. single-phase locomotives and the interurban motor cars of the Spokane & Inland Empire Railroad have caused considerable trouble by failure. This has been eliminated by the substitution of Bakelite Micarta for the porcelain. The central object of the accompanying illustration is the cylinder of Bakelite, 3½ in. x 8 in., just as it is received from the General Bakelite Company. In the railway company's shops it is turned in a lathe to the finished shape shown at the right, and a 1½-in. hole is bored through it. The leads are then drawn through and the hole is filled up with a mixture of litharge and glycerine. On the left-hand side of the illustration is one of the porcelain insulators that failed.



OLD AND IMPROVED TYPES OF INSULATORS FOR A. C. CIRCUIT BREAKERS ON LOCOMOTIVES

The welding jobs done in the repair of the engine cylinders of the German ships left in American ports at the outbreak of the war are additional proofs that cast iron can be electrically welded successfully. The work has been practically completed and the cylinders have withstood tests which indicate that the welded portions will certainly withstand the maximum service to which they will be subjected at sea.

Synopsis of Safety Code Commended

Attention Called to Fact That "Signal Lines" Refer to Telephone and Telegraph Lines and Not to Block Signal Lines

BY C. L. CADLE

Electrical Engineer New York State Railways, Rochester, N. Y., and Chairman A. E. R. E. A. Committee to Consider U. S. Bureau of Standards' Safety Code.

A great deal has been printed in regard to the National Electrical Safety Code and the work of codifying the information obtained from numerous experiments and collections which has extended over a period of approximately four years. During this time thousands of dollars have been spent in collecting information from all available sources, and the result has been one of the most valuable documents ever produced from the standpoint of construction and operation in connection with the safety of the electrical industry.

It has seemed to some that this was an inopportune time to lay much stress upon such work, but from the standpoint of conservation the safety code is of enormous value to the country, particularly so when the country needs the best thought and energy of its ablest men. The synopsis, appearing in recent issues of the ELECTRIC RAILWAY JOURNAL, prepared by Dr. E. B. Rosa and W. J. Canada of the United States Bureau of Standards, gives an excellent outline in brief of the principal items touched upon in the code. The compilation of this summary for the benefit of the electric railway industry is particularly gratifying as it is so concise that the busy railway executive will have no trouble in digesting the principal items within a reasonable length of time. The writers deserve the most heartfelt congratulations, which we as railroad men extend to them.

For the convenience of those who are not familiar with the several headings, it will be well to call attention to the definition of the term "signal lines" as used in the code, which should be differentiated from the common use of this term in the electric railway field. Signal lines as used in the code refer primarily to telephone, telegraph lines and other similar lines used for communication. Block signal lines come under the heading of electrical supply lines and are treated as such throughout the entire code. Telephone and telegraph lines, however, may become electrical supply lines under certain conditions, these conditions being principally when they are carried on the same poles, or parallel and adjacent to electrical supply lines.

A great many railway, lighting and telephone companies have taken advantage of the valuable data which are exhibited in the printed copies of the code, using them in building of new electrical installations and reconstruction of old and not waiting for the completion of the tentative year's trial as proposed when the second edition was published in 1916. This edition was distributed widely through the country, particularly by the American Electric Railway Association which sent a copy to each member company. It is hoped that all men of the railway fraternity directly or indirectly interested in the progress of the electric railway art will avail themselves of the information contained therein. The second edition of the code is now on sale at Washington at the Bureau of Documents and should be used by every engineer of public service companies as a textbook as well as a guide to more safe operation.

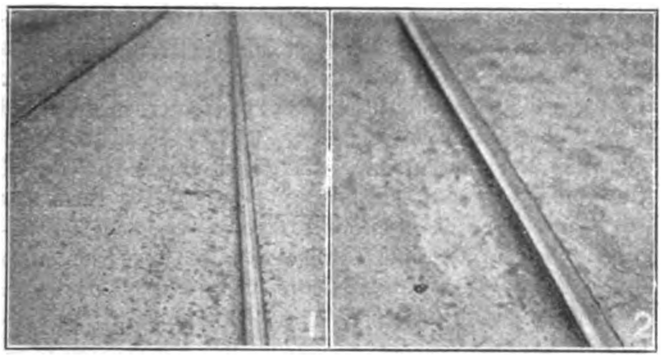


FIG. 1 AND FIG. 2—TWO SECTIONS OF RAIL ON THE SAME STREET, FIG. 1 HAVING INCLINE TIE PLATE CONSTRUCTION AND FIG. 2 WITHOUT THESE PLATES

Tilting Track Rails Reduces Car Nosing

Incline Tie Plates Used on Wood Tie Construction—Tilting Effect Can Be Obtained Also with Bent Steel Ties

BY P. NEY WILSON
Roadmaster Connecticut Company, New Haven, Conn.

On some of its reconstruction work the maintenance-of-way department of the Connecticut Company is using an incline tie plate which has the effect of tilting the rails to conform to the coning of the wheels operating over them. The inclination is one in twenty, bringing the top of the rail normal to the load. It is believed that flange wear will be reduced, thrust will be minimized and internal stresses in the rails will be reduced, thus producing a more favorable effect on the bending movement in the axles and reducing the tendency to overturn the rails.

A 5-in. 80-lb. A. S. C. E. T-rail laid with these tie plates is shown in Fig. 1. This rail has been in service one year under a schedule of seven and one-half minute headway. It can be seen from the illustration that the car wheels tread directly over the web and in the center of the head of the rail. Fig. 2 shows a rail of the same section and installed on the same street but without the incline tie plates. This clearly indicates that the wheels tread on the inside edge of the head of the rail thus abnormally loading it.

It might seem that the coning of wheels due to the wedge action created would tend to minimize nosing, and that in using the tie plate mentioned, nosing might be the cause of some trouble. However, from a practical standpoint the cars operate over the track under which the plates are placed with less tendency to nose than they do over the track without the plates. This is, no doubt, due to the fact that the wheels tread over the center of the head of the rail on a uniform wheel diameter whereas, with the rail in the usual position in relation to the car wheel there is a tendency for the car to nose on account of one wheel running close to the gage line of the rail on its largest diameter, the other wheel on the same axle running on its smallest diameter. This may readily happen with the usual gage-play between wheel and rail, and an oscillation is set up which causes side wear on the rail head, flange wear, and nosing.

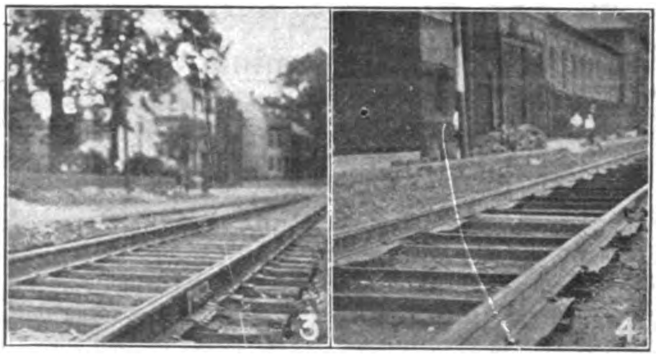


FIG. 3 AND FIG. 4—RAILS TILTED WITH INCLINE TIE PLATES AND BY MEANS OF STEEL TIES BENT TO GIVE A 1:20 SLOPE TO THE RAIL

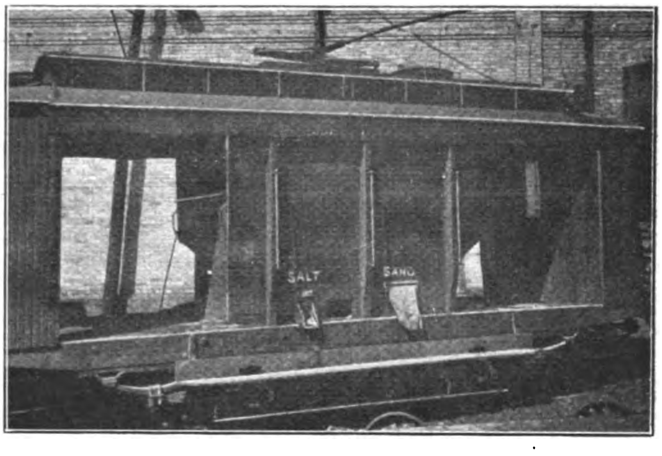
A tilted track construction consisting of 7-in., 95-lb. T-rail with "Lundie" incline tie-plates and wood ties is shown in Fig. 3. The worn line in the center of the rail head indicates that the wheels tread directly in the center. Fig. 4 shows a section of tilted track construction with 6-in., 100-lb. T-rail laid on steel ties. In order to obtain the tilting effect with the steel-tie construction it is necessary to have the channel ties bent at a point about 15 in. from the ends. This bending is done by a press which is especially adapted for bending both ends of a pair of channels at a time. The incline thus obtained is also one in twenty. A description of the use of steel ties for tilted track construction in Cleveland, Ohio, was given in the ELECTRIC RAILWAY JOURNAL for Nov. 11, 1916, page 1029.

Sand and Salt Car Made from Old Summer Car

BY HENRY MEYER
Master Mechanic Beaver Valley Traction Company, New Brighton, Pa.

The Beaver Valley Traction Company has a large number of sand and salt boxes located at switch points, curves and other important points along its lines. For supplying these boxes the sand and salt car shown in the illustration has been constructed. An old single-truck summer car was used for this purpose, and bins for the sand and salt were constructed between the center three side posts.

To supply the storage boxes along the route the chutes at the side of the car are used. It is possible also to apply sand or salt from the car directly to the rail. This is done in case of sleet storms and other emergencies.



SAND AND SALT CAR OF BEAVER VALLEY TRACTION COMPANY

Two Men for 1125 Recorders and Thirty-three Terminal Clocks

The Total Cost for Labor and Material, Including Operating Supplies, Is Less than 1 Cent per Diem per Instrument

In the spring of 1914 the Third Avenue Railway system decided to adopt the Rico coasting recorder throughout after satisfactory experiences with 100 machines on its most congested line, the Broadway and Forty-second Street route. This brought the total number of coasting recorders up to 1125, in addition to which thirty-three Rico terminal clocks were installed at the different division points.

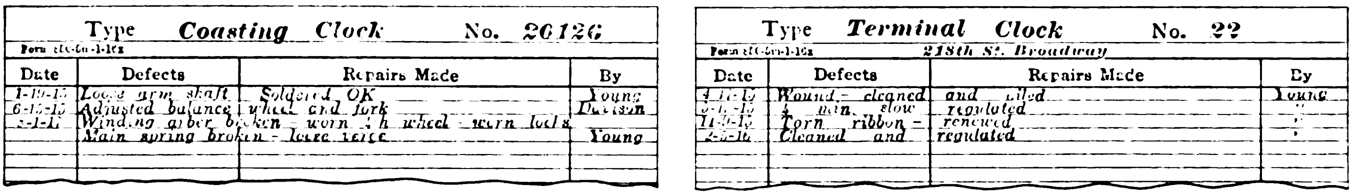
The cost of placing the coasting recorder on the car, including the relay which stays on the car when the recorder is transferred, was $8.70, of which $3 was for labor and the remainder for wire, conduit, bolts, grooves, pipes and fittings. In accordance with its usual practice, the manufacturer of the coasting recorder instructed the men who were assigned to the upkeep of the coasting recorders and terminal clocks. In addition, instructions were issued to the carhouse foremen that the work by the carhouse forces would include the renewal of the tape, winding the clock movements and taking care of the relays and brake contact boxes, but that all repairs would be done at the shop.

The simplicity of the coasting recorder is indicated by the fact that the railway was able to assign to this latter work two former wiremen, one of whom has since been raised to $2.70 and the other to $3 a day, making the total labor expense for 1125 coasting recorders and thirty-three terminal clocks only $5.70 or about ½ cent per diem per instrument. It is customary for one of these men to spend all of his time on coasting recorders while the other devotes three days a week to the terminal clocks and general inspection. These men also have time for other jobs which their experience with small tools enables them to handle better than the ordinary shopman.

From the time that the instruments were installed a separate record card has been kept of each unit, substantially like the coasting recorder and terminal clock records reproduced.

No accounting charge is made to maintenance of the cost of the monthly winding of the clock movements and the quarterly renewal of the recorder tape, as this is a very small item which is absorbed into regular carhouse labor. The same holds true for the labor required in transferring a coasting recorder from a summer to a winter car or vice versa. Inasmuch as the relays are not removed, the transfer of a recorder simply means the removal of four bolts and the disconnection of two wires. This takes only twenty minutes twice a year and labor of less skill is required than if the relays themselves were transferred. Reports are submitted daily to the management of all equipment troubles, and to help in their analysis the mechanical department rearranges the figures as shown in the tabulation for Sept. 6, 1917. Eventually the totals for every month are transferred to the standard full-year form, supplied by the Railway Improvement Company. Analyses of these reports show the rarity of any troubles except those caused by faulty use of the coasting recorder by the motormen. As a matter of fact, the burning out of some magnets due to defective relays constitutes the only strictly electro-mechanical trouble worth mention.

On any large railway system there are always a certain number of men who are new, awkward or careless. This accounts for the fact that "paper stuck" is invariably the largest item on the list, although this trouble is more annoying than costly. A recent improvement in the paper chute has cut this item in half. Next in order of frequency is the blown fuse, which, in a sense, is the safety valve for the recorder magnet when there is any defect in the relay or wiring or when the controller is improperly reversed. When the relays were installed originally they required a separate hand-brake contact box to complete the recorder circuit only when the brakes were fully released. On account of the incorrect design and location of this box, trouble was experienced when the brakes did not release fully and in the winter when the contact box would break because of becoming loaded with mud and ice. This trouble was practically eliminated when the contact box



Type *Coasting Clock* No. *20126*

Form 31C-6m-1-16a

Date	Defects	Repairs Made	By
1-19-15	Loose arm shaft	Soldered OK	Young
6-15-15	Adjusted balance	wheel and fork	Davison
3-1-16	Winding arbor broken - worn 4th wheel - worn locks		
	Main spring broken - loose verge		Young

Type *Terminal Clock* No. *22*

Form 31C-5m-1-16a *218th St. Broadway*

Date	Defects	Repairs Made	By
4-16-15	Wound - cleaned	and oiled	Young
5-1-15	½ min. slow	regulated	"
11-9-15	Torn ribbon -	renewed	"
2-8-16	Cleaned and	regulated	"

UPPER PARTS OF CARDS USED TO RECORD REPAIRS TO COASTING RECORDER AND TERMINAL CLOCK

MECHANICAL DEPARTMENT

REPORT OF DEFECTIVE COASTING CLOCKS AS REPORTED BY THE TRANSPORTATION DEPARTMENT FOR SEPT. 6, 1917

	W. F.	K. B.	Yonkers	Eastchester	Harlem	Ams. Ave.	Grand St.	54th St.	Total
Paper stuck in chute	3	1	..	1	1	1	3	2	12
Fuse blown	..	..	1	1	..	4	..	..	6
Long brakes	..	1	..	..	..	..	..	..	1
Defect works	1	1	..	..	..	1	..	..	3
Relay stuck	..	1	..	..	..	..	..	..	1
Key way stuck	..	1	..	..	..	..	..	..	1
Brakes not releasing	..	..	1	..	..	..	..	..	1
Found O. K.	..	..	1	..	1	..	..	..	2
Contact stick broken	..	..	..	..	..	..	1	..	1
Wires burnt in relay	1	..	..	..	..	..	..	..	1
Totals	5	5	3	2	2	6	4	2	29

STATEMENT TO ASSISTANT GENERAL MANAGER OF COASTING CLOCK TROUBLE FOR AUG. 17, 1916

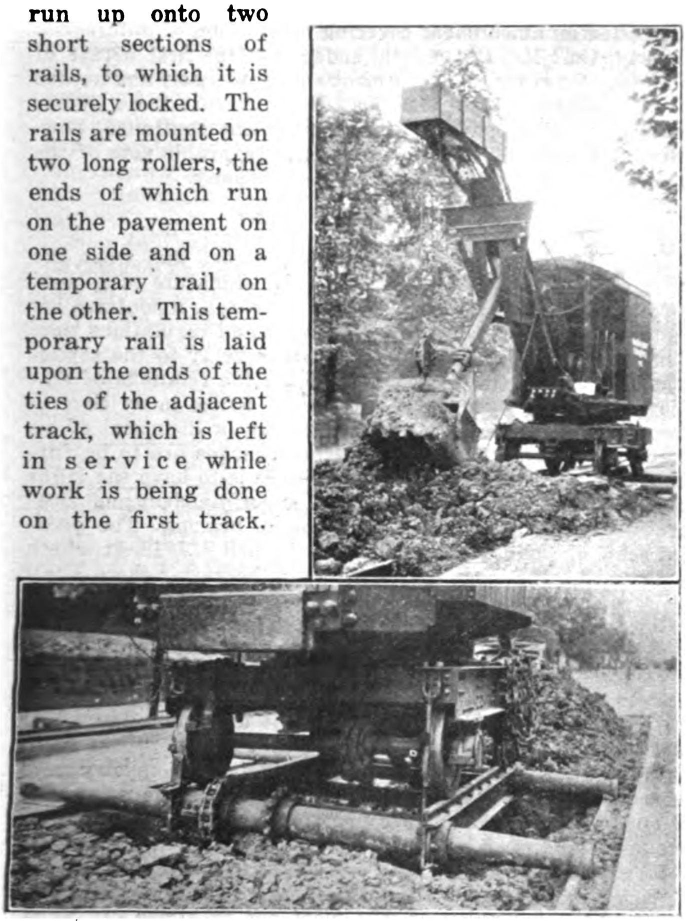
Third Avenue Division	
Out of order 951	Two amp. fuse blown
Broadway and Queensboro Bridge Division	
Out of order 78	Tape stuck in chute
Out of order 80	Balance wheel broken
Grand Street Division	
Out of order 799	Paper caught in chute
Fifty-ninth Street Division	
Out of order 824, 826	Tape stuck in chute
West Farms Division	
No cars reported	
Kingsbridge Division	
Out of order 592, 564	Stuck tape
Out of order 435	Loose wheel
Out of order 900	Relay out of adjustment
Yonkers Division	
Out of order 111, 113	Relay out of adjustment
Out of order 185, 116	Blown fuse
Eastchester Division	
No cars reported	

was combined with the relay. The manufacturer has since adopted this feature wherever applicable; in other cases an improved type of hand-brake contact box is used.

On the whole, the successful maintenance of coasting recorders is found to be simply a matter of the same periodical inspection that any other railway device requires and of reminding the motormen occasionally that they must handle all equipment with reasonable care. The amount of material required for replacement of worn, broken or defective parts plus all operating supplies like tape, and inclusive of the terminal clocks, totaled only $1,116 in 1916, less than $1 per recorder per annum or less than 1/3 cent a day. Thus the total labor and material cost of the coasting recorder is within 1 cent per diem per instrument.

Power Shovel Equipped to Move Along as It Digs

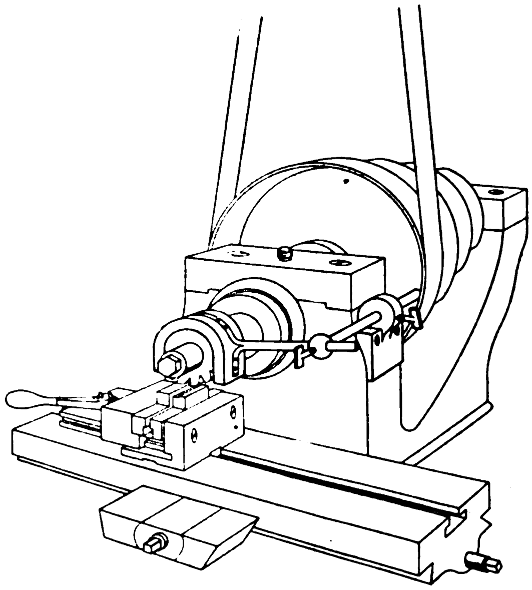
Mounting its steam shovel on electrically chain-driven rollers is the scheme used by the Pittsburgh (Pa.) Railways to do away with moving-up delays in its power-shovel track excavation. The illustrations show the shovel and its method of mounting. It is run up onto two short sections of rails, to which it is securely locked. The rails are mounted on two long rollers, the ends of which run on the pavement on one side and on a temporary rail on the other. This temporary rail is laid upon the ends of the ties of the adjacent track, which is left in service while work is being done on the first track. The rollers are turned by a chain drive so geared that the shovel moves ahead as fast as the digging progresses. A capable operator will keep cleaned up as he goes, and he always has a full bite ahead without having to stop to move up. This equipment was developed under the direction of J. M. Larned, engineer maintenance of way.



PITTSBURGH RAILWAYS' TRACK SHOVEL MOUNTED TO AUTOMATICALLY MOVE UP AS THE WORK PROGRESSES—ENLARGED VIEW SHOWING METHOD OF MOUNTING ON CHAIN-DRIVEN ROLLERS

Guard for Milling Cutters Recommended

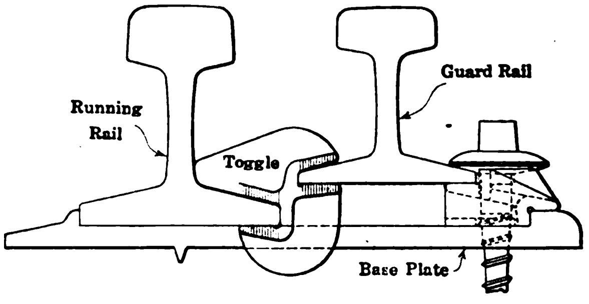
For guarding milling machine cutters the National Safety Council in a recently issued bulletin recommends a device such as shown in the drawing. This is of simple and inexpensive construction and consists of a tilting hood supported from the frame of the machine by two rods which provide for convenient adjustment.



CUTTER GUARD FOR MILLING MACHINE

Guard Rail Fastenings for Open Track Work

A guard rail fastening which can be used where tracks are not laid in paved streets is shown in the illustration. The design is very flexible in application since it permits bringing the rail heads close together without the necessity of shearing off the flange of the guard rail. It also allows the use of a guard rail whose section height is much less than that of the running rail.



GUARD RAIL FASTENING FOR TRACKS NOT LAID IN PAVEMENT

The toggle pieces shown between the rail bases are placed between ties and serve both to support the guard rail and to keep it from tipping over. The base of the guard rail on the other side is supported on a cast-iron shim and is held in position by a screw spike. This fastening has been tried out with good results on steam railroad work, and it is also suitable for open-track construction on electric lines. It was developed by Thomas Maney, Monrovia, Cal.

News of Electric Railways

Traffic and Transportation
Financial and Corporate
Personal Mention
Construction News

Engineers Present R. I. Report

Company Is Said to Need Increased Revenues and Reduced Expenses—Intimation Regarding Abolition of Jitneys

Sloan, Huddle, Feustel & Freeman, railway engineers, in their preliminary report upon the financial condition of the Rhode Island Company, Providence, R. I., presented to the special legislative investigating commission, arrive at the conclusion that the company's revenue must be increased and the expenses, such as franchise taxes, be greatly reduced, before the railway problem in Rhode Island can be straightened out. Although specific recommendations are not made, the engineers intimate that jitneys should be abolished, fares should be increased in some way, and that the State and local tax assessments on the company, now aggregating $534,623 a year, be greatly lessened by the necessary legislation.

The present report of the engineers is distinctly a financial one. It shows that for 1917 the total operating revenue was $5,913,074 and operating expenses $4,030,257. Taxes amounted to $534,623 and rentals to $1,165,586. Interest charges were $267,291 and other charges $11,056. The total charges amounted to $6,008,813, and there was a deficit of $95,739.

Since 1903 the company has paid dividends in only five years, 1909 to 1913, inclusive. The capital stock in 1903 was only $2,000,000, and in 1917 it was $9,685,500, having reached that total in 1910. The return on capital stock in 1917 was 0.23 per cent. The reproduction value of property owned and leased by the company is $12,700,662, the figure being that used in the report of Ford, Bacon & Davis, previously filed with the commission by the company. These figures had been accepted by the other engineers for the time being.

Progress Made on St. Louis Drafts

The public utilities committee of the Board of Aldermen of St. Louis, Mo., drafted a recommendation on Oct. 8 that the mill tax now imposed on the United Railways be permitted to stand, and that an additional tax of 1 per cent of the company's gross receipts be exacted in lieu of the franchise and occupation tax. It is estimated that this will amount to a reduction of about $75,000 a year in the total taxes paid by the company.

No specific extensions of line will be set forth in the reconstructed ordinance for the settlement of the differences between the city and the company, but a carefully worded clause will require a board of control to recommend all extensions needed for the betterment of service. Another clause will leave the way open for residents of outlying districts or promoters of subdivisions to pay the cost of constructing extensions to such sections and require the United Railways to take over and operate the lines. The committee has decided to reject the proposed extension of the company's franchises for fifty years and the present franchise will be validated until 1948—the term for which the company now asserts its franchises run. The partnership feature in the so-called Ordinance No. 1 will be eliminated, and the new ordinance to be recommended by the committee will be based on the so-called Ordinance No. 2, with amendments.

Unless unexpected objections develop to delay the plans of the committee, a final report recommending the passage of the new ordinance will probably be made to the Board of Aldermen by Nov. 15.

Chattanooga Strike Settled

Men Accept Terms Offered by the Company After Being Out Nearly Four Weeks—Provisions of the Settlement

The strike of the employees of the Chattanooga Railway & Light Company, Chattanooga, Tenn., was settled on Oct. 5 by the favorable vote of the men on terms offered by the company after days of negotiation. The strike lacked only a few hours of being in progress four full weeks.

The company made it plain on Oct. 1 that the last word had been said by it with respect to concessions. F. W. Hoover, vice-president of the company, returned to Chattanooga on Sept. 30. Commissioner T. C. Batterson communicated with Mr. Hoover at once and after a conference issued a statement to the public. Mr. Batterson said that he urged the company to agree to amending "its proposition of adjustment," submitted on the previous Wednesday. This contained eight articles, seven of which were agreed to. He suggested an amendment covering arbitration of differences. He said that Mr. Hoover contended that the first article of his proposition for an adjustment spoke for itself and needed no amendment. This was Mr. Hoover's last word before leaving town. Agitation for a settlement continued, however, and on Oct. 6 the end came in a favorable vote of the men on the settlement offered by the company.

TERMS OF SETTLEMENT

The first clause of the settlement provides that when the offer of settlement is evidenced by the signature of an employee thereto the instrument is to constitute a contract between him and the company. The rules and regulations then existing are to remain in force. Either party to the settlement is to have the right to terminate the relations of employer and employee upon two weeks' notice in writing to the other. In the case of the suspension or dismissal of an employee by his immediate superior, charges are to be furnished him in writing and the employee is to have the right of appeal to the company's general superintendent and vice-president, who are to give an impartial hearing. The present scale of wages will continue until April 7, 1918, at which time and on the same date each year thereafter there shall be a readjustment by a board composed of three bona-fide residents of Chattanooga, one of whom shall be appointed by the company, one by the employees and one by the two previously selected. The contract says that the obligations are reciprocal and the company agrees faithfully to perform its part with impartiality and without discrimination. The last section of Clause 9 of the settlement follows:

"This instrument has been signed by the company and when signed by an employee shall constitute between the company and him a contract for two years from the date of the last signature."

Mr. Hoover in a letter to O. B. Andrews, president of the Rotary Club, explained that the offer of the company was tendered to all employees who went out on strike on Sept. 7, but that the company reserved the right to reject some few who by reason of their conduct had made their future connections with the company inconsistent with good service. He said the men could return and execute the contract in the order of their seniority as shown by the records of the company.

In only one place in the contract is the word union used. That is where provision is made for arbitration if an employee dismissed from the service feels that such dismissal has been due to discrimination against him because of his affiliation or non-affiliation with a union.

In commenting on the settlement of the strike, the Chattanooga *Daily Times* of Oct. 6 said in part:

"At last the men and the company have reached an agreement for the settlement of their differences. We have no hesitation in saying that if the differences in the first place had been left to the conservative, level-headed, patriotic and intelligent men of the labor organizations in the city and not to noisy, radical and enterprising agitators, the trouble would have been composed long ago. In fact, there would have been no serious trouble and the city would have been spared the harmful experience through which it has passed and the consequent humiliation it has been made to suffer. The lesson is that the conservative, patriotic and sensible leaders of labor should be in the lead. Chattanooga will not again stand for the sort of agitators who have made this community hang its head in shame for the last four weeks."

Man Shortage in Cleveland

389 Men of the Cleveland Railway in the National Army—Service Curtailed Temporarily—President Stanley Discsusses Employment of Women

The Cleveland (Ohio) Railway has posted notices in its cars stating that 389 of its employees have joined the National Army and that as a consequence many runs have been discontinued. The company, however, is endeavoring to give the best possible service under the circumstances, and it asks patrons to bear any inconvenience with patience until improvement can be made.

On his return from the conference of the American Electric Railway Association in New York, J. J. Stanley, president of the Cleveland Railway and the newly-elected president of the association, in an interview with a local paper, stated that the company has not yet decided to employ women as conductresses or motorwomen, but said that the time might come, however, when this would be necessary.

In a political address before the Tippecanoe Club on Oct. 10, Fielder Sanders, Street Railway Commissioner, said that two things were necessary to preserve the so-called 3-cent fare. One was the construction of subways in the downtown district to eliminate delays, and the other was the education of employers not to dismiss all their employees at the same time during the evening rush hours. He said that the peak load must be reduced. Operating expenses were increased by the delay of cars in the congested district. The only way to eliminate this trouble was by building subways, and the only concrete plan for obtaining subways was now before the people for their decision.

Mr. Sanders said that Mayor Davis averted a strike of street railway employees in 1916 and that this alone should entitle him to re-election. He claimed for himself the credit of having retained the low fare under the most discouraging conditions.

More Rapid Transit Lines by 1918

It is the hope of the Public Service Commission for the First District of New York, based upon reports of engineers in charge of subway construction, that it will be possible to place the Lexington Avenue subway and the Seventh Avenue subway in operation before the end of the year and to extend the operation of the Broadway subway from Fourteenth Street north to Times Square, also before 1918. If it is possible to carry out this program, it will mean an increase from four to eight tracks of the subway facilities north of Forty-second Street and the trebling of facilities for most of the distance in Manhattan, south of Forty-second Street. The Lexington Avenue and the Seventh Avenue subways are for operation by the Interborough Rapid Transit Company, while the Broadway subway is operated by the New York Consolidated Railroad, a Brooklyn Rapid Transit subsidiary. Engineers of the commission report that there are only three or four locations where conditions are such as to give rise to fear of possible delay and disarrangement of the program as outlined, but they believe that these conditions can be overcome and that the operating program outlined above can be carried out.

Strike Cases Passed Upon

Public Safety Commission Considers Cases of Men Involved in Recent Minneapolis Strike

The Minnesota Public Safety Commission has reinstated forty-four of the fifty-seven trainmen of the Twin City Rapid Transit Company, Minneapolis, Minn., whose discharges led up to the recent strike in that city and St. Paul. The resolution adopted by the commission at the conclusion of its consideration of the cases of these men was as follows:

"Resolved, that in taking this action, which concludes the work of the commission in connection with the recent street railway strike, both sides to the controversy be earnestly admonished to refrain from any action that will tend to revive or perpetuate past differences."

The thirteen trainmen failing of reinstatement include a number who resigned voluntarily and others dismissed for cause.

The cases of the discharged men were heard individually. Each man involved was allowed to tell his story and state his claims for reinstatement. It developed that a number were discharged in advance of the strike and that others had records which gave ample cause for refusing them employment.

BAD ADVICE FROM OUTSIDERS RESPONSIBLE

In commenting editorially on the strike the Minneapolis *Journal* said:

"The strike has been brought to an end through the interposition of the State Public Safety Commission, which rightly declares that 'unionism and non-unionism should not, during the war, be involved,' and which narrows the whole controversy to the question of the reinstatement of various trainmen discharged before the strike was called. These cases are to be considered on their individual merits. This is a common-sense solution of a difficulty that was precipitated by the bad advice of outsiders, who had their own ends to serve."

Wage Arbitration in Portland

The employees of the Portland Railway & Power Company, Portland, Ore., on Oct. 10 after a series of conferences with Franklin T. Griffith, president of the company, agreed to leave their demands to an arbitration board of three members. The decision of the board will be accepted by both the union and the company and will be binding until next June, but the subject can be reopened on or after Jan. 1, 1918. If the decision of the arbitrators bears too heavily on the company, it is expected the latter will appeal to the Public Service Commission to hear again a request for an increase in fare or some other tangible form of relief. There is no ill feeling between the company and men. The one big issue is the demand of the men for a straight eight-hour day. Recognition of the union does not enter into the question. The daily wage increase of 20 cents over the present wage scale asked by the men has been conceded by Mr. Griffith, with this point of difference that the men asked the increase on a basis of an eight-hour day, while the proposal made by the company is on the basis of a ten-hour day as at present.

At a conference on Oct. 6 the platform men of the company rejected an offer by Mr. Griffith to give them in wage increases every cent the company could save by following suggestions of the Public Service Commission as to curtailment of service, elimination of the 4½-cent ticket, and increase in the price of school tickets from 3 cents to 4 cents. In rejecting the offer, the men held out for the eight-hour day. This Mr. Griffith, in his proposal to the men, said would be impossible for the company to grant, for the simple reason that denial by the Public Service Commission of the company's application for a 6-cent fare to meet the demands of the men made it impossible for it to raise the necessary revenue.

The decision of the Public Service Commission in the fare case referred to in the wage negotiations is reviewed in detail on page 739 of this issue of the ELECTRIC RAILWAY JOURNAL.

Municipal Railway to Be Extended

Appropriation of money from the general fund, and the transfer of funds from the light depreciation fund, have been abandoned as a means of financing the extension of the Seattle (Wash.) Municipal Railway across the Fifteenth Avenue Northwest bridge into Ballard, after legal opinions of the Assistant Corporation Counsel indicated that such appropriations and transfers would be illegal. Charles R. Case, superintendent of streets, has been directed to build the extension, using the men in his department and the funds set aside for street cleaning, street repairs and other work. The order to Mr. Case is understood to mean that sums used to extend the railway will be replaced by emergency appropriations made from the general fund and added to the 1916 tax levy.

Mayor H. C. Gill has approved the bill passed by the City Council several weeks ago, specifying and adopting a plan for the extension of the municipal railway by building an elevated line on Washington Street, Railroad Avenue, Whatcom Avenue and Spokane Street, from First Avenue south to the West Waterway. The bill provides for the issuance of utility bonds, principal and interest to be paid from the earnings of the railway system. The cost of construction is estimated at $350,000. Before the Council passed the bill, Mayor Gill announced that he would disapprove the plan for such extension to the south, because of excessive cost and the probability that the revenues would not be sufficient to make it a paying investment. The bill, however, passed the Council with six affirmative votes, sufficient to pass it over a veto.

Agreement Reached in Toledo

After Negotiating for More than Thirteen Months Toledo Railways & Light Company and City Agree on Electric Railway Grant

Mayor Milroy's street railway commission and Henry L. Doherty, chairman of the board of the Toledo Railways & Light Company, Toledo, Ohio, reached an agreement on Oct. 15, on a grant for the electric railway, after negotiations extending over thirteen months. It provides for the organization of a community company which will own the property. The intention is that local people shall buy the stock of this company and later on it is expected that the city will take over the road on the installment plan under a leasing arrangement.

The grant is to extend for twenty-five years. If, at the end of ten years the city has not taken over the property or the grant has not been renewed, an amortization fund may be established for the retirement of the stock at the end of the franchise term. Not to exceed one-half of 1 per cent of the capital value is to be paid into this fund monthly and the total amount so accumulated must not exceed 75 per cent of the capital value. This is similar to a sinking fund and will be paid into the hands of trustees.

Holders of stock in the community company will be paid 6 per cent on their investment. In the event the city takes over the property, they will receive 106 per cent of par for their stock. After five years the city may purchase the property by the payment of 25 per cent of the purchase price, which is to be found by making a physical examination of the property. It is provided that a fund to apply on this payment may be accumulated from excess receipts and from any other sources.

The rate of fare is to be based upon cost of operation, including interest and dividends. A sliding scale will be adopted to take care of varying business conditions. It is presumed that this will be patterned after the plan followed in Cleveland, although the figures may not be identical.

The City Council is to have control of the service. All questions upon which any agreement cannot be reached are to be submitted to arbitration. The award of the arbitrators will be enforced by withholding one-sixth of the dividends until the company has complied with the findings of the arbitrators.

Methods of amortization caused the longest discussion at the conferences held on Oct. 14 and 15. Mr. Doherty finally announced that he would insist on the Cleveland plan unless one he had suggested some time previously was adopted. Members of the commission finally formulated a provision which corresponds with the one Mr. Doherty had outlined.

The new grant must now be submitted to a referendum vote. If the measure is approved the community company will be organized. Stock in the new company will be sold on the installment plan. The members of the commission expect that the stock will be taken readily.

Tacoma Municipal Railway Extension

Commissioners Atkins, Gronen, Pettit and Drake of Tacoma, Wash., recently went over the head of Mayor A. V. Fawcett and adopted a resolution at a special legislative session of the Council, offering to enter into a contract with the Tacoma Railway & Power Company for the operation of the new municipal tideflats line for a period of two years, with a transfer arrangement that allows a return of 2 cents on every 5-cent transfer issued by the company from its city lines. The resolution definitely fixes the fare to be charged at 5 cents inside the city limits, and an additional cent outside the city limits, when commutation tickets are used. Without commutation tickets, the fare will be 5 cents to the city limits, and 5 cents each way outside. The tickets are intended more particularly for the benefit of the shipyard workers on the tideflats.

Although the ordinance takes the operation of the city line from under his control Mayor Fawcett voted in favor of the resolution when it was on its way to a final reading in Council, maintaining that the 2-cent provision on transfers was all that he was ever fighting for. Members of the City Council believe that the resolution will meet with the favor of Louis H. Bean, manager of the Tacoma Railway & Power Company. With the fixing of an additional 1-cent fare for passage outside the city limits, the resolution provided for an equal division of profits on transfers where they are issued on a 6-cent fare. It is stated that the additional 1 cent which the city will receive if the 2-cent transfer agreement supplants the old one, where the city received only 1 cent out of every five, will pay 5 per cent interest on the initial investment of $180,000 in the line.

Wage Increase in Pine Bluff.—Under a new scale of wages the trainmen of the Pine Bluff (Ark.) Company will receive from 20 to 27 cents an hour, the maximum, which will be paid after six years of service. The men have been receiving from 20 to 25 cents an hour.

Safety-First Talks on Harrisburg Railways.—In an effort to better conditions on its lines, the Harrisburg (Pa.) Railways recently had a representative of the Westinghouse Air Brake Company deliver two safety-first addresses and demonstrate brake applications on one of the cars of the company in operation.

Progress on Key Route Arbitration.—The arbitration board, headed by Paul A. Sinsheimer, which has been considering the differences between the San Francisco-Oakland Terminal Railways, Oakland, Cal., and its employees, has concluded the first section of its hearing and adjourned on Oct. 6 for two weeks. It is believed that a decision can be reached promptly after the recess.

Strike in Montgomery Called Off.—The Amalgamated Association has called off the strike of the employers of the Montgomery Light & Traction Company, Montgomery, Ala. The men went out on Aug. 15. Richard Tillis, president of the company, stuck resolutely to his decision not to discuss the question of recognition of the union. He built up a new organization around the men who remained faithful to the company.

Franchise Renewal Sought by Tulsa Street Railway.—In its efforts to secure a renewal of its franchise rights to build extensions in Tulsa, the Tulsa (Okla.) Street Railway published in the daily press a statement to the public containing the proceedings of the meeting recently held between a committee of the Chamber of Commerce and representatives of the railway company. The statement includes an account of the improvements made in Tulsa by the company since the construction of the original line and the extensions and improvements contemplated by the company in the near future.

New Working Conditions in Mobile.—At a recent conference between J. H. Wilson, president of the Mobile Light & Railroad Company, Mobile, Ala., and representatives of the Amalgamated Association, a new wage scale was agreed upon for the conductors and motormen. The working agreement entered into is for a period of two years and three months and is effective from Oct. 1. By the agreement one and two-year men get an advance in wages from 19 to 22 cents an hour, while three-year men will hereafter receive 23 cents an hour, four-year men 24 cents an hour and so on up to the eight-year men, who will receive 28 cents an hour.

Toledo May Have a Public Utilities Commission.—Councilman Frank Miller has introduced a resolution in the City Council of Toledo, Ohio, asking that a committee of three be appointed to determine the advisability of creating a public utilities commission under the provisions of the city charter. Such a commission would have power to decide upon rates, service and relations of all public utilities. The street railway franchise question, with other matters still unsettled, would come into the hands of this commission. It is claimed that the commission has not been established before because the financial condition of the city would not permit of any increase in expenses.

Increase in Wages in Davenport.—The trainmen in the employ of the Tri-City Railway & Light Company, Davenport, Iowa, have received an increase in wages of 1 cent an hour. This anticipates a clause in the contract of the men with the company calling for an increase on June 1, 1918. The contract, however, does not expire until June 1, 1919. The advance was made voluntarily by the company in order to assist the men to meet the advance in commodity prices. The men have been receiving 27 cents an hour for the first year, 28 cents for the second year and 32 cents for the third year. Under the increase they will receive 28, 29 and 33 cents an hour, respectively.

Philadelphia Conference Date Not Fixed.—No date has been fixed for the conference between representatives of the City Transit Department of Philadelphia, Pa., and counsel for A. Merritt Taylor, former director of city transit, who is opposed to some of the provisions of the contract as now worded providing for the operation of the proposed high-speed rapid transit lines by the Philadelphia Rapid Transit Company. It is expected that the conference will be arranged when Dr. William Draper Lewis, the Mayor's special legal adviser, completes certain amendments to the proposed lease with the purpose of making the provisions of the grant more specific but not of altering them materially.

West Side Improvement Plan Rejected.—The New York Central Railroad has rejected the "tentative proposals" of the joint conference committee of the Board of Estimate and the Public Service Commission for changing the rail facilities on the west side of New York City along the Hudson River. The "proposals" were made public by the joint committee on Oct. 6, and were the result of negotiations undertaken after the Board of Estimate had failed to solve the long-standing West Side improvement controversy, and the Legislature had delegated authority over the project to the joint committee. The improvements to be carried out contemplated the removal of the tracks from the surface and their electrification.

Coal Supply Still a Problem in the Central West.—An acute coal shortage has again been experienced by some of the electric railways in the central west, notably those which have obtained coal from the southeastern Kentucky-Tennessee field. A sudden descent of cold weather with freezing temperatures just before the middle of October created a severe drain on available coal supplies, while wholesale confiscation by the railroads, has further increased the stress. Cars of certain of the Southern Indiana traction lines have been running cold all fall due to inability to obtain supplies of coke for which the heating equipment is designed. Efforts of industrial consumers to obtain surplus supplies of coal have been attended with small success.

Mr. Duffy Banquets Vice-Governor of the Philippines.—C. Nesbitt Duffy, general manager of the Manila Electric Railroad & Light Corporation, Manila, P. I., recently gave a banquet at the Manila Hotel in honor of Hon. Charles E. Yeater, the new Vice-Governor of the Philippine Islands. The guests included many prominent men of the community. Following several speeches of welcome Mr. Yeater, who is a native of Missouri, in his first public talk on Philippine affairs, declared he was whole-hearted in his support of present policies on the Philippine problem and loyal to the pledge of independence to the Islands. Mr. Duffy acted as toastmaster. Before introducing Mr. Yeater he spoke of the necessity of developing that country and of the possibilities for investment there.

To Force Municipality to Complete Line Through Stock Purchase.—The Plymouth & Sandwich Street Railway, Plymouth, Mass., has petitioned the Supreme Court of the State for a writ of mandamus to compel the town of Plymouth to comply with a vote of the municipality in 1911 to subscribe for 500 shares of its capital stock. With the exception of about 0.75 mile between Sagamore and Sandwich the line has been completed. On the missing link an expenditure of about $2500 is necessary. The road has been in operation between Plymouth and Sagamore since July 28, 1917. The 1911 Legislature authorized the town of Plymouth to subscribe not more than $50,000 to the project. The company states that the subscription is needed to complete and maintain the road.

Programs of Association Meetings

New England Street Railway Club

The first regular monthly meeting of the 1917-1918 season of the New England Street Railway Club will be held at Young's Hotel, Boston, Mass., on Oct. 25 at 6 p. m. The subject committee of the club has chosen "The One-Man Car" as the topic for the meeting. The principal speakers will be John C. Thirlwall of the General Electric Company and C. H. Beck of the Westinghouse Air Brake Company. A special buffet dinner will be served.

New Jersey Utilities Association

The third annual convention of the New Jersey Utilities Association will be held at the St. Charles Hotel, Atlantic City, N. J., on Oct. 26 and 27. The program for Oct. 26 is as follows:

Address, Harry Bacharach, Mayor of Atlantic City.

Address, John A. Riggins, president of the New Jersey Utilities Association.

Paper, "Purification of Municipal Water Supplies," by George A. Johnson, consulting engineer, New York.

Address, "The Proper Relations Between Public Utilities and Public Utility Commissions," by Ralph E. Donges, president of the Board of Public Utility Commissioners of New Jersey.

Paper, "The Problem of Higher Operating Costs and Commission Control of Rates," by Thomas Conway, Jr., professor of finance at the University of Pennsylvania.

Paper, "Public Utilities Doing Their Bit," by John L. O'Toole of the Public Service Corporation of New Jersey, Newark, N. J.

The program for Oct. 27 is as follows:

Paper, "Inter-Relation of Various Obligations for Adequate Utility Facilities Under War Conditions," by George W. Fuller, consulting engineer, New York.

Paper, "The Financing of Public Utilities," by T. H. Dudley Perkins of Bioren & Company, bankers, Philadelphia, Pa.

Paper, "The Binding Force of Term Contracts with Special Relation to Public Utility Rates," by Ralph J. Baker, Harrisburg, Pa.

Paper, "The Valuation of Intangibles for Rate-Making Purposes," by Dr. F. Herbert Snow, chief engineer of the Public Service Commission of Pennsylvania.

Paper, "Utility Troubles—Their Causes, Effects and Remedies," by W. H. Roth, Philadelphia, Pa.

The annual banquet for members, guests and the ladies will be held by the association at the St. Charles Hotel on Oct. 26 at 6.30 p. m.

Financial and Corporate

Annual Reports

Third Avenue Railway

The comparative income statement of the Third Avenue Railway, New York, N. Y., and its controlled lines for the years ended June 30, 1916 and 1917, follows:

	1917		1916	
	Amount	Per Cent	Amount	Per Cent
Transportation	$8,701,328	97.0	$10,837,076	97.3
Advertising	71,348	0.8	80.000	0.7
Rent of equipment	19,927	0.2	18 386	0.2
Rent of tracks and terminals	51,588	0.6	73,211	0.6
Rent of buildings and other property	93,664	1.0	85,802	0.8
Sale of power	34,793	0.4	41,895	0.4
Total operating revenue	$8,972,648	100.0	$11,136,370	100.0
Maintenance of way and structures	$998,770	11.1	$1,090,701	9.8
Maintenance of equipment	709,637	7.9	599,549	5.4
Depreciation accruals	225,962	2.5	294,271	2.6
Power supply	781,085	8.7	731,598	6.6
Operation of cars	2,726,243	30.4	2,923,777	26.2
Injuries to persons and property	862,805	9.6	659,197	6.0
General and miscellaneous expenses	983,338	11.0	509,101	4.5
Total operating expenses	$7,287,840	81.2	$6 808,194	61.1
Net operating revenue	$1,684,808	18.8	$4,328,176	38.9
Taxes	794,450	8.8	848,122	7.6
Operating income	$890,358	10.0	$3,480,054	31.3
Interest revenue	164,925	1.8	157,870	1.4
Gross income	$1,055,283	11.8	$3,637,924	32.7
Deductions from gross income	2,677,609	29.9	2,646,852	23.8
Net income	*$1,622,326	*18.1	$991,072	8.9

*Deficit.

The system for the current fiscal year showed a deficit of $1,622,326, as compared to a net income of $991,072 for the year previous. The decrease was due to several causes. The operating revenue decreased $2,163,721 because of the strikes on the transportation lines in the Boroughs of Manhattan and the Bronx during the summer of 1916. The earnings were also seriously affected by the epidemic of infantile paralysis with which the city was afflicted last summer and which reduced the pleasure riding to practically nothing. The unusually cold and rainy weather conditions existing throughout April, May and June of this year also contributed materially to the decrease in revenue.

Moreover, operating expenses rose because of the great increase in the cost of all materials used in the maintenance and operation of electric railways. It was necessary to raise the wages of employees generally, and increases were made in the last year which it is estimated will increase expenses by $500,000 over those of June 30, 1916. The operating expenses in the last year also reflected large expenditures for repairs and renewals of track work. It was necessary to make $300,200 of extraordinary repairs under orders of the Public Service Commission or to insure safe and economical operation.

New competition developed during the last year by reason of the operation of the White Plains Avenue subway extension, the Jerome Avenue subway extension, the Steinway tube to Long Island City and subway extensions in Queens Borough. While these extensions are decreasing the earnings of the company at the present time, it is expected that ultimately the extensions in the Bronx will develop new territory and new and profitable business to the advantage of the Third Avenue Railway. This company also suffered from competition of the bus line operated by the New York Transportation Company to the Billy Sunday Tabernacle. This operation was authorized by a temporary permit which expired with the close of the campaign. The buses are said at present to run under a permit which the Public Service Commission has refused to approve, and the present operation is without any legal sanction.

Within two weeks of the announcement of the company's partial payment plan for employees' subscriptions to the Liberty Loan, 3265 subscriptions had been received from 73 per cent of the employees for more than $200,000 of bonds. The plan submitted by the company provides for the payment of the amount of the subscription in fifty weekly installments. The company has borrowed the money necessary to finance the subscriptions, pledging the bonds as collateral for the loan. In regard to the need of higher fares the annual report states:

"The situation reduced to the simplest terms is that the cost of all labor and materials having increased to all manufacturers and others furnishing materials and supplies to electric railways, the manufacturers have, of necessity, increased the cost of their product to their customers. If electric railways were allowed to recover some part of this unavoidable increased cost of operation by increasing the cost of the service to their own customers, the car riders, the situation would adjust itself to some degree. It is only a fair and reasonable adjustment that this company seeks to make. Much will be said and written as to the right of the people to the 5-cent fare with free transfers and the hardships that will follow any increase in that rate. The facts in the matter, which must be recognized, are that no industry can continue to furnish its product at a loss. The electric railway industry is the only one in which the price at which the service or commodity is furnished has not increased materially in recent years."

Savannah Electric Company

The comparative income statement of the Savannah (Ga.) Electric Company for the calendar years 1915 and 1916 follows:

	1916	1915
Railway earnings	$480,434	$473,266
Light and power	345,660	320,948
Total earnings	$826,094	$794,214
Operating expenses	$422,786	$390,361
Maintenance	71,543	72,262
Taxes	59,366	55,865
Net earnings	$272,399	$275,725
Interest charges	$262,757	$258,492
Mortgage improvement fund	20,000	20,000
Deficit	$10,359	$2,767

The gross earnings for 1916 increased 4 per cent. Early in the year both the railway and lighting earnings showed decreases as compared with 1915. These conditions, however, improved to a sufficient extent during the latter months of the year to result in substantial increases in both the lighting and the railway department.

Operation of jitneys still continues without substantial regulation. General business conditions improved materially, especially during the latter half of the year. The high price of cotton is making Savannah and surrounding territory prosperous, and the naval stores business has been placed on a sound footing and prices are better. The factories manufacturing cottonseed products had a very prosperous year. Development of the river district west of the city is progressing rapidly and should prove of advantage to Savannah by leading to greater variety in the city's manufactures.

During 1916 the extensions to the light and power system cost $37,500; $4,800 was used in extending the company's power lines to the new compress west of the city, and about $24,500 was expended for meters, transformers and short-line extensions to serve new customers. To provide funds for the necessary expenditures the company increased its floating debt $125,000.

Underlying Companies Need Not Pay

In the case of the State of Ohio against the Little Miami Railroad, the Supreme Court of Ohio rendered a decision on Oct. 9 to the affect that underlying companies are not subject to the franchise tax imposed on domestic corporations. Underlying companies are defined by the Court as those which build railroads or other properties and lease them to operating companies. The suit was brought by the State several years ago and the decisions of the lower courts were in its favor. There are about thirty other underlying companies in the State and the franchise-tax for the several years would be large.

Municipal Lines Benefit from San Francisco Strike

The San Francisco (Cal.) Municipal Street Railway has been reaping a harvest by reason of the strike on the lines of the United Railroads of San Francisco. The total earnings for September reached the highest point in the history of the system. During the Exposition period, with thousands of visitors thronging the city, the lines had in August, 1915, earnings of $236,935. With the aid of the Church Street line, which has since been built, the municipal system last month earned a total of $313,125, or an increase of $76,189.

Each day that the strike has been in progress has seen thousands of dollars diverted to the earnings of the municipal lines. It began the first day with a few hundred dollars. After the strike had been in operation for a week, the earnings began to climb at the rate of between $2,000 and $3,000 a day, until they reached on occasions points as high as $5,000 over the same day of the preceding year.

While a very large part of the earnings is offset by heavy expenses, and it cannot be expected that the extra earnings are all profits, it is stated by Assistant Superintendent Fred Boeken that at the present rate, if the strike lasts a few weeks longer, between $200,000 and $250,000 will be added to the surplus of the system.

Dallas Railway Financed

New Company Which Will Take Over Dallas Properties Organizes and Announces Details of Financing

The Dallas (Tex.) Railway, which is to take over the electric railway properties in Dallas, consolidate them under one ownership and management and operate them under the service-at-cost franchise granted by the city of Dallas, has been formally organized. When the board of directors of the new company met during the week ended Oct. 13 to elect officers and complete details of organization, C. W. Hobson, who had been head of the company during its formative state, retired, and J. F. Strickland, president of the Dallas Electric Light & Power Company, was elected president of the Dallas Railway, and C. W. Hobson was made chairman of the board. Other officers of the Dallas Railway are: H. M. Hughes, vice-president; Henry Lange, Jr., secretary and treasurer. Members of the board of directors are: C. W. Hobson, chairman; J. C. Duke, H. A. Olmsted, W. A. Green, W. R. Ellis, John H. McDonald, Judge M. L. Morris, J. K. Hexter, H. M. Hughes, H. E. Hobson and C. W. Hobson.

Following the meeting of the directors, announcement was made by Mr. Strickland that Richard Meriwether, who had served as superintendent of the electric railway system of Dallas when it was controlled by Stone & Webster, had been appointed assistant general manager. The appointment of a general manager has not been announced.

The Electric Bond & Share Company, New York, was interested in financing the Dallas Electric Light & Power Company and the operation of the Dallas Railway. Mr. Hobson announced that the new railway will issue 26,500 shares of stock with a par value of $100 per share, of which 21,500 will be common stock and 5000 shares will be 7 per cent preferred stock. These shares of stock will be in addition to notes amounting in principal to $2,600,000, executed in payment of property actually received. These notes are unsecured, bear 6 per cent interest and are due April 1, 1922. The shares are also in addition to 1000 shares of common stock heretofore issued and paid for.

J. F. Strickland, representing the Dallas Electric Light & Power Company, announced that this company would issue 18,500 shares of capital stock of a par value of $100 per share, in addition to 1500 shares of such stock heretofore issued and paid for, and in addition would put out notes in the principal amount of $4,000,000, bearing 6 per cent interest, given in payment for property actually received. These notes are unsecured and are due April 1, 1922.

Mr. Hobson is quoted as follows: "A careful study of the situation discloses that the intimate relationship between the Dallas railways and other public utilities already in Mr. Strickland's charge would make such an arrangement more efficient in the public interest and more economcal for the owners than a separate management, however competent it could be. Mr. Strickland is a transportation expert and is surrounded with men who are trained in traffic work. He has an organization ready to take up the work; on the other hand, a new organization would have to be built up, a slow and expensive process."

The Board of City Commissioners, under the provision of the franchises, have appointed M. N. Baker, Dallas, as utilities supervisor. He will serve for one year and is subject to removal at any time by the Mayor and Board of Commissioners.

Arkansas Valley Railway, Light & Power Company, Pueblo, Col.—Wilson, Cranmer & Company, Denver, and N. S. Walpole, Pueblo, Col., are offering at 97, to yield 7.2 per cent, an additional block of $450,000 of the 7 per cent cumulative preferred stock of the Arkansas Valley Railway, Light & Power Company, the issue to provide for extensions and additions.

Bangor Railway & Electric Company, Bangor, Me.—According to the annual report of the Bangor Railway & Electric Company, filed with the Public Utilities Commission, the railway operating revenues for the fiscal year ended June 30, 1917, were $358,318 against $354,758 for the preceding year, an increase of $3,559. The railway operating expenses for the last year were $261,306 against $231,883 for the preceding year, an increase of $29,422. The net revenue from railway operations for the last year, therefore, was $97,012 against $122,874 for the preceding year, a decrease of $25,862. The transportation revenue was divided in the last year as follows: Passenger revenue, $316,238; parlor, sleeping, dining and special car revenue, $80; mail revenue, $1,590; freight revenue, $30,116; rent of buildings and other property, $2,891. The operating expenses of the road were divided as follows: Way and structures, $40,734; equipment, $32,373; power, $13,664; conducting transportation, $91,062; general and miscellaneous expenses, $44,472.

Cities Service Company, New York, N. Y.—The directors of the Cities Service Company have increased the rate of the stock dividend on the common stock from a 6 to a 9 per cent annual basis. The company has been distributing stock in the form of dividends for some time in periodic payments. The usual monthly dividend of one-half of 1 per cent in cash has been declared, payable on Jan. 1 to shareholders of record of Dec. 15, and arrangement was made to make a similar distribution on Feb. 1. The directors have taken no action on the proposal to list the stocks on the Stock Exchange and to reduce the par value.

Dallas (Tex.) Northwestern Traction Company.—The Dallas Northwestern Traction Company, which proposes to construct an electric railway from Dallas to Slidell, has filed a trust deed in the office of the county clerk at Dallas, Tex., securing an issue of $2,225,000 of twenty-year 6 per cent bonds dated Sept. 21, 1917. The trustee of the mortgage securing the bonds is the Metropolitan Trust Company, New York.

Dallas (Tex.) Southwestern Traction Company.—The Dallas Southwestern Traction Company, which has commenced construction of an interurban electric railway between Dallas and Cleburne, has filed with the county clerk at Dallas a trust deed to the Metropolitan Trust Company, New York, trustee, to secure an issue of $2,225,000 of bonds dated Sept. 21, 1917.

Monongahela Valley Traction Company, Fairmont, W. Va.—At the annual meeting of the Kanawha Traction & Electric Company, directors were elected as follows: Thomas Logan, Parkersburg; W. W. Van Winkle, Parkersburg; Edward A. Merydith, Marietta, Ohio; William H. Jett, Marietta, Ohio; J. M. Hartley, Fairmont; G. M. Alexander, Fairmont; E. B. Moore, Fairmont. In pursuance of the agreement entered into by the Kanawha Traction & Electric Company and the Monongahela Valley Traction Company, the latter company took over the operation of the properties of the Kanawha Traction & Electric Company on July 1, 1917. Since the making of this agreement, practically all of the stockholders of the Kanawha Traction & Electric

Company have exchanged their stock for the stock of the Monongahela Valley Traction Company.

Petaluma & Santa Rosa Railway, Petaluma, Cal.—The directors of the Petaluma & Santa Rosa Railway have referred to a special committee the matter of taking care of the issue of $217,000 of outstanding second mortgage 6 per cent bonds of the company which have matured.

St. Paul (Minn.) Southern Electric Railway.—The holders of the second mortgage bonds of the St. Paul Southern Electric Railway have appointed a committee as follows: W. W. Cutler, chairman, E. E. Sanford, P. J. Jarman, Frank Schlick and W. W. Dunn. The majority of the first mortgage bonds are held by a single owner who is represented by M. M. Munn, St. Paul, and no committee has been appointed to represent this issue. A statement credited to Irving Todd, Jr., vice-president of the company, with respect to its financial position was referred to in the ELECTRIC RAILWAY JOURNAL of Oct. 13, page 696.

United Railways & Electric Company, Baltimore, Md.—The Maryland Public Service Commission has granted permission to the United Railways & Electric Company to issue $5,750,000 of five-year notes, but it has modified the plan proposed by the company for the conversion of these notes into the common stock. The company desired permission to convert the short-time notes, which will be dated Aug. 15, 1917, into common stock at $30 a share within two years, $32 within three years, $34 within four years and $36 thereafter until Feb. 15, 1922. Under the commission's order notes may be converted into common stock at $30 per share within one year after Aug. 15, 1919, and at $33 thereafter until Aug. 15, 1922. Thus under the commission's order there can be no conversion of the notes into common stock at $30 after two years with an ascending scale thereafter upon the price of the stock for conversion purposes. The stipulation placed by the commission on the conversion privilege was put there in consequence of the investigation being made by the commission into the affairs of the company. It is said unofficially that the members of the commission were fearful that if they permitted the conversion to be effected before the investigation was finished those who obtained common stock in that way would set up a claim that they had taken the stock upon a valuation established morally at least by the commission and that therefore the commission should permit such earnings as would maintain the valuation so established.

Electric Railway Monthly Earnings

BERKSHIRE STREET RAILWAY, PITTSFIELD, MASS.

Period	Operating Revenue	Operating Expenses	Operating Income	Fixed Charges	Net Income
1m., Aug., '17	$112,515	*$85,603	$26,912	$27,382	†‡$339
1 " " '16	100,761	*74,951	25,810	27,700	†‡1,708
8 " " '17	728,149	*625,152	102,997	220,406	†‡116,453
8 " " '16	656,817	*539,800	117,017	206,191	†‡87,642

CONNECTICUT COMPANY, NEW HAVEN, CONN.

Period	Operating Revenue	Operating Expenses	Operating Income	Fixed Charges	Net Income
1m., Aug., '17	$977,471	*$719,179	$258,292	$102,810	‡$160,109
1 " " '16	910,429	*689,838	220,591	98,634	‡144,667
8 " " '17	6,733,370	*5,210,941	1,522,429	778,164	‡875,409
8 " " '16	6,338,486	*4,357,006	1,981,480	788,715	‡1,345,011

NEW YORK & STAMFORD RAILWAY, PORT CHESTER, N. Y.

Period	Operating Revenue	Operating Expenses	Operating Income	Fixed Charges	Net Income
1m., Aug., '17	$53,405	*$33,503	$19,902	$7,982	‡$12,002
1 " " '16	40,814	*28,078	12,736	7,987	‡4,811
8 " " '17	282,402	*237,549	44,853	63,872	†‡18,625
8 " " '16	253,996	*202,041	51,955	63,874	†‡11,574

NEW YORK, WESTCHESTER & BOSTON RAILWAY,
NEW YORK, N. Y.

Period	Operating Revenue	Operating Expenses	Operating Income	Fixed Charges	Net Income
1m., Aug., '17	$47,556	*$45,958	$1,598	§$9,642	†‡$7,392
1 " " '16	46,027	*45,074	953	§7,893	†‡5,965
8 " " '17	371,161	*368,716	2,445	§61,863	†‡51,623
8 " " '16	352,261	*393,947	†41,685	§67,671	†‡66,325

RHODE ISLAND COMPANY, PROVIDENCE, R. I.

Period	Operating Revenue	Operating Expenses	Operating Income	Fixed Charges	Net Income
1m., Aug., '17	$595,687	*$446,045	$149,642	$122,897	‡$27,822
1 " " '16	587,474	*369,299	218,175	120,714	‡99,067
8 " " '17	4,035,508	*3,229,713	805,795	963,999	‡72,569
8 " " '16	3,885,362	*2,762,661	1,122,701	921,184	‡289,464

WESTCHESTER STREET RAILROAD, WHITE PLAINS, N. Y.

Period	Operating Revenue	Operating Expenses	Operating Income	Fixed Charges	Net Income
1m., Aug., '17	$26,413	*$24,483	$1,930	$2,211	†‡$249
1 " " '16	21,076	*21,872	†796	1,863	†‡2,630
8 " " '17	167,003	*186,548	†19,545	16,870	†‡36,186
8 " " '16	162,736	*171,641	†8,905	14,237	†‡22,935

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*Includes taxes. †Deficit. ‡Includes non-operating income. §Excludes interest on bonds charged income and paid by the New York, New Haven & Hartford Railroad under guarantee; also interest on notes held by the New York, New Haven & Hartford Railroad, not credited to income of that company.

Traffic and Transportation

Another Connecticut Fare Increase

Shore Line Shortens Its Nickel Zone and Increases Interurban Zone Fare from Two to Three Cents

The Shore Line Electric Railway, Norwich, Conn., which operates 240 miles of line, has increased its fares. The company has retained the nickel as the unit of fare, but it has materially shortened the ride and secured 7 cents as the next unit for a ride in two zones. This gives the company a 7-cent rate to the large manufacturing villages just out of Norwich where the company formerly received a 5-cent fare. The old minimum was 5 cents in two zones. The new minimum is 5 cents in one zone, except that in the cities of Norwich and New London the company includes a transfer into the second zone, so that a 5-cent fare provides transportation not only to and from the center of the city, but through the center with or without transfer, depending on how the cars happen to be routed.

INTERURBAN ZONE FARES INCREASED TO 3 CENTS

On the interurban lines the company has advanced the rate from 2 cents a zone to 3 cents a zone, with a minimum of 5 cents in one zone and 7 cents in two, using the same zone terminals as heretofore. This system was explained very fully in the ELECTRIC RAILWAY JOURNAL for Sept. 11, 1915, page 443. If the present advances in rate are maintained, the company will probably change its zone terminal numbers so that the principle of subtracting one station from the other will disclose the rate. At present it is necessary to subtract the station numbers one from the other and add one-half in order to arrive at the passenger fare.

STEAM AND ELECTRIC RATES COMPARED

The changes which have gone into effect have raised the rate by electric railways in a number of cases above the present steam road rate. The company sells now, as formerly, a commutation ticket at 75 per cent of the adult rate covering fifty-four rides in a calendar month. A comparison of the present rates of the Shore Line between Norwich and other cities with those of the steam road operating between these cities follows:

Norwich to	Steam	Electric
New London	35 cents	36 cents
Jewett City	24 cents	24 cents
Plainfield	40 cents	42 cents
Central Village	48 cents	51 cents
Danielson	63 cents	69 cents
Putnam	82 cents	96 cents
Willimantic	50 cents	45 cents

It is regarded as likely that the steam road rate will be advanced to a point above that of the electric railway.

HOW THE PUBLIC WAS INFORMED

Posters were put in the cars of the company at the time of the change in rate and a series of public notices was run in the daily papers. The first of these announcements to the public appeared in the form of a letter, while the others were run as regular advertisements. Number 4 of the series served as the announcement of the exact effect of the change. There has been some general complaint on the part of the public, but up to Oct. 17 no concerted action had been taken in opposition to the maintenance of the new tariff. An explanation for this is seemingly offered by the fact that the nickel still serves as payment for a short ride.

Some time previous to the change in fares R. W. Perkins, president of the company, made a statement in which he said the railway had just passed through the hardest year of its history, with operating costs advancing at a rate undreamed of even after the rising cost of the first year of the war. Every economy possible had been practiced by the company. He called attention to the increases in fares made by other companies in New England, and said that if satisfactory service was to be rendered by the Shore Line increased revenue per passenger must be secured.

Flat Fare Increase Denied

Oregon Commission Denies Fare Increase to Portland Railway, Light & Power Company—Suggests Elimination of 4½-Cent Tickets

The Public Service Commission of Oregon on Oct. 5 handed down a decision denying the application of the Portland Railway, Light & Power Company for an increase in fares to 6 cents. The application for this increase was made in order that the company could meet the demands of the platform men for an eight-hour day and wage increase, as reported in the ELECTRIC RAILWAY JOURNAL for Aug. 25, page 327, and Sept. 1, page 367.

COMPANY'S REVENUES INADEQUATE

The commission admitted, however, that the company's revenues were inadequate and that even without further increase in its expenditures its condition was critical. The commission recommended a reduction in service, the elimination of the 4½-cent tickets (sold only in books of fifty tickets) and the advance of the 3 1-3-cent school ticket to 4 cents. It also suggested that the city relieve the company of the burden of laying and maintaining pavements between its tracks, which would mean a saving of approximately $225,000 a year, as well as remitting bridge tolls of $66,000 a year. This could be done only by charter amendment at the next November election. Four-fifths of the tracks are already paved. The commission retains jurisdiction over the case and requires monthly reports of the company's operation showing the effect of these changes.

The order of the commission is signed by Chairman Miller and Commissioner Buchtel. Commissioner Corey dissented. The finding and the order of the commission follow:

THE FINDING

"After a full consideration of the foregoing, and based upon the record before it, and its knowledge of the operations of the company gained from an exhaustive investigation extending over several years, the commission now makes the following findings of fact:

"1. That present revenues derived by this utility from the operation of its electric railway system are inadequate.

"2. That service now afforded is in excess of that required reasonably to meet the demands of the traffic handled.

"3. That the rates charged and collected for unlimited ticket books and school children's limited tickets are unjust, unreasonable and inadequate.

"4. That just, reasonable and adequate rates and practices for the utility to charge, impose and collect, in lieu of such unjust, unreasonable and inadequate rates, are: Unlimited tickets, 5 cents each; limited school children's tickets, 4 cents each.

THE ORDER

"The commission having fully investigated the application of the Portland Railway, Light & Power Company for increase in fares on its electric railway lines in the city of Portland,

"It is ordered that the company be and it hereby is authorized to increase the rates named by it in its tariff O. R. C. No. P 141 for unlimited tickets and school children's limited tickets, such increased rates, however, not to exceed the following: Unlimited tickets, 5 cents each; limited school children's tickets, 4 cents each.

"It is further ordered that until otherwise advised by this commission, the company shall submit monthly statements covering its railway operations, together with full information as to any action which may have been taken subsequent to the date of this order with reference to the curtailment of service, or other measures of economy in such operations.

"And it is further ordered that pending further developments this matter be kept open upon the docket of the commission and that jurisdiction herein be retained for the purpose of taking such other and further action as may be deemed appropriate.

"The application of this order is restricted to purely Oregon intrastate business, and nothing herein contained shall be taken as in any way affecting interstate commerce."

In his dissenting opinion, Commissioner Corey said he favored a reduction in service where practicable, and a temporary trial increase of cash fares at 6 cents, six rides for 35 cents, retaining the present school children's tickets, workingmen's daily ride books upon the basis of fifty-two rides during the period of one month for $2.50, unused coupons to be redeemable at an amount equal to the difference between what the rides the passenger has taken have cost him and what they would have cost him had he paid cash instead of using the tickets, such tickets to be used only on week days. He said:

"I firmly believe the increase in rates is absolutely necessary if a reasonably high standard of service is to be maintained and a just increase in wages granted to the employees. Delay in applying a proper remedy may necessitate a later increase in fares in excess of the 6-cent fare now suggested, and for a much longer period."

COMPANY EARNING ONLY 2.07 PER CENT ON VALUATION

At the hearing it was shown that on the present basis of operation the company is earning only 2.07 per cent on the valuation of the electric railway. The figures cited were fixed upon the actual value of the utilities proper. It was also shown that without a change in the daily wage, if a change from a ten to an eight-hour day were made, the payroll would be increased 25 per cent, or $600,000 additional annually. While the revenues for September were $45,000 higher than the previous month, the deficit was $3,000. This deficit was due to the increase in the operating expenses. No dividends have been paid since 1913 and stockholders in the last three years have had to put $2,500,000 into the company.

Fare Protests Under Consideration

The traffic commission of the city of Bridgeport, Conn., has not yet decided when it will present its case to the Public Utilities Commission protesting against the 6-cent fare recently put into effect in that city by the Connecticut Company. The commission has retained J. Payson Clark as an expert to assist it in the investigation which is being made into the affairs of the company as they affect Bridgeport.

In Hartford no definite action has been taken by the city with respect to the increase. A public meeting was held there recently to determine the attitude of Hartford people in regard to the 6-cent fare and in consequence a resolution was introduced in the Council on the evening of Oct. 15 calling upon the Corporation Counsel to arrange with the Public Utilities Commission for a hearing in regard to the increase. This resolution, however, was held up by Acting Mayor Walter A. Schutz, who when the discussion of the resolution was under way turned the meeting over to Alderman Borden. A deadlock followed in which the rules of parliamentary procedure governing voting rights under such conditions were involved.

COMMISSION COULD NOT RESTRAIN COMPANY

Almost immediately upon the announcement of the proposed increase in fares by the company representatives of Bridgeport petitioned the Public Utilities Commission to issue forthwith a restraining order against the company. The commission through its chairman, Richard T. Higgins, replied that it was without jurisdiction to issue such an order or to order a change in the company's rates except upon a petition and after public hearing and a finding that the company's rates were unreasonable, such petition and public hearing to be in accordance with the procedure prescribed by statute.

CHANGE ONLY AFTER PUBLIC HEARING

Under the laws of Connecticut a utility company has the right to make, alter or raise its own rates. The Public Utilities Commission, however, has jurisdiction on petition to confirm, reduce or otherwise modify such rates. A company has in the first instance the right to raise or modify its own made rates, but has no authority to modify or change a commission-made rate. The Connecticut Company's rates now and heretofore in force in Bridgeport are company-made rates which the commission is not authorized to change except upon petition and a finding after public hearing that the rates established by the company are unreasonable.

Bay State Weekly Paper

Purpose Is to Acquaint Patrons with Present-Day Transportation Problems, and to Invite Constructive Criticism

Beginning on Wednesday, Oct. 24, the Bay State Street Railway, Boston, Mass., will publish a weekly paper devoted to the interests of patrons and seeking to establish a better understanding with the public. About 90,000 copies of this paper will be distributed free each week in all cars and waiting rooms of the company. In addition 11,000 copies will be mailed direct to the homes of selected persons in the territory in which the company operates. Contributions from the pens of the ablest electric railway experts will be features of the publication, and the public will be invited to contribute its views as to the service, as well as to make suggestions for improvements. The weekly will be illustrated, and will also contain the work of John Bliss, the Boston cartoonist.

PRESIDENT SULLIVAN'S AIM

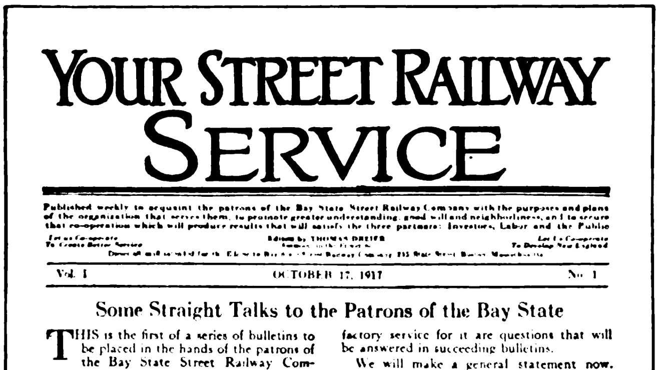
P. F. Sullivan, president of the Bay State Company, when asked about the new publication said:

"It is our aim to endeavor to interpret street railway problems to the public, and to have the public interpreted to us through *Your Street Railway Service*, which is the name of our new publication. That, it seems to me, is a fitting name, for street railways belong to the people and they depend upon the people for good-will and for sufficiently sustained patronage to keep them going.

"The last two years have witnessed unparalleled increases in the price of everything connected with the operation of street railways. There are other problems about which the public is in ignorance. In my opinion large public utility companies have made a mistake in not taking the public into their confidence, in not trying to make things clear so that mutual problems might be discussed and settled amicably and logically.

"The relation between the public and big business must be established on a get-together basis. Strange to say, a great many people who recognize that a grocer or baker or tailor has risked money in establishing his particular business and is therefore entitled to a fair protection and return fail to understand that this same protection and return is due the people who invest or risk their money in street railways.

"The Bank Commissioner of Massachusetts has held that street railway bonds are, under specified conditions, a legal investment for savings banks, which means that street railways must prosper if they are to pay interest on these bonds held by savings banks. To pay this interest they must earn more than expenses and cannot operate below the line of making expenses, as at present. The street railway must have such protection and opportunity as will safeguard the banks and insurance companies as well as the thousands of smaller individual investors. In addition to our desire to protect these investors, we want to make the Bay State Street Railway the most efficient public carrier of its kind in New England, and if possible in the world."



YOUR STREET RAILWAY SERVICE

Published weekly to acquaint the patrons of the Bay State Street Railway Company with the purposes and plans of the organization that serves them, to promote greater understanding, good will and neighborliness, and to secure that co-operation which will produce results that will satisfy the three partners: Investors, Labor and the Public

Let us Co-operate
To Create Better Service

Edited by THOMAS DREIER

Let Us Co-operate
To Develop New England

Vol. I OCTOBER 17, 1917 No. 1

Some Straight Talks to the Patrons of the Bay State

THIS is the first of a series of bulletins to be placed in the hands of the patrons of the Bay State Street Railway Company.

For twenty-seven weeks we have been publishing a weekly paper that told our employees about our Company and its problems. We have told them of the needs of the Company and have asked them to co-operate with the management for the purpose of decreasing unnecessary expenses and for the purpose of increasing income. We have repeated over and over the statement that the first lesson they must learn is that every employee from the president down to the humblest worker must master the art of giving satisfactory service to the public.

Let us make that as clear to you as we have tried to make it to our own employees: *The purpose of the Bay State Street Railway Company is to give satisfactory service to the public*

We want to make that as emphatic as printed words can make it Substitute that statement for every other statement you may have heard or seen printed anywhere which may have led you to think otherwise.

We Will Give a Frank Explanation

Having said that, let us go on We know that the service given on all our lines is not perfectly satisfactory to all our patrons.

As a matter of fact, we know that it is unsatisfactory to many of them

Why that service which is unsatisfactory exists and why we cannot substitute satisfactory service for it are questions that will be answered in succeeding bulletins.

We will make a general statement now. Satisfactory service demands.

First The right kind of men, second, the right kind of equipment, third, the right amount of money for the service rendered; fourth, the right conditions under which men, equipment and money operate.

In dealing with these matters we shall indulge in some straight talk. We shall call a spade a spade and not an agricultural implement. We shall be frank in telling what we think is responsible for the condition in which most street railways, not the Bay State alone, find themselves.

The Public Has a Right to Know

Our position is this a street railway is a public service corporation. It is organized and operated with *private money* for the benefit of the public Therefore, the public has a right to be told all about the business of the street railway, its problems, the forces that are hindering its growth and development, the conditions that are robbing it of its financial health, and everything else that enters into its operation.

Before we can furnish you with so much as an outline of the plans we have made for the betterment of the service it is necessary for us to clear away for once and for all many statements that have been circulated for years that have in them so little truth that they deserve to be wiped out of existence.

FRONT PAGE OF NEW PAPER

Detroit One-Fare Traffic Decreased

E. J. Burdick, Assistant General Manager of the Detroit United Railway, Says There Has Been Serious Decline in This Traffic

That the one-fare zone passenger earnings of the Detroit (Mich.) United Railway are showing a startling decrease was a statement made by E. J. Burdick, assistant general manager of the company, before the public utilities committee of the Common Council at a hearing recently when several matters affecting the service of this company were discussed.

NET PASSENGER EARNINGS DECLINED $2,500 A DAY IN SEPTEMBER

While in the beginning of the year the gross passenger receipts within the zone were largely in excess of those of a year ago, due to the tremendous business activities of Detroit, there has been of late a marked decline, so that the fare receipts for September of this year were less than for the same month in 1916. Not only have the gross receipts declined because of business conditions, but the tremendous increased cost of operating the city lines—in the way of wages and other items—has resulted in a decline of $2,500 a day in the net passenger earnings in September compared with the same month a year ago.

This loss came with some 35 miles of additional track in operation.

CO-OPERATION NEEDED

Mr. Burdick pointed out to the meeting the need of the hearty co-operation of the civic authorities so that there may be no needless expenditure of money; expressing the hope that rates of fare may remain the same. He said:

"It is not our desire to disturb the present low rates of fare. We are doing everything possible to avoid coming to you in the matter of increased fares to carry on our work and meet the many items of increased expenses. We, therefore, ask your hearty co-operation."

The company is by no means certain that all the routes as laid out for re-routing will be successful. It is more than probable that some of them will have to be changed in order to equalize the load on the various lines in the heart of the city. The separation of a vast amount of the east and west service across Woodward Avenue is most desirable, as it results in doing away with a lot of needless interference of cars with one another. Whether the loops as planned will accomplish all the company desires is a debatable question, but it is more likely that some new loops will have to be worked out.

SKIP STOP SUCCESSFUL—USED ON NEARLY ALL LINES

The skip-stop plan is working to the good of the service, particularly in the way of reducing the running time. This plan is now in effect on nearly all the lines of the city. There are, of course, some kinks to be straightened out, but the company has no doubt that these little matters can and will be adjusted in a satisfactory manner. It is opposed, however, to immaterial changes being offered simply for the convenience of the few here and there.

Transfer Limits Extended

Bay State Street Railway Transfer Order Includes Discussion of General Principles

In an order dated Oct. 9 the Public Service Commission of Massachusetts extended certain transfer limits in the Haverhill district on the Bay State Street Railway and included in its finding a discussion of general principles of transfer application in relation to the recent establishment of a 6-cent fare unit on the urban lines of the company. The local case involved two lines radiating from the transfer station in the heart of Haverhill. The 6-cent fare limit upon one line is at the Groveland-West Newburg town line, 4.34 miles from Haverhill, and upon the other it is at the Groveland-Georgetown town line, a distance of 5.11 miles. Formerly the transfer limits were the same, but now they are located at Pines turnout, in one case, 3.08 miles, and at the Haverhill-Groveland town line, 2.67 miles from Haverhill. The ticket limits are the same. The petitioners asked that the transfer limits be extended 0.71 mile on one line and 0.58 mile on the other, in order to enable passengers to ride through to local settlements known as Savoryville and South Groveland. The company conceded that its receipts would not be seriously diminished by the desired change, but rested its case upon the fact that the present transfer limits have been established substantially in accordance with the agreement reached in July, 1917, between the company and many of the principal communities served by it. The company held that any marked departure from this general principle would constitute a dangerous precedent.

SAME PRINCIPLES GOVERN TRANSFERS AND 5-CENT TICKETS

In the agreement then reached the understanding appeared to be that the same principle should apply to transfer privileges as to the sale of 5-cent tickets (twenty for $1, good except Saturdays after 1 p.m., on Sundays and holidays); that existing transfer privileges should be retained in those towns or portions of towns which by location or density of population practically form a part of adjacent urban centers; and that in other territory transfer privileges might be curtailed by the relocation of transfer limits which permitted too long a ride for the basic fare. A suggestion that transfer privileges should in general extend about 2.5 miles from the centers of the urban districts was also considered, but was not adopted. The schedule filed by the company pursuant to the agreement provided for free transfer privileges which, in most cases, covered more than 2.5 miles from the centers of the respective cities. The scheme was elastic without fixing limits by any arbitrary rule of distance or other fixed standard. In the case in point the granting of the petition of the selectmen and citizens of Groveland extends the limits on the lines in question to 3.79 and 3.45 miles respectively, from the center of Haverhill. These distances are not greater than on many other lines of the Bay State company, but the commission states that even so, it would not have been willing to order the company to extend the former limits during the six months' trial period of the present fare schedule, had the evidence indicated that the company would be likely to lose any substantial amount of revenue.

Patron Returns Car Fare

The Ohio Valley Electric Company, Ashland, Ky., recently received a letter from one of its patrons in which restitution was made of car fare which had been withheld from the company more than a year previous. The letter was as follows, except for two words which it was impossible to decipher:

"To the Ohio Valey Railway

"Co. of Ashland ky i do hear in close some car fair which was not cleced from me about the year of 1916 and i did not thank much about it till a fue weaks ago and Jeses Crist shod me i must Pay it and i am only * * * * i did not Pay it then tho i hope you will for give me in excepin the 25 cts and when we meat at the Jugement of God you may ancer and say it is Paid God word says he will make all * * * * strait and i will close hoping to mete you all in heven if not on this erth is my Prair."

Women Subway Guards for the B. R. T.—Arrangements have been about completed for the installation of women as guards in the subways of the Brooklyn (N. Y.) Rapid Transit Company during rush hours.

Skip Stops Extended in Toledo.—On Oct. 1 the Toledo Railways & Light Company, Toledo, Ohio, established a skip-stop service on the Summit-Broadway line. Service on the Point Place line during the rush hours was lengthened from fifteen to eighteen minutes and from thirty to thirty-six minutes during the remainder of the day. Skip-stop service was started on the Cherry-Union Depot line on Aug. 13.

New Jitney Ordinance in Effect in San Antonio.—The new jitney ordinance restricting jitneys and their routes went into effect on Sept. 18 in San Antonio, Tex. The ordinance prohibits jitneys from operating on Houston and Commerce Streets. As a result, fifty-two applications for changes in routings were made by owners of jitneys, and as the petitions complied with the law, they were granted by the City Commissioners.

Employee Special Officers Make Arrests.—Uniformed supervisors on the city lines of the International Railway in Buffalo, N. Y., who were recently appointed special police officers, have been observing the loading of cars at congested intersections and at other points along the line. Several arrests have been made by the supervisors and a fine of $5 has been imposed in each instance when a person was charged with pulling the trolley from the wire in order to board the car when the motorman had refused to stop.

New Street Guide Issued by Denver Tramway.—The Denver (Col.) Tramway has issued a new street guide, which, besides containing the information which the usual street guide carries, also gives information as to what cars to take to any address in Denver. Although the guide was compiled by the company, it has been published and will be sold by the Associated Tramway Trainmen's Clubs. There is a small profit above the printing cost of each book and all of that profit will be divided between the trainmen and their clubs.

Jitneys on Decrease in Houston.—The number of jitneys in Houston, Tex., is decreasing, according to George L. Charlton, public service commissioner, whose report just filed shows that only 100 jitney drivers have applied for licenses for the new quarter, whereas during the quarter just ended there were 140 jitneys in operation in the city. The city ordinance requires that a license tag be displayed on the front of the automobile used as a jitney and the tags for each quarter are of different color, thus enabling traffic officers to tell at once if a driver has paid the license fee.

Fare Increase Anticipated by Large Purchases of Tickets.—The Travelers' Insurance Company, Hartford, Conn., purchased $25,000 of tickets of the Connecticut Company at the old rate of 5 cents just prior to the establishment of the 6-cent fare by the company. The purchase was made for the benefit of the employees of the insurance company to whom the tickets are being resold at cost. Each employee is entitled to buy $2 worth of tickets a week, or two books of twenty rides each. No deduction is being made by the company for interest or carrying charges. Other business concerns in Hartford are reported to have made similar purchases in anticipation of the fare increase.

Permanent Injunction Against Free Jitneys Denied.—The petition of the Puget Sound Traction, Light & Power Company, Seattle, Wash., for a permanent injunction against Dave Levinson and twenty other jitney bus drivers in Seattle was recently denied by Judge King Dykeman. Judge Dykeman stated that he found from the evidence that the men had State licenses for operating automobiles for hire, and also licenses as drivers. The jitney men claimed they were not accepting money as common carriers, or holding themselves as such. The decision means that as far as the State is concerned, the free buses may operate with impunity. In the Federal Court, however, Judge Neterer, as noted on page 742 of this issue, issued an injunction against the same men.

Oregon Bus Owners Give Personal Bond.—The Portland (Ore.) Trackless Motor Bus Company, unable to secure surety company bonds, has filed with the Council personal bonds covering the requirements under the various franchises granted by the voters at the last municipal election, for the operation of motor buses over streets in the city. The bondsmen are Stephen Carver, promoter and principal owner of the company, and his wife, whose resources are given at $102,000, and J. L. Sprinkle, at $335,000. Mr. Carver renewed his request for an extension of time in beginning the operation of several of the proposed motor bus lines, but he was informed that no action would be taken on the petition for extension until the investigation which has been ordered into the financial status of the bondsmen is finished.

New Buses for Baltimore.—The Baltimore (Md.) Transit Company, a subsidary of the United Railways & Electric Company, has placed in operation twenty new buses on its Charles Street line, to replace the conveyances which have been in service. The new buses are similar in design to those formerly used, but are larger. They have a seating capacity of seventeen each, including the chauffeur and a total carrying capacity of twenty-three. The bodies are of Brill make, of special design for this company, and are mounted on two-ton White standard chasses. Passengers enter and leave the machines by hand-operated side folding doors, and there are also emergency doors at the back of the buses. The cars are housed at the company's garage, the old Charles Street carhouse, the remodeling of which for this purpose has been practically completed.

Temporary Injunction Continued Against Jitneys.—In declining to dissolve the temporary injunction granted against Earl W. Arnold and 196 other jitney drivers in Seattle, Wash., United States District Judge Jeremiah Neterer fixed Nov. 7 as the date for the hearing of the case on its merits, when it will be decided whether or not the temporary injunction granted the Puget Sound Traction, Light & Power Company shall be made permanent. The decision was made following an application filed by W. R. Crawford on behalf of certain of the 196 defendants to have the temporary injunction dissolved. The temporary injunction was granted on the application of the plaintiff, the Puget Sound Traction, Light & Power Company, which alleged that through the operation of auto buses for hire in competition with the company's cars it had been damaged to the extent of $50,000.

Hearing on Buffalo Traffic Recommendations.—A hearing was arranged to be held on Oct. 18 at Buffalo by the Public Service Commission for the Second District of New York, before Chairman Van Santvoord and Commissioner Barhite, in the case pending with the commission against the International Railway. The action is one brought by the city of Buffalo and various civic and commercial organizations and concerns the service rendered and equipment operated by the railway within its 5-cent fare zone in Buffalo and vicinity. At the hearing the recommendations for improvements suggested in the report of C. R. Barnes, chief inspector of electric railroads for the commission, were to be presented for discussion and also the reply of the railroad in respect of the recommendations for changes in service and equipment made by Mr. Barnes. The recommendations made by Mr. Barnes were reviewed in the ELECTRIC RAILWAY JOURNAL of Sept. 8, page 415.

Elevated Non-Rush Hour Express Service Details Furnished.—Details of the proposed operation of an "all day" express service on the Third Avenue elevated railroad have been furnished to the Public Service Commission for the First District of New York by operating officials of the Interborough Rapid Transit Company. As soon as certain minor structural changes are completed and the necessary schedules prepared, the new service will be instituted. The date at which it will begin, it is believed, will be about Nov. 10. So far as outlined the schedule calls for the operation of express trains southbound during the morning rush hours, beginning about 6 a. m. and continuing until noon. The first northbound express train will leave the downtown terminus about 1 p. m. and the service will conclude at the end of the evening rush hour. It is estimated that southbound and northbound passengers in non-rush hours will be saved about eight minutes in running time between the northern and southern terminals of the railroad.

Legal Notes

CHARTERS, FRANCHISES, ORDINANCES

MINNESOTA.—*What Paving Is Made Extra by Reason of a Railway?*

Defendant's franchise, in referring to the cost of pavings, says that "the company shall be required to pay only so much of the expense of paving the street as is made extra by reason of said railway." Another section therein provides that the "company shall keep the space between the rails in proper repair." The word "railway," as used in the quoted part, is not synonymous with the "rails," but means the track with the cars moving on it. Held, that the company should pay for a width of 10 ft. where it had double tracks and for 5 ft. where it had single tracks. (City of Duluth v. Duluth Street Railway Co., 163 Northwestern Rep., 659.)

NEW YORK.—*Private Freight Line Not a "Railroad" Within Meaning of Railroad Law.*

Under the provisions of the railroad law (Consol. Laws, chap. 49) the city of New York could not authorize the use of streets by a private freight railroad, with spurs extending across the sidewalks and injuring abutting owner's rights, not operated for the convenience of the public but for the convenience of manufacturing enterprises, and such a road was not a "railroad," within the meaning of the railroad law, and the termini in the private establishments which the railroad served were not "termini" within the legislative contemplation. (Stanley v. Jay Street Connecting Railroad, 166 New York Sup., 119.)

VIRGINIA.—*Right to Cross City Bridge.*

Under an ordinance granting a thirty-year street railway franchise, accepted by the company, authorizing the company to operate on a certain street to the corporate limits and referring to bridges to be crossed by the company's tracks, the company was not obliged to pay the city toll for crossing a bridge subsequently condemned and constructed by the city as a part of such street. The city's statutory right to require of transportation companies compensation for the use of its bridges was exercised by the compensation and considerations exacted of the company in the original franchise ordinance (City of Richmond v. Virginia Railway & Power Co., 92 Southeastern Rep., 898.)

LIABILITY FOR ACCIDENT

MARYLAND.—*Injury of Passenger After Being Ejected.*

A passenger ejected from a car, who therefore walks along defendant's tracks, assumes the risk of its perils. (State to Use of Scott et al. v. Washington, Baltimore & Annapolis Electric R. R., 101 Alt. Rep., 546.)

MARYLAND.—*Employment Held to Be Not Under Federal Employers' Liability Act.*

In an action under the federal employers' liability act, evidence that deceased, who was accidentally killed by the discharge of a pistol in the hands of a fellow servant, was employed in a blacksmith shop in which repairs were made on cars engaged in both interstate and intrastate work, was insufficient to show that at the time of deceased's death he was engaged in work in interstate commerce. (Washington, Baltimore & Annapolis Electric Railroad v. Owens, 101 Atlantic Rep., 532.)

NEW JERSEY.—*Duty to Protect Passengers Against Assault.*

The fact that a passenger was intoxicated to the knowledge of the conductor, the fact that he had repeatedly insulted a woman passenger in the presence and hearing of the conductor, and immediately after the last insulting remark arose from his seat and struck her twice, all without any word of admonition or protest by the conductor or attempt upon his part to prevent the assault, although he was throughout within arm's reach of the drunken man, are circumstances from which the jury could properly infer that with proper care upon the part of the conductor the act of violence might have been foreseen and prevented. (Hoff v. Public Service Railway, 101 Atlantic Rep., 404.)

Personal Mention

F. M. Weld has been appointed master mechanic of the Boston & Worcester Street Railway, Framingham, Mass.

George Kuhn, master mechanic of the International Railway, Buffalo, N. Y., has been appointed acting superintendent of equipment in charge of shops and carhouses.

Walter G. Parker, manager of the Penobscot Bay Electric Company, Bucksport, Me., has been elected general manager of the Waterville, Fairfield & Oakland Railway, Waterville, Me. He will retain his former position.

H. D. Feuers, general manager of the Fremont Gas, Electric Light & Power Company, Fremont, Neb., has been appointed general manager of the City Light & Traction Company, Sedalia, Mo., to succeed S. B. Irelan.

Frank McEnaney, formerly of Providence, R. I., who for nine years has been in the service of the Connecticut Company, has been made superintendent of the Waterbury & Milldale Tramway, with headquarters in Waterbury, Conn.

George W. Dunlap, heretofore superintendent of power and equipment for the International Railway, Buffalo, N. Y., has been appointed superintendent of power stations following a separation of the equipment and power departments.

George H. Waring has resigned as vice-president and general manager of the Charleston Consolidated Railway & Lighting Company, Charleston, S. C., to become manager for the American Public Utilities Company at Salt Lake City, Utah.

Thomas Logan of Parkersburg, W. Va., has been elected president of the Parkersburg-Marietta division of the Monongahela Valley Traction Company to succeed S. D. Camden. This property was formerly known as the Kanawha Traction & Electric Company.

J. F. Strickland, president of the Dallas Electric Light & Power Company and president of the Texas Electric Railway, has been elected president of the Dallas Railway, which is to take over the electric railway properties in Dallas and operate them under the new service-at-cost franchise.

Richard Meriwether, who has been superintendent of the electric railway system at Dallas, controlled by Stone & Webster, has been appointed assistant general manager of the Dallas Railway. This road is to take over the electric railway properties in that city and operate them under the new service-at-cost franchise.

D. G. Brandt has resigned as general superintendent of Bartlesville (Okla.) Inter-Urban Railway and the Bartlesville Gas & Oil Company, which are operated by H. L. Doherty & Company, New York. Mr. Brandt will take up natural gas and oil work for the Doherty organization with headquarters in New York City.

C. M. Benedict, assistant secretary and assistant treasurer of the Charleston Consolidated Railway & Lighting Company, Charleston, S. C., has been elected in addition vice-president of the company. He will have charge of the operation of the system, discharging the duties of general manager, which position has been abolished.

M. N. Baker, Dallas, Tex., has been appointed by the Board of City Commissioners of that city as utility supervisor in accordance with the terms of the new service-at-cost franchise under which the electric railway and light properties will hereafter be operated. He will serve for one year and is subject to removal at any time by the Mayor or the Board of Commissioners. Mr. Baker was born in Knowlesville, N. Y., in 1854. He was graduated from the high school at Geneva, N. Y., and at the close of his school career became connected with one of the predecessors of the Toledo Railways & Light Company at Toledo, Ohio. He served with that company in various capacities, including that of cashier, for seven years. Since 1883 he has resided in Dallas, where he has engaged in the buying and selling of farm lands and city property.

S. B. Irelan, vice-president and general manager of the City Light & Traction Company, Sedalia, Mo., has been appointed manager of the Montgomery Light & Water Power Company, Montgomery, Ala., to succeed Harry D. Frueauff, who has been transferred to the oil department of the Doherty organization. Both companies are operated by H. L. Doherty & Company, New York, with which Mr. Irelan has been connected for several years. He was formerly stationed at Fremont, Neb. In May, 1914, he was appointed manager of the Bartlesville (Okla.) Inter-Urban Railway, and later was elected vice-president and general manager to succeed L. G. Coleman. Mr. Irelan became connected with the City Light & Traction Company of Sedalia in September, 1916, to succeed Mr. Frueauff, whom he succeeds now as manager of the Montgomery property.

G. E. PELLISSIER

George E. Pellissier, as noted in these columns recently, has been appointed assistant general manager of the Holyoke (Mass.) Street Railway. During the last four years Mr. Pellissier has acted as consulting engineer for that company in charge of the design and reconstruction of its power houses, carhouses and other buildings. He was first employed by the Holyoke Street Railway in 1897 and served in its repair shop and the transportation department. Three years later he entered Worcester Polytechnic Institute, from which he was graduated with the degree of Bachelor of Science in Civil Engineering. He then returned to the Holyoke Street Railway as engineer of maintenance of way and structures. From 1906 until 1912 he was engineer and superintendent for the Goldschmidt Thermit Company, New York, N. Y., engaged in developing the Thermit process particularly as applied to electric railways. In connection with this work he made inspections of electric railways in nearly all the large cities of the United States and Europe. For the last five years Mr. Pellissier has engaged in private consulting engineering practice in Springfield, Mass. During this time his work on the design and construction of power houses, carhouses and industrial buildings, bridges, etc., for electric railways and municipalities has aggregated approximately $2,000,000 in value. Mr. Pellissier is a member of the American Society of Civil Engineers and the American Society of Mechanical Engineers.

Obituary

Behrend Joost, one of the promoters of the first electric railway in San Francisco, died suddenly at his home in that city recently. Mr. Joost was a member of the De Lesseps engineering firm which made the original attempt to build the Panama Canal.

Dr. James S. Gilbert, formerly Mayor of Bordentown, N. J., and the first superintendent of the old Camden & Trenton Railway, died in a Trenton hospital on Oct. 11, after a long illness. He was superintendent of the Camden & Trenton line for many years and gave up the position when the road was purchased by the Public Service Railway, Newark.

E. F. Roeber, Ph.D., editor of *Metallurgical & Chemical Engineering*, one of the papers of the McGraw-Hill Publishing Company, Inc., died on Oct. 17 after an illness of about six months. He was born in Germany in 1867 and came to this country in 1894. For some time he was associated with Dr. Carl Hering of Philadelphia, in electrical engineering work, but became editor of *Electrochemical Industry*, later known as *Metallurgical & Chemical Engineering*, on its foundation in 1892. He was a member of the American Institute of Mining Engineers, American Institute of Electrical Engineers, American Chemical Society and American Electrochemical Society, and was president of the latter organization in 1913-1914.

Construction News

Construction News Notes are classified under each heading alphabetically by States.

An asterisk (*) indicates a project not previously reported.

FRANCHISES

Glendora, Cal.—The Pacific Electric Railway has received a fifty-year franchise from the City Council of Glendora for the construction of a line on Banana Avenue. This was the last act necessary to complete the securing of rights-of-way for connecting the Azusa-Glendora line with the Pomona and San Bernardino line. The connection will be made at Lone Hill. Officials of the company state that construction work will be begun at once and the line opened for traffic by the first of the year.

Washington, D. C.—The Capital Traction Company has received an extension of time until Jan. 1 on its franchise to construct an extension on Seventeenth and Nineteenth Streets, south of Pennsylvania Avenue.

Savannah, Ga.—The Savannah Electric Company has asked the City Council for a franchise to construct an extension on Abercorn Street between Fiftieth and Fifty-fourth Streets and on Fifty-fourth Street between Abercorn and Barnard Streets.

Cedar Rapids, Iowa.—The Iowa Railway & Light Company has received a twenty-five year franchise from the Board of State Railroad Commissioners to construct and operate electric transmission lines on certain roads and highways in Muscatine County.

Muskegon, Mich.—The Muskegon Light & Traction Company has filed its acceptance with the city of the proposed thirty-year franchise recently adopted by the City Council and which will be voted on at the spring election.

New York, N. Y.—James D. Quackenbush, counsel for the New York Railways, has notified the Board of Estimate that the company will not accept the contract as drawn up by the city for the franchise to operate a line through West Eighty-sixth Street from Central Park West to Broadway.

Nashville, Tenn.—The Board of City Commissioners of Nashville rejected the franchise granting to the Nashville Railway & Light Company rights-of-way on a number of streets of the city on condition that the company at its expense extend and pave Deaderick Street from Fifth Avenue to Capitol Boulevard and accord to the Board of Commissioners the privilege of supervising the routing of its cars.

TRACK AND ROADWAY

Montgomery Light & Traction Company, Montgomery, Ala.—Work will be begun at once by the Montgomery Light & Traction Company on the construction of its proposed extension to Camp Sheridan. The double-tracking of its line to Pickett Springs will also be begun at once.

Connecticut Company, New Haven, Conn.—The Public Utilities Commission of Connecticut recently approved three petitions of the Connecticut Company with regard to the building of trolley tracks. The first was a petition for approval of the proposed method of reconstructing the single track on Main street, South Farms, in Middletown. The second was with regard to the construction of a split switch cross-over on the New Haven-Derby line in the town of Orange. The third concerned the construction of a spur track across Watertown Avenue to the property of the Oakville Company in Waterbury.

Savannah (Ga.) Electric Company.—At a recent meeting of committees representing the five trade bodies and the city to consider the construction of an electric railway to Port Wentworth, a general committee was appointed to offer its services to the Savannah Electric Company in connection with its plans for the extension of its car service to the new industrial center.

Des Moines (Iowa) City Railway.—The North American Construction Company has received a contract from the Des Moines City Railway for the completion of the Fort Des Moines and Sevastopol lines from the south end of the Seventh Street viaduct to the south end of the bridge and for the connections with the two lines there.

Joplin & Pittsburg Railway, Pittsburg, Kan.—A preliminary survey has been completed by the Joplin & Pittsburg Railway for a 2-mile line from Waco into the rapidly developing mineral field between Waco and Lawton.

***Sharptown, Md.**—Plans are under consideration for the construction of a line from Sharptown to either Delmar or Salisbury, 11 and 15 miles respectively. The Board of Trade, Sharptown, may give information.

Boston (Mass.) Elevated Railway.—Work will be begun at once by the Boston Elevated Railway on the extension of its tracks at Neponset to the site of the proposed $200,000 bridge which is to be constructed from Commercial Point, Neponset, to Squantum, where the federal government is to erect a huge destroyer plant.

Detroit, Pontiac & Owosso Railway, Owosso, Mich.—According to an announcement made by officials of the Detroit, Pontiac & Owosso Railway, operation will be begun on its line between Detroit and Owosso, via Pontiac, next summer. The new line will operate over the tracks of the Detroit United Railway from the interurban waiting room in Detroit to Huron Street, Pontiac. From there the line will branch off on a private right-of-way, extending 52 miles to Owosso and passing through Fenton, Holly, Linden, Durand and other towns. [June 24, '16.]

Kansas City (Mo) Railways.—Work has been begun by the Kansas City Railways on the construction of tracks across the Union station plaza. Double tracks will be laid in front of the station, connecting on the east with those on Main Street and turning north over the Broadway viaduct. Immediately in front of the main entrance of the Union station a loading and unloading station will be erected with covered passageways leading to the station. The company estimates the cost at about $100,000.

St. Louis, Mo.—Public Utilities Director Hooke recently submitted to the Board of Public Service proposals for the construction of a downtown interurban loop to connect with the free bridge at St. Louis. The companies asking for the privilege of crossing the bridge and using the loop are the St. Louis & East St. Louis Interurban Railway and the St. Louis & Illinois Railway. Director Hooke proposes that the loop extend from the west approach of the bridge north to Seventh and Walnut Streets, east to Sixth Street, north to Chestnut Street, west to Seventh Street and back to the bridge. The cost of constructing this loop, he estimates, would be $150,000.

Butte, (Mont.) Electric Railway.—A petition has been presented to J. R. Wharton, manager of the Butte Electric Railway, by merchants of that city for the double-tracking of Main Street from Park Street to Quartz Street. The petition has been referred to the City Council of Butte. Mr. Wharton states that his company stands ready to perform this work if the public demands it, but that orders for material will have to be placed at once if work is to be begun in the spring.

Brooklyn (N. Y.) Rapid Transit Company.—Agreements have been reached between officials of Queens, representatives of large Long Island City manufacturing interests and officials of the Brooklyn Rapid Transit Company regarding the proposed extension of the company's lines into Long Island City. The proposed line would begin at Second Avenue and Fifty-ninth Street, Manhattan, cross the Queensboro Bridge, pass through the Dutch Kills industrial basin and by way of the Greenpoint Avenue bridge reach Manhattan Avenue, Brooklyn, extending to Bedford Avenue and thence to the Brooklyn plaza of the Williamsburg Bridge. This route would give a crosstown line between Long Island City and Manhattan and a direct route to uptown Manhattan and Brooklyn's eastern district.

Cincinnati (Ohio) Traction Company.—Street Railway Commissioner Culkins recently submitted eight proposed extensions to the Cincinnati Traction Company with the request that they investigate and inform him of the cost.

Those on the list were the extension of the Sedamsville line to Fernbank, Crosstown line to Mount Washington, the Madisonville loop, Auburn Avenue to Ehrman Avenue, North Fairmount line to Colerain Avenue, McMicken and Main line over the Hopple Street viaduct, John Street line to Seton and Warsaw and the Warsaw Avenue line to the Harvest Home grounds.

Tulsa (Okla.) Street Railway.—The Tulsa Street Railway has double-tracked practically the whole of East Third Street from the corner of Main and Third Streets to Yorktown Avenue and will complete the line to Lewis Avenue. The company will also double-track Madison Street from Third to Fostoria Street and Fostoria Street to Quincy Street. It is also intended to extend the double-tracking on West Third Street from Elwood to Guthrie Streets and West Fifth Street from the end of the double-track at Boulder Street as far as the carhouse. The entire Main Street line will also be double-tracked.

Dallas Northwestern Traction Company, Dallas, Tex.—It is reported that construction will be begun by the Dallas Northwestern Traction Company within the next few weeks on its proposed line from Dallas to Slidell. A trust deed from the Dallas Northwestern Traction Company to the Metropolitan Trust Company of New York, trustee, to secure the payment of $2,250,000 first mortgage 6 per cent bonds of the company, authorized at a meeting held July 9, 1917, was filed in the County Clerk's office on Oct. 2. A similar deed of trust from the Dallas Southwestern Traction Company to the Metropolitan Trust Company of New York, trustee, authorizing the issuance of bonds in the same amount, was also filed. Provisions in the trust deeds are made for the immediate certification of $50,000 of the bonds of each company and for the certification of others as engineers shall report that the companies have expended the amounts called for for the purchase of rights of way, depots, power houses, equipment or work done. Both deeds of trust were executed Sept. 21. References to the bond issues are made on page 738 of this issue. E. P. Turner, president. [Aug. 25, 1917.]

Dallas Southwestern Traction Company, Dallas, Tex.—Actual construction work has been begun on the interurban line of the Dallas Southwestern Traction Company from Dallas to Irving, via West Dallas, Cement City and Eagle Ford. The line is being built by the Creek Construction Company. The plans of the company call for the Dallas-Irving line, 10 miles long, to be completed within eight months. Later a line will be built from Eagle Ford through Grand Prairie, Mansfield, Cleburne, Glen Rose and eventually to Stephenville, thus giving the company a line 80 miles long. Sealed bids will be received by the Creek Construction Company, 303 Gaston Building, in care of F. R. Perkins, until Nov. 6, for the construction of a steel bridge over Trinity River and concrete approaches at Dallas. Plans and specifications can be obtained by depositing a certified check for $25 for the return of same. Each bid must be accompanied by a certified check for $500. E. P. Turner, president. [Oct. 13, 1917.]

Seattle (Wash.) Municipal Railway.—The Board of Public Works has cancelled the contract awarded to R. H. Travers for an extension of the Seattle Municipal Railway into Ballard at $19,554. This action was taken when it became apparent that for some time at least there would be no money available, in view of the opinions of the legal department that money cannot be taken from the light or general funds for such a purpose. Mr. Travers asked to be relieved of the contract, the board agreeing to reimburse him to the extent of his expenditures to date, the total not to exceed $350.

Tacoma (Wash.) Municipal Railway.—At a special session held recently the City Council passed a resolution offering to enter into a contract with the Tacoma Railway & Power Company to operate the city's car line on the tideflats. The proposition, if accepted, provides that the Tacoma Railway & Power Company would operate the city line at cost for two years. The city would receive 2 cents on each transfer, while the company would receive the remaining 3 cents. As noted elsewhere in this issue a fare of 5 cents would be charged for all points within the city limits while a fare of 6 cents would be charged for any point outside the city limits.

SHOPS AND BUILDINGS

Galesburg Railway, Lighting & Power Company, Galesburg, Ill.—This company will remove its offices to No. 5 Public Square, which will be remodeled into an office building.

Philadelphia, Pa.—Sealed proposals will be received by the Department of City Transit, William S. Twining, director, until 12 o'clock noon, on Oct. 30, for the following work appurtenant to the Frankford Elevated Railway: Contract No. 525.—Steel frame work and railings, concrete floors and parapets, side inclosures, roofs, drain gutters and spouts for four station platforms and connecting passages or foot bridges between station platforms and station buildings at Orthodox-Margaret Streets and Ruan-Church Streets. Contract No. 533.—Erection of brick and reinforced concrete station buildings at 4604 Frankford Avenue and at 4679-4681 Frankford Avenue, including the removal of existing buildings on these sites. Contract No. 534.—Erection of brick and reinforced concrete station buildings at 4270-4272 Frankford Avenue and at 4269-4271 Frankford Avenue, including the removal of existing buildings on these sites. Copies of plans and specifications may be obtained upon deposit of $10, to be refunded upon return of plans.

Pennsylvania Railroad, Philadelphia, Pa.—Plans have been completed by the Pennsylvania Railroad for the construction of a new one-story addition, about 25 ft. x 50 ft., to its West Philadelphia shops, to cost about $7,000.

POWER HOUSES AND SUBSTATIONS

Northwestern Elevated Railroad, Chicago, Ill.—The construction of a new substation at the terminal of the Northwestern Elevated Railroad at Linden Avenue, Wilmette, is contemplated by the Public Service Company of Northern Illinois, to furnish power to the railway.

Illinois Traction System, Peoria, Ill.—A sixteen-lever Saxby & Farmer mechanical interlocking plant will be installed by the Illinois Traction System at the crossing of its line with the Chicago & Illinois Midland Railroad. The Federal Signal Company, Albany, N. Y., will furnish the plant.

Manchester Traction, Light & Power Company, Manchester, N. H.—A contract has been awarded by the Manchester Traction, Light & Power Company to Whitcomb & Kavanaugh, Boston, Mass., for the construction of a new power station.

New York Municipal Railway, Brooklyn, N. Y.—Plans have been prepared by the New York Municipal Railway for the erection of new signal towers, circuit-breaker houses, etc., at its Coney Island terminal.

Ohio Electric Railway, Springfield, Ohio.—An automatic substation is being installed by the Ohio Electric Railway at Columbus Grove, on the Toledo division. The substation will contain one 500-kw. rotary converter.

Northwestern Ohio Railway & Power Company, Toledo, Ohio.—This company plans to install a 5000-kw. turbogenerator in its power house at Port Clinton.

Virginia Railway & Power Company, Norfolk, Va.—A contract has been awarded by the Virginia Railway & Power Company to J. H. Pierce, Norfolk, for the construction of a new one-story substation, about 20 ft. x 25 ft.

Puget Sound Traction, Light & Power Company, Seattle, Wash.—A report from the Puget Sound Traction, Light & Power Company states that it has placed orders for and is preparing to install a 16,000-kva. generator at its White River hydroelectric station; a 10,000-kw. steam turbine set at its Georgetown steam station, together with coal and ash-handling apparatus; a 600-hp. boiler at its Western Avenue steam-heating plant, together with apparatus for burning powdered fuel under a battery of five boilers at this plant.

Monongahela Valley Traction Company, Fairmont, W. Va.—A new 50,000-kw. power plant is now being built by the Monongahela Valley Traction Company at Fairmont.

Wisconsin Traction, Light, Heat & Power Company, Appleton, Wis.—A contract has been awarded to the Wisconsin Traction, Light, Heat & Power Company for the installation of street lights at Neenah.

Manufactures and Markets

Discussions of Market and Trade Conditions for the Manufacturer, Salesman and Purchasing Agent
Rolling Stock Purchases Market Quotations Business Announcements

Railway Buying Active in the South

High Prices No Bar to Purchasers as Traffic Under Military Influx Increases, Necessitating Additional Equipment

The natural increase in population and the location of cantonments in the Southeastern states have put the various electric railways in that section of the country under great pressure during the past few months in order to provide additional service for the normal traffic and the abnormal temporary influx of the military. The Columbia Railway & Gas Company, Columbia, S. C., has purchased one 500-kw. rotary and ten double truck cars; the South Carolina Light, Power & Railway Company, six double truck cars; the Augusta-Aiken Railway Company, five single and five double truck cars; the North Carolina Public Service Company, fifteen single truck cars; the Columbus Railroad Company, eight single truck cars; the Tampa Electric Company, fifteen single truck cars; the Vicksburg Light & Traction Company, three single truck cars; the Georgia Railway & Power Company, ten double truck equipments, the cars to be built in the shops, and two 500-kw. rotaries; the Charleston Consolidated Railway & Light Company, one 500-kw. rotary. Some of the above mentioned equipment is being installed now, and the balance will be delivered shortly.

The Savannah Electric Company is contemplating the extension of its lines a distance of 10 miles to Fort Wentworth. The government is now widening the channel to accommodate the shipbuilding yards being erected at this point.

On the whole, the above reference to a few electric railway companies indicates considerable activity in this field, even though the price of most all materials has advanced rapidly. Extensions, maintenance and relays have called for a considerable steel tonnage, and with some of the companies price had to be treated as a secondary consideration, as the delivery of steel was of first importance. Cantonment extensions called for practically immediate delivery of the equipment necessary to handle the traffic, and in these instances the second-hand dealers found a ready market for a large quantity of equipment.

While the demand for new motors has fallen off slightly in the past two weeks, good second-hand equipment is being disposed of without much difficulty.

Manufacturers say that the gear and pinion market is very dull, and that consumers are buying from hand to mouth. The market for car wheels is somewhat uncertain, but the general average shows up fairly well. This line has secured abnormal support from the various car repairing and equipment companies putting second-hand cars on the market. The demand has been good for cross-ties, spikes and miscellaneous track equipment, with a decided slowing up in deliveries of steel products. Difficulty is also experienced in securing prompt delivery on ties. Overhead material has had an active period, and deliveries are about as good as can be expected under the existing raw material situation.

Insulators continue to be in demand, and a slight improvement in deliveries is noted. This may be only temporary, however. As a rule, buyers of large quantities of steel and copper do not seem to be hesitating on account of the recent price fixed for these products, as they realize it may be some time before anything definite will be known or before any prices settle materially, if at all. They feel that under the circumstances it is much better to secure the necessary material on the present basis than wait and possibly be seriously inconvenienced later when the need may be more acute.

Coal Situation Acute in Middle West

Strike of 12,000 Illinois Miners, Oct. 16, Cuts Off 75,000 Tons a Day from Normal Supply—More Evidence of Open-Market Purchasing

The unauthorized strike of 12,000 miners in the Illinois coal field is seriously aggravating the already acute coal situation in the Middle West states. This strike was effected on Oct. 16, the beginning of the second pay-day period for October, for the reason that the miners insisted that the advance in pay of 10 cents a ton for digging coal, $5 a day for day work and 15 cents advance for yardage and dead work, should begin that day. It is reported that this strike will spread through the states of Missouri, Arkansas, Oklahoma and Kansas by Oct. 19, in protest against the penalty clause inserted in recent agreements, which would automatically fix fines for unauthorized strikes. National Coal Administrator Garfield is making strenuous effort to bring about an immediate settlement, and by the time this item is published some agreement may have been effected which will put the miners back to work.

However, this strike is only an added pressure to an already acute coal situation throughout the Middle West states. One prominent electric railway company in Ohio at the present time has no contracts for coal, and is forced to make all purchases on the open market, which it reports to be tighter than last year. The principal difficulty there seems to be shortage of motive power, and also lack of sufficient labor at the mines. The effect of the President's recent price fixing for coal in this location is interpreted to be a lessening of the amount of coal offered on the market. All the larger operators are booked for Lake shipments, which, presumably, is in accord with Mr. Garfield's priority shipment order for the Upper Lake region.

Evidence that this is the case is also had by a report from one of the electric railways in this district, which states that it is not having any serious difficulty in securing coal on contract. Contractors seem to be having more difficulty than formerly in maintaining their stock on hand, but otherwise the situation has not changed since last year.

A large electric railway in Indiana reports the coal market there to be easier than last year at this time, and that its needs are being supplied on contract. The effect of the President's order at this location is said to be only the freeing of coal at a lower price, but the shortage of supply is still the determining factor.

A large Illinois interurban railway reports that the mine is unable to fill its contract, due principally to labor and equipment trouble, and the company is at present buying about one-third of its supply in the open market. It finds it almost impossible to secure a good grade of coal, though there is plenty of poor coal to be had. This company states that it has noticed a particular shortage of good coal since the President fixed the prices, and also that the market in this district is now much tighter than last year at this time.

A report from a Missouri electric railway company of considerable prominence states that the coal situation is growing steadily worse, even without considering the possibility of a strike in Missouri, Kansas, Oklahoma or Arkansas or that already obtaining in Illinois. This company is not able to procure the full amount of coal called for on its contract on account of the labor and car shortage, and it also states that it is difficult to obtain sufficient coal in the open market to meet its requirements above the contract deliveries. This company expresses the belief that coal would certainly be more easily obtained if particular attention were given to the car supply rather than the coal supply, since the coal would be made available if the railroads were compelled to place open cars at the mine. The situation is now more critical than at any time during the past year. It was also believed to be very important that the American Electric Railway Association should take advance steps to prevent the government or state officials from diverting any coal consigned to city utilities to the use of other consumers. This has been threatened in several instances, and if any state administrator should take such steps it would cause serious trouble.

One Iowa electric railway company reports that it is receiving all the coal it is entitled to on its contracts dated in 1916, and also on other contracts dated in 1917. However, not sufficient coal was contracted for in 1917 to meet the full requirements, and the company is buying in the open market at the prices proclaimed by the President. It states that some difficulty is had in getting operators to quote on this additional tonnage, and it is found that the market is materially more tight than it was at this time a year ago. The sharp advance in 1916 did not come until several weeks later in the season.

Good Local Market for Old Rail and Wire

General Scarcity Brings Demand from Contractors and Industrials for Rail and Copper Platers for Copper

Considerable demand for old rail, without much regard to weight or section, and for old copper wire and bar copper is being felt by the electric railway companies in their own cities and along the lines of their own properties. The general scarcity of rail has frequently brought customers from among the local industrial men to the railway companies to purchase sufficient rail for industry side tracks for which they are willing to pay premium prices. Local contractors have also been calling for old rail sections as reinforcing metal for concrete, to make up for their inability to get standard reinforcing material. One railway company reports that it has been getting $75 a ton for old rail sold locally for these purposes, and it has frequently secured additional revenue from hauling these shipments over its own lines. The customers were glad to get the steel at any price.

Old copper has also been in demand locally by copper plating companies and various manufacturing companies who were glad to get it at unusual prices. For this purpose it is necessary to cut old wire up into sections 18 in. long, but this is readily accomplished by a bull cutter, one or more of which is usually to be found in the average railway shop.

Gears and Pinions in Active Demand

Delivery Situation in Regard to Raw Materials Somewhat Easier, Although Still Far from Being Satisfactory

Freights have caused no end of uneasiness and exasperation among the manufacturers and sellers of gears and pinions. The uncertainty in the delivering of material and obtaining blanks has caused the giving of promises, made in good faith and with an idea that their ultimate execution would be a matter of course, in the main untrustworthy. However, deliveries are improving, according to some distributors, and not so much anxiety is displayed on this score, although the betterment is none too satisfactory. Others declare that on the matter of freights it is impossible to accept any contracts with any definiteness of a delivery date.

The demand is active, and there is not the slightest indication of a decline in trade or lack of orders. Where some manufacturers are obligated to pay a premium on metals and even on freights to guarantee shipments, others declare there is a slight tendency toward lower prices. There is also a marked preference for a better grade of material. The blank situation is trying, and stock of this description, as stated, is difficult to obtain. The cutting of the blanks is "extremely strenuous," as a leading manufacturer phrased it, somewhere in the ratio of sixty in the receipt of blanks against forty in material. Deliveries on finished goods is about thirty days, which is much better than for some time past. Prices on gears and pinions reflect that of the basic metals, and instances are reported where the price was, within reason, a negligible quantity so long as the goods could be figured on a certainty of delivery.

Labor at the plants is creating obstacles, as in other branches of the industry. The demand for skilled workmen far exceeds the supply. This phase, producers report, is improving; however, it is not so intensive or pressing.

Taylor-Wharton Company Celebrates 175th Anniversary

Large New Plant at Easton, Pa., Engaged in Manufacture of Frogs, Switches, Curves and Track Layout, of Particular Interest

Several thousand employees and guests of the Taylor-Wharton Iron & Steel Company assembled at High Bridge, N. J., on Oct. 13, to celebrate the 175th anniversary of the iron and steel business founded by Robert Taylor. The program comprised an inspection of the High Bridge plant, addresses by officials of the company, a wonderful historical pageant, a clam bake, and sports and entertainment of several kinds. Large numbers of employees came from the other plants of the company, and the town was elaborately decorated in honor of the event.

To the electric railway track specialist the most interesting plant of the company is the one located at Easton, Pa., where the company owns 100 acres of land, utilizes about 40 acres for manufacturing purposes and has under roof a floor space of nearly 10 acres. The plant comprises a main building for track work, 420 ft. x 420 ft., a foundry 115 ft. x 415 ft., a pattern shop 120 ft. x 200 ft., a pattern storage 40 ft. x 110 ft., a forge shop and finishing shop having combined dimensions of 110 ft. x 420 ft., a large office building, a garage, a power plant, and sundry smaller buildings. A prominent feature of the yard layout is the assembly yard at the west end of the plant which is surrounded by a stretch of track of 175-ft. radius within which special track work layouts, switches, frogs, etc., are assembled and loaded for shipment. In all about 11,000 ft. of trackage is provided in the yard installation.

NEW YORK METAL MARKET PRICES

	Oct. 10	Oct. 17
Prime Lake, cents per lb	23½	23½
Electrolytic, cents per lb	23½	23½
Copper wire base, cents per lb	35	35
Lead, cents per lb	7.60	7.00
Nickel, cents per lb	50	50
Spelter, cents per lb	8¼	8¼
Tin, Straits, cents per lb	61	61
Aluminum, 98 to 99 per cent, cents per lb	42	..

OLD METAL PRICES—NEW YORK

	Oct. 10	Oct. 17
Heavy copper, cents per lb	23½	23½
Light copper, cents per lb	20½	23¼
Red brass, cents per lb	19	19
Yellow brass, cents per lb	16¼	16¼
Lead, heavy, cents per lb	7	7
Zinc, cents per lb	6	6
Steel car axles, Chicago, per net ton	$41.00	$41.00
Old car wheels, Chicago, per gross ton	$28.00	$27.00
Steel rails (scrap), Chicago, per gross ton	$35.00	$34.00
Steel rails (relaying), Chicago, per gross ton	$55.00	$55.00
Machine shop turnings, Chicago, per net ton	$15.00	$15.50

RAILWAY MATERIALS

	Oct. 10	Oct. 17
Rubber-covered wire base, New York, cents per lb.	35	35
Rails, heavy, Bessemer, Pittsburgh	$38.00	$38.00
Rails, heavy, O. H. Pittsburgh, per gross ton	$40.00	$40.00
Wire nails, Pittsburgh, per 100 lb	$4.00	$4.00
Railroad spikes, 9/16 in., Pittsburgh, per 100 lb	$7.00	$5.50
Steel bars, Pittsburgh, per 100 lb	$4.50	$4.50
Sheet iron, black (24 gage), Pittsburgh, per 100 lb.	$8.85	$8.85
Sheet iron, galvanized (24 gage), Pittsburgh, per 100 lb.	$9.55	$9.55
Galvanized barbed wire, Pittsburgh, cents per lb.	4.85	4.85
Galvanized wire, ordinary, Pittsburgh, cents per lb.	4.65	4.65
Cement (carload lots), New York, per bbl	$2.22	$2.22
Cement (carload lots), Chicago, per bbl	$2.31	$2.31
Cement (carload lots), Seattle, per bbl	$2.65	$2.65
Linseed oil (raw, 5 bbl. lots), New York, per gal.	$1.18	$1.17
Linseed oil (boiled, 5 bbl. lots), New York, per gal.	$1.19	$1.19
White lead (100 lb. keg), New York, cents per gal.	12	12
Turpentine (bbl. lots), New York, cents per gal.	50	51

ROLLING STOCK

Yazoo City (Miss.) Municipal Railway is reported as contemplating the purchase of four cars.

Salt Lake, Garfield & Western Railroad, a steam line undergoing electrification, has placed an order with the McGuire-Cummings Company for six passenger cars. These cars will be all steel and 56 ft. long and will be equipped with four 110-hp. GE-240 motors per car. The orders for the air brake and other equipment on the cars and for the automatic substation equipment to be installed in two new substations on the line were also placed with the General Electric Company.

TRADE NOTES

Ward Leonard Electric Company, Mount Vernon, N. Y., announces that it is now represented in Detroit, Mich., by the Electrical Specialties Company, 69 State Street.

Railway Improvement Company, New York, N. Y., announces that A. L. Whipple, hitherto sales manager, has been made vice-president; and W. O. Wade, formerly chief engineer, sales manager.

W. H. Bramman has recently become connected with the Walter A. Zelmicker Supply Company, St. Louis, Mo., as assistant to the president. Mr. Bramman was formerly with the American Carbon & Battery Company.

Lund & Weiss Company, East Orange, N. J., has been incorporated by Edward P. Lund, Arthur J. Weiss and Frank Tunstead of East Orange, N. J. The company is capitalized at $10,000, and it is its intention to engage in the manufacture of motors.

Henry M. Sperry, 120 Broadway, New York City, will hereafter handle the publicity work of the Union Switch & Signal Company, General Railway Signal Company, Federal Signal Company and Hall Switch & Signal Company as publicity representative of these companies.

Ford, Bacon & Davis, New York, N. Y., announce that they are prepared to devote special attention to the appraisal of industrial property for the purpose of war tax returns, as called for by the war profits tax section of the new revenue law recently enacted by Congress.

Westinghouse Traction Brake Company, Wilmerding, Pa., is supplying 100 partial equipments to the Connecticut Railroad, which are in the process of delivery. The second shipment of twenty-five went forward last week, the remainder being delivered monthly in like number.

Consolidated Car Fender Company, Providence, R. I., through the Wendell & McDuffie Company, general sales agents, has received an order to install H. B. life guards and Providence fenders on the ten cars ordered by the Honolulu (H. T.) Rapid Transit & Land Company, as noted in the ELECTRIC RAILWAY JOURNAL of Oct. 13, page 700.

Hale & Kilburn Company, New York, N. Y., has plans under consideration for a readjustment of its capitalization, to obtain additional capital. One meeting of the stockholders has been held, and further conferences will consider the proposals that have been advanced, which so far are in a tentative form. High cost of materials and other causes have prompted the proposed readjustment.

Frank P. Archibald, for the last five years Eastern manager of the National Lock Washer Company, Newark, N. J., has been elected vice-president of the company. J. Howard Horn, eastern representative for seven years, is appointed sales manager. On or about Dec. 1 offices of the National company will be opened in Philadelphia, Pa., and St. Louis, Mo. These are in addition to offices in Chicago, Ill., and Detroit, Mich.

Indiana Rubber & Insulated Wire Company, Jonesboro, Ind., on Oct. 10 presented all employees who have been in their service for one year or more a life insurance policy, through the Metropolitan Life Insurance Company, New York. The amount of the policy is in accordance with the years of service, but will be increased yearly, as each employee's connection with the company grows older. All employees have the privilege of naming the beneficiary. The total amount of protection will amount to approximately $250,000, the expense of which will be borne by the Indiana company.

Westinghouse Electric & Manufacturing Company, East Pittsburgh, Pa., has given another increase in wages for shop employees aggregating nearly $2,000,000 a year, effective on Oct. 16. All employees observing shop hours, excepting munition workers, will receive an additional bonus of 10 per cent if they are on a salary or time rate basis; and of 7 per cent if on a piece, premium or task basis. The 20,000 shop employees of the Westinghouse Company have had increases granted since the outbreak of the European war amounting to about 60 per cent of the former average compensation.

Vulcan Steel Products Company, New York, N. Y., has opened an office in Havana, Cuba, under the management of G. O. Simpson. In connection with this office, there will be maintained a permanent exhibition of machinery, and steel and iron products of the company. The Vulcan company's agencies are now established in the principal trade centers of the world including branch offices at Paris, France; Hongkong and Shanghai, China; Yokohama, Japan; Milan, Italy; Barcelona, Spain; Melbourne and Sydney, Australia; San Juan, Porto Rico, and Singapore, Straits Settlements.

Standard Asphalt & Refining Company, Chicago, Ill., has purchased the plants, trade marks and good-will of the Sarco Petroleum Products Company. The Cities Service Company, New York City, is the new interest back of this company, although the management remains essentially the same as before the change. Charles Muller, who was an executive of the former company, now becomes manager. He has been associated with the old company for ten years, and has risen through the ranks to his present position and is well known in the business and financial circles of Chicago. Robert F. Trumbull has been promoted to manager of the railway and building materials department. He has been in the service of the old company for eight years in this department, and is therefore intimately acquainted with its requirements for asphalt materials.

NEW ADVERTISING LITERATURE

Burt Manufacturing Company, Akron, Ohio: Illustrated catalog on "Oil Filters, Exhaust Heads and Ventilators," describes saving waste in lubricating oil, the cost of lubrication in general and matters of similar nature.

Prest-O-Lite Company, Indianapolis, Ind.: Illustrated booklet on "Turning Waste Into Profit," is devoted to the possibilities of reclaiming broken and worn machinery and metal parts for service by the oxy-acetylene process.

Moller & Schumann Company, Brooklyn, N. Y.: Bulletin No. 2 treats specially of the company's Hilo colored lacquers or transparent color varnishes, air drying and baking, for use on manufactures of tin, polished nickel, aluminum, zinc, etc. Samples of six standard shades in color on metal stripe are embodied in the bulletin.

Automatic Sprinkler Company of America, New York, N. Y.: "The Pursuit of Safety" is the title of a new bulletin now being distributed which gives photographs of fires where the sprinkler system was installed, besides illustrations showing modern structures and rebuilt structures equipped with fire extinguishers.

Ohio Wood Preserving Company, Pittsburgh, Pa.: A new booklet, "The New and More Economical Creosoted Wood Block Pavement," has been distributed by this company. It describes and illustrates the new creosoted block construction, which consists of pinning and sealing each block to the concrete base, instead of merely sealing the joints, as formerly.

Magnesia Association of America, Philadelphia, Pa.: A new booklet, "Let 85 Per Cent Magnesia Defend Your Steam," is a study of the cause and prevention of heat losses in the transmission of steam for power or heating purposes, with adequate illustrations. It is a good deal more than the ordinary trade booklet, being a carefully written treatise on the subject. The manufacture and application of the coverings are described in a very practical manner.

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Prosperous Railways Necessary for Community Development

A VERY good way, perhaps the best way, of getting a proper view of the present electric railway industry is by perspective. Then the different phases appear in their proper relation and proportion. Conceive, for example, that a new city was to be planned exactly like that of any existing American city and with the same streets, buildings and distribution of population as at present. In such a community the installation of an efficient urban transportation system would be considered by any city-planning engineer as a matter of course. Indeed, it would be impossible to conceive of the proper functioning of the business, industrial and social life of the community without such means of inter-communication. It would also be recognized in any such city, we believe, that for this communication neither jitneys nor private automobiles would suffice. The main portion of the urban transportation would not only have to be supplied by electric cars but, in the present state of the art, by electric cars and systems built along practically the same lines as are now common. Nor is it possible in such a community as we are now supposed to be planning to consider that such a necessary public utility as its electric railway transportation system could perform its work properly except under such conditions of return on the investment as would encourage extensions of the system to keep pace with the demands for transportation by the community. If this is the case with a suppositious city, why is it not true with a city already in existence? The answer is simple; it is. No city can prosper unless such a vital factor of its community growth as its electric railway system is also prosperous.

Brains Are Needed in the Boiler Room These Days

EVEN before the world war began there was a growing appreciation of the importance of having intelligent men on the power firing line. For many years the boiler room was the backward element of the power plant, but that is not so to-day. Everywhere there is a rehabilitation going on, if it has not already been completed. Under present and prospective conditions the urgency of using coal intelligently is most pressing. Everything humanly possible must be done to save coal. At a recent meeting in Washington Van H. Manning, director of the United States Bureau of Mines, said some striking things in this connection. One was that of the 600,000,000 tons of coal produced in a year, 60 per cent is shoveled by 250,000 men into the furnaces of power plants and locomotives. Twenty per cent is shoveled by sixty times as many people into domestic stoves and furnaces. It is, therefore, 180 times as important to reach a fireman with conservation propaganda as it is a householder. In many power plants the coal consumption is as low as can reasonably be expected, but this is far from being the rule. Nor is it reasonable to expect an old-fashioned steam plant to produce electrical energy on, say, 2 lb. of coal or less per kilowatt-hour as the newer ones can do. But almost every fireman can save some coal if he will use his head for the proper purpose. Further, the management can put high-grade men into the boiler room, shifting the poorer ones to places where they can do less harm. At the same time the management can instill into the minds of the men the patriotic necessity for intelligent discharge of their duties and a conception of the dignity of these duties.

The Company Sections Are Doing Their Bit

THE report of the secretary-treasurer of the American Electric Railway Association printed in our issue of two weeks ago states that there were 1741 company section members in the association at the end of last month. This is no inconsiderable number, and while there are but eleven company sections as yet, the membership is rather widely distributed geographically and is in a position to exert a disproportionately large influence, due to the publicity given to the section proceedings. Any considerable increase in the number of sections is not to be anticipated during the war period, but the existing sections have a great responsibility to the industry which we believe they are endeavoring to discharge. This conviction is based upon a direct canvass of the sections, a study of the reports of the meetings and attendance at a considerable number of the meetings. In stimulating the sale of Liberty bonds, pushing the home garden movement, inviting men in the public service to address them, discussing means for enabling the companies to meet the present emergency and in many other ways the section members have been demonstrating their patriotism. The coming year will be one of great stress for electric railways in demands for extra service, in difficulties with the labor supply, in obtaining needed materials, in maintaining financial credit. We hope and expect to chronicle many a bit of evidence that the sections are giving material assistance in the carrying of these abnormal burdens.

Prompt and Sympathetic Consideration Is Indeed Needed

IN his opening address before the National Association of Railway Commissioners, in Washington last week, President Max Thelen referred in a rather encouraging way to the possibilities of relief for utilities from some of their present-day burdens. Calling the position of the steam railroads very satisfactory, Mr. Thelen said: "The same statement cannot be made with reference to electric railways . . . and other utilities. These classes, as a whole, have not enjoyed the increase in business which has come to most of the steam railroads. To applications for authority to charge higher rates, based on large increases in operating expenses, frequently without commensurate increases in the volume of business, the various state commissions must give prompt and sympathetic consideration."

Without a doubt, electric railways are in a less fortunate condition than the steam carriers, and our suspicion that all is not so well with the latter class as Mr. Thelen asserts only emphasizes the pressing need of the electric lines. Commissioners other than Mr. Thelen are also awakening to the danger confronting not only the industry, but also the public it serves. We have in mind a general and a specific instance of this. To cite the first, the committee on public utility rates of the National Association of Railway Commissioners reported last week that "with increasing costs of operation an increase of revenue is necessary in order that electric railway service, which is very important in urban and interurban development, may not be crippled or destroyed." Furthermore, in the second instance, the Oregon Public Service Commission, in handing down the fare decision noted on another page, stated that the Portland Railway, Light & Power Company is in a critical position, facing an impairment of its already low earnings that cannot be borne under present conditions.

These recognitions of the existing electric railway situation make for hope, but one cannot refrain from wondering when the desired relief is to come. It helps, of course, to have commission support for such ideas as the abolition of unjust paving and other taxes, the use of light-weight, quick-service cars and the employment of women conductors, as evidenced in the case of the Oregon commission and the rate committee previously mentioned. Useful as such means might be in increasing revenues or decreasing expenses—we would not at all be interpreted as questioning their possible efficacy—their aggregate effect would be slight compared with the financial needs, and in most cases they could not be adopted without considerable delay and a restoration of railway credit. Furthermore, they certainly would not aid the railways to rid themselves of that great handicap to successful operation—the idea of a nickel fare eternally fixed regardless of operating costs.

It is not unnatural that commissions should show a desire to consider all methods for improving the condition of electric railways, but it is highly important that they consider fairly and squarely the major question of higher fares. We believe that celerity in this work would be more certain if the railways themselves would state fully and clearly why a fare increase is desired, regardless of other items of relief, and why particular methods of increasing fares are being suggested, whether it be for legal reasons, as in New York, local conditions, or any other cause. The commissions realize, as the rate committee stated in Washington last week, that no fixed standard can be applied in establishing electric railway fares, and they are fully conscious of their right to exercise judgment regarding not only the amount of additional revenue to be granted, but also the means therefor to be utilized. This fact emphasizes the desirability of the collection of all the information possible on the relative effect on gross and net revenue of all of the different methods for increasing fares. We believe that the accumulation of authoritative data on these points would meet with a welcome from commissions that would be reflected in an increased promptitude of action on their part.

A Good Word for the Constant-Speed Railway Motor

A MAMMOTH electric locomotive has recently been undergoing tests on the electrified section of the Pennsylvania Railroad between Philadelphia and Paoli. It is of the alternating-current constant-speed type, equipped with three-phase motors, and similar essentially to the locomotives in use for several years past on the Norfolk & Western Railway. This type of locomotive will probably be adopted for the mountainous section of the main line of the Pennsylvania near Altoona, Pa., a fact which indicates that most serious consideration is still being given to a type of equipment regarding the merits of which for traction purposes there has been a sharp division of opinion among engineers for many years. Elsewhere in this issue will be found an article by R. E. Hellmund, an engineer who has had extensive experience as a designer of electric railway apparatus, in which he sums up the case for the constant-speed motor from the general economic standpoint. In his opinion the outlook for this type of motor is improving, and he explains why he holds this opinion. He does not go into the technical details of the subject but, assuming the experience already gained to have demonstrated the workability of the constant-speed railway motor, he proceeds to analyze its performance from the money-earning standpoint. In view of the Pennsylvania Railroad's locomotive trials referred to, this discussion is timely.

The study of the constant-speed motor in its relation to traction requirements has necessarily centered on two principal factors, namely, the speed characteristics of the motor itself and the supply of power to the motor in suitable form. With a given frequency and number of motor poles and reasonably constant voltage, the induction motor hangs to its loads with constant speed, varying but a few per cent between full load "motoring" and full load regenerating. Any variation is due to inefficiency in the motor or the control. This property is considered by some to be overwhelmingly favorable, by others the reverse. Mr. Hellmund goes into the situation in detail. In regard to power supply the constant speed motor is seriously handicapped. There must be either two overhead contact conductors as in the Cascade tunnel of the Great Northern Railway and on several European lines, or phase converters on the locomotives as on the Norfolk & Western and the new Pennsylvania locomotives.

The necessity for the use of two overhead conductors has been the barrier which has almost kept the constant-speed motor out of the railway field in this country. The commercializing of the phase converter has removed this barrier, but has put up two lesser ones in its place, the phase converter itself and the difficulty of generating and transmitting single-phase power efficiently. Of course, all technical problems involved in any or all of these barriers have been solved or are in process of solution, but they must always remain as economic factors in electrification.

It would not be fair to the constant-speed motor not to refer again to its well-known inherent regenerating property, which has furnished a weighty argument in its favor. The motor pumps power back into the line when driven above synchronous speed without the aid of auxiliary apparatus. This property is, however, less unique than formerly, owing to the satisfactory installation of regenerating direct current locomotives on a large scale on the Chicago, Milwaukee & St. Paul.

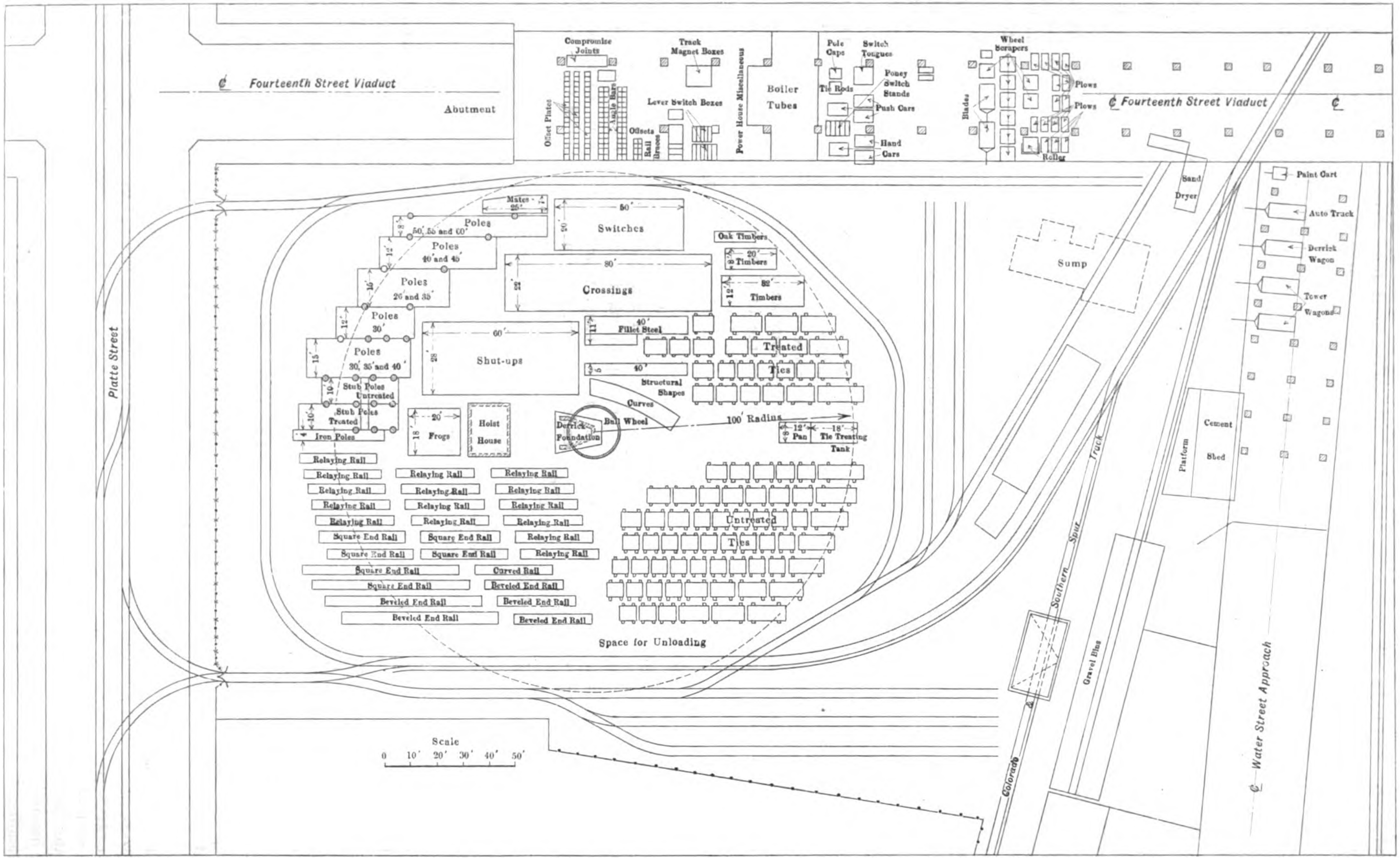
Handling Way Materials with Minimum Labor Consumption

IN an earlier editorial we expressed the conviction that there was much that could be done on electric railway properties to reduce the consumption of labor as an offset to the rising costs of both labor and materials. An excellent example of the possibilities along this line is to be found in the results obtained in the new Denver storage yard, as described elsewhere in this issue by Edward A. West. His article serves to bring out many of the important points made in previous articles which have appeared in this paper. Among the notable features perhaps the most prominent is the deliberate selection of an expensive site, centrally located, mainly to bring the yard closer to the center of the railway system in order to reduce haulage charges. Such a location also requires careful planning of the space assignment for the different materials so that maximum capacity per unit of space may be secured. That this has been done is indicated by the fact that the old yard now abandoned covered 5½ acres while the new one contains only 2¼ acres. The size of the yard also conduces to the use of a minimum amount of yard machinery. The study given to such matters as track layout, space assignment, steam road connections and the use of first-class track materials for the yard tracks indicates the thoroughness with which the whole project was handled.

The outstanding feature of this yard is the use of one large, permanently located derrick. In almost every storage yard small derricks have been utilized usually to serve one kind of supply or material stored on a small ground area at the foot of the derrick, but so far as we are aware this is the first application of the derrick to electric railway work on so large a scale. A comparison on the basis of first cost and service performed with materials-handling machines in other yards may prove of interest. The nearest parallel to the Denver installation which we now recall made by an electric railway company is the enormous gantry crane installed in the new Cleveland storage yard, described in this paper, issue of Feb. 24, 1917. This operates on a runway, 1000 ft. long, and serves a strip of ground 120 ft. wide, or a total storage area of 120,000 sq. ft. The Denver derrick with its 100-ft. boom serves a storage area of 31,416 sq. ft.—26 per cent as great an area served, but with an investment not more than 15 per cent as large. Hence, four such derricks might be installed to serve an area 5 per cent greater than that served by the Cleveland crane, and with a total investment only 60 per cent as great. The capacity of the Cleveland crane is six or eight times that of the Denver derrick, and it could handle more material per hour than the latter. It could probably not handle as much as four of the derricks, as so many more motions are involved in its operation. All things considered, then, the large derrick would seem to be the ideal hoisting and materials-handling apparatus for the medium-sized property, and two or more could be used in large yards.

Among other features of the Denver yard worthy of comment is the unique arrangement under which the storage bins for sand and gravel were obtained. For the privilege of placing his bins on the property of the tramway company, which made a very advantageous location for him, the contractor supplied the bins for the use of the tramway and it was thus relieved of any investment for sand and gravel storage and handling. Arrangements were further made so that the tramway buys its sand and gravel from this contractor at a very reasonable price, since he does not have to handle the materials at all when they are drawn from the bins.

At a time when every possible saving in man-energy is worth striving for, the distinct labor saving achieved in the Denver yard is noteworthy. A line of work which formerly required fifteen men can now be done by three men, and this saving in man-energy assumes even greater importance than that attached to the monetary saving alone because of the great difficulty now experienced all over the country in obtaining and keeping men at work of this class. We take particular pleasure in directing the attention of managers and way engineers to the article in question, as it supplements our own past efforts in presenting the subject of handling way materials. We are more than ever convinced that these efforts have been exerted in a channel where distinct savings can be made if the proper study is given the subject by those responsible for securing the greatest possible efficiency at a time when it is most difficult to do so.



℄ Fourteenth Street Viaduct
Abutment
Compromise Joints
Offset Plates
Angle Bars
Offsets
Rail Braces
Track Magnet Boxes
Lever Switch Boxes
Power House Miscellaneous
Boiler Tubes
Pole Caps
Switch Tongues
Tie Rods
Poney Switch Stands
Push Cars
Hand Cars
Wheel Scrapers
Blades
Plows
Plows
Roller
℄ Fourteenth Street Viaduct
Paint Cart
Auto Track
Derrick Wagon
Tower Wagons
Sand Dryer
Sump
Cement Shed
Platform
Southern Spur Track
Gravel Bins
Colorado
℄ Water Street Approach
Platte Street
Mates 25'
Poles 50', 55 and 60'
Poles 40 and 45
Poles 26 and 35
Poles 30'
Poles 30', 35 and 40
Stub Poles Untreated
Stub Poles Treated
Iron Poles
Switches
50'
Crossings
80'
Oak Timbers
20' Timbers
32' Timbers
Shut-ups
60'
Fillet Steel
40'
Structural Shapes
Curves
Bull Wheel
Derrick Foundation
Hoist House
Frogs
20'
18'
100' Radius
12' Pan
18' Tie Treating Tank
Treated Ties
Untreated Ties
Relaying Rail
Square End Rail
Curved Rail
Beveled End Rail
Space for Unloading
Scale
0 10' 20' 30' 40' 50'

In this yard the most suitable location for each class of material has been carefully studied out. The man in charge has a blueprint similar to this illustration which shows him exactly where incoming material is to be placed and where he can find the supplies when wanted.

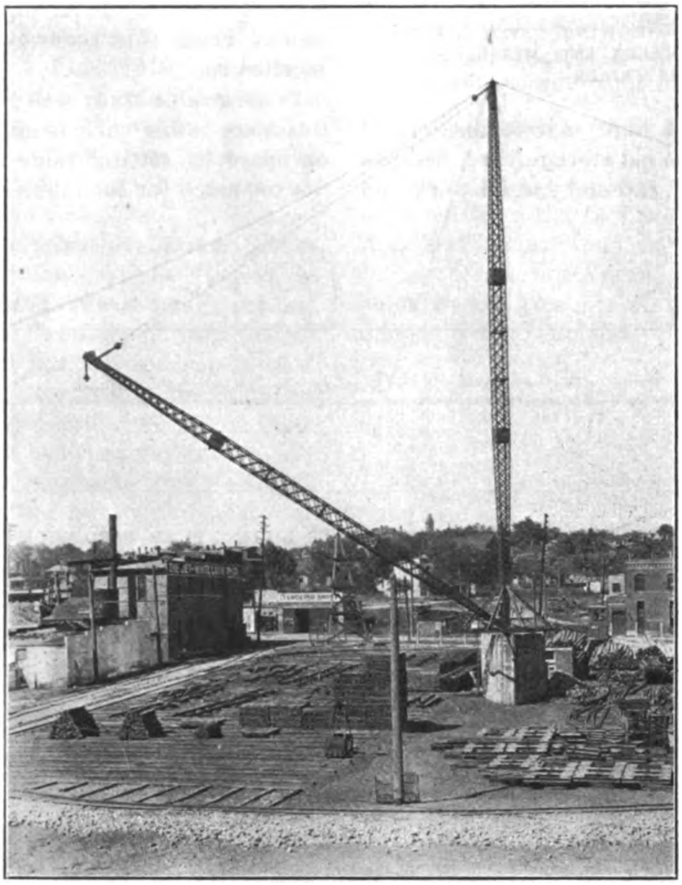
Denver Storage Yard—Fig. 2—Located Near Center of City, Where Land Is Expensive and Must be Used Intensively

Denver's New Storage Yard Served by a Single 100-Ft. Derrick

Location of Storage Yard Close to the Center of the City Reduces Haulage Costs—Special Storage Schemes Adopted to Utilize Available Space Efficiently—Only Three Men Required to Handlt the Work

By EDWARD A. WEST
Chief Engineer Denver (Col.) Tramway

WHAT is believed to be a particularly accessible and economical track material yard has recently been completed and put into use in Denver, Col. The principal features of this storage yard are, first, the use of a single derrick placed in the center of the yard in such a manner as to have a range of utility which practically covers the complete hoisting requirements of the yard; second, the intensified and efficient use of a rather small area, and last, the location of the yard close to the center of the city and of the railway system. All three of these features tend to lessen the charge which must normally be made against the track department for interest on the land investment, for handling of materials cost, and for haulage costs.



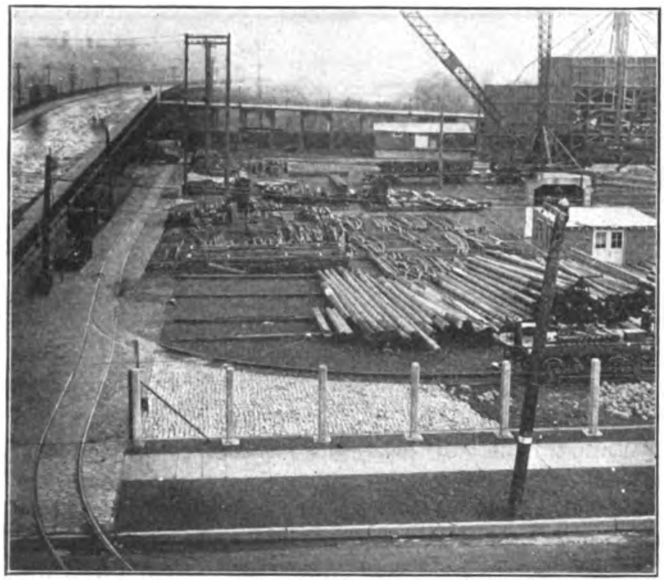
DENVER STORAGE YARD—FIG. 1—GENERAL VIEW OF YARD SHOWING DERRICK WITH 100-FT. BOOM

Many electric railway companies have shown reluctance to use ground close to the center of the city for track-storage purposes, presumably because of the high value attached to it. Yet it frequently happens that a company has a piece of ground centrally located that has been idle for many years waiting for a price, while the company has meantime been paying high haulage costs for taking material to and from a material yard located in the outskirts of the city on less valuable ground. Up to the present time this has also been the situation with the Denver Tramway. Approximately 3 miles from the center of the city a storage yard containing approximately 5½ acres of land and requiring fifteen men to operate it has served the purpose for many years. It was difficult to keep men long in this material yard because of the hard work which they were required to do, and rails, ties, paving blocks and cement sheds were placed here and there around the needlessly large area, wherever the whim of a yard man dictated, or in the only spot available at the moment.

While this old yard was in use a small piece of ground adjacent to the company's power house and located less than 1 mile from the heart of the business district stood idle. This had been purchased originally for the storage of coal, but a different scheme had later been adopted. Because of the small area involved and the advantage of its central location, it was an economical plan to utilize this property for the purposes of the track department. It contains approximately 2 acres of ground, but the space beneath the Fourteenth Street viaduct along one side of the yard, and the space beneath a right-angle approach to this viaduct which extends along the back end of the yard, add about another quarter acre of ground which is also used for storage purposes.

GENERAL LAYOUT OF MATERIAL YARD

As shown in the full-page drawing, a big derrick with a 100-ft. boom is located at practically the center of the yard. The space within the 100-ft. radius is reserved for the most part for the heavier materials such as special work, rails, poles and ties, etc., and a track completely encircling this area served by the derrick makes possible the handling of materials into or out of cars at any point around the derrick. Entrance to the yard is made from the electric railway system at both front corners, and these tracks extend back through the yard, branching into several stub-end sidings and connecting with steam railway tracks at the rear of the yard. As the tramway tracks are for the most part 3-ft., 6-in. gage, it was necessary to install a third running rail outside of the narrow-gage track in order to bring standard-gage steam-road cars into the yard for unloading supplies. For the tracks in the yard, only first-class, 65-lb., A.S.C.E. section rail with continuous joints was used.



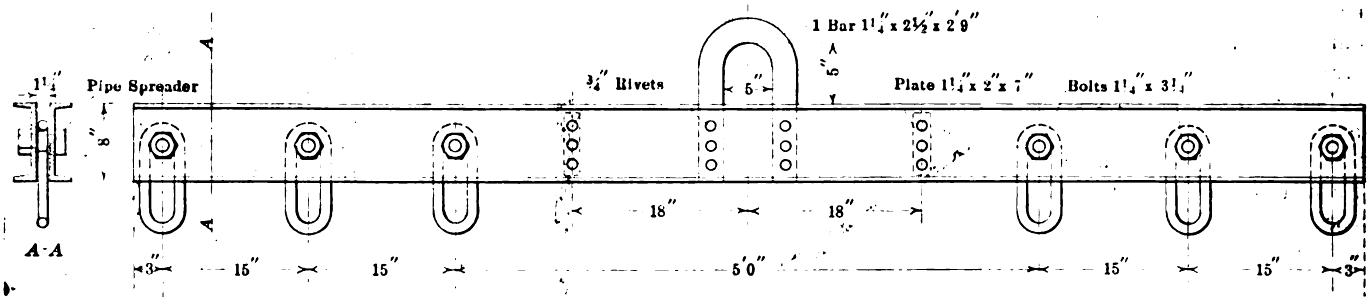
DENVER STORAGE YARD—FIG. 3—SHOWING PAVED DRIVEWAY, SAND AND GRAVEL BUNKERS AND METHOD OF PILING MATERIALS

The delays, derailments and high maintenance costs which were experienced in the old storage yard, because second-hand odds and ends of rail and special work had been used, served as a lesson in constructing the new layout.

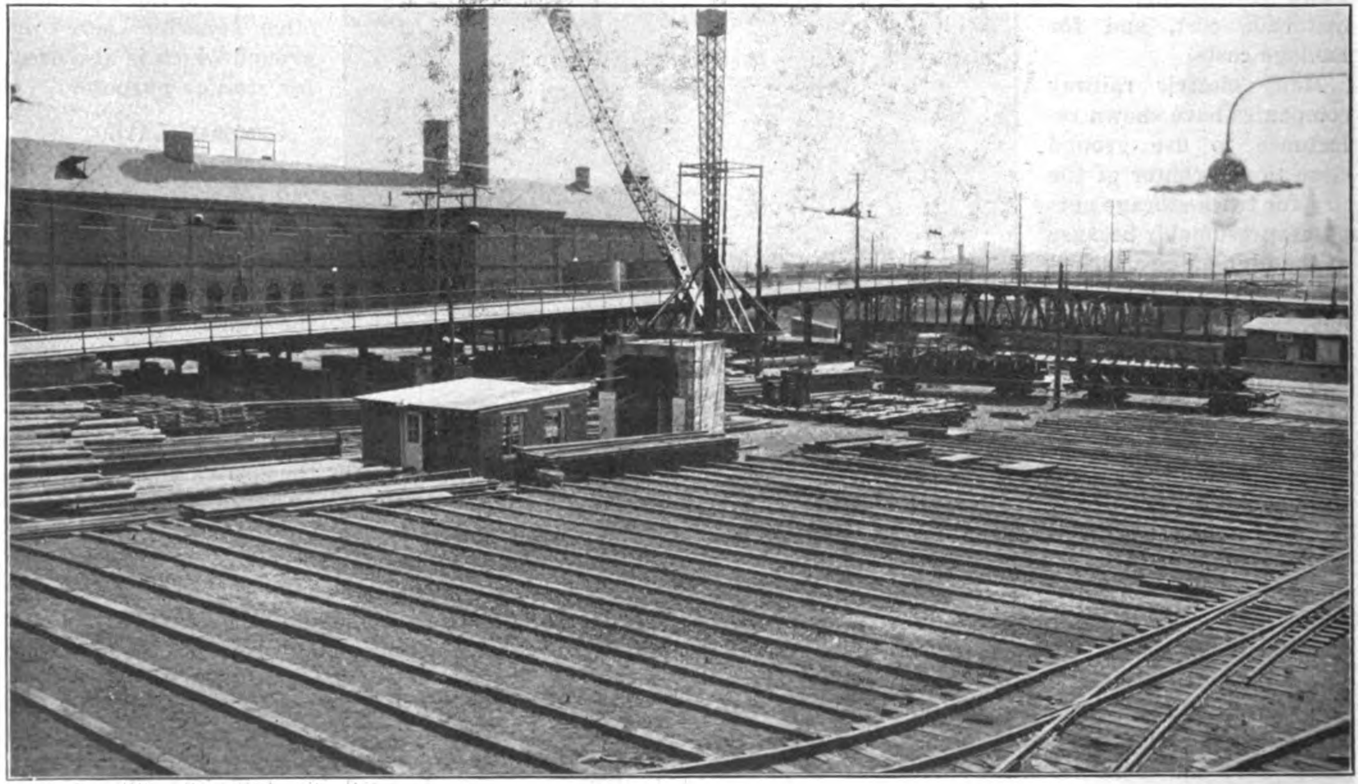
The derrick is a 5-ton machine built by the Clyde Iron Works and mounted on a V-shaped concrete foundation, as shown. The boom is 100 ft. long and is new, while the electrically driven operating mechanism is a second-hand outfit made over to suit the yard conditions. Due to the use of this derrick and the other labor-saving schemes and devices in the yard, only three men are required to take care of all work there.

The yard was completely graded and surfaced and was then equipped with mud sills, as shown in Fig. 5. These were made from second-hand ties laid end to end in lines about 8 ft. apart, and they make a foundation upon which to pile material. Old paving blocks unfit for street work were used to build a solid roadway, Fig. 3, from the street through the yard along one of the tracks, to the cement shed and gravel and sand bunkers at the rear of the property. As far as possible, all material requiring team or truck service is located along this roadway, so that it may be readily handled.

Considerable study was given to the matter of assigning space to the various materials in order to economize on space by setting aside a sufficient amount and yet not too much for each item. Allowances were made also

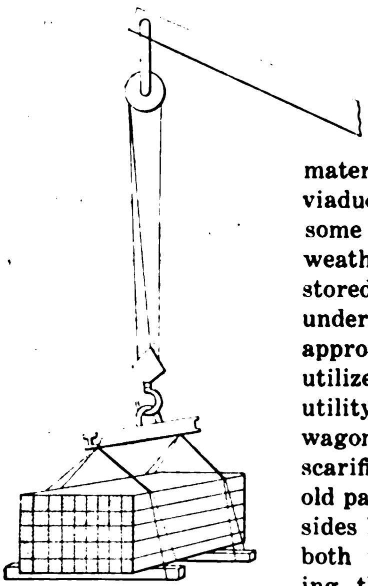


DENVER STORAGE YARD—FIG. 4—DETAILS OF LIFTING BEAM USED WITH DERRICK

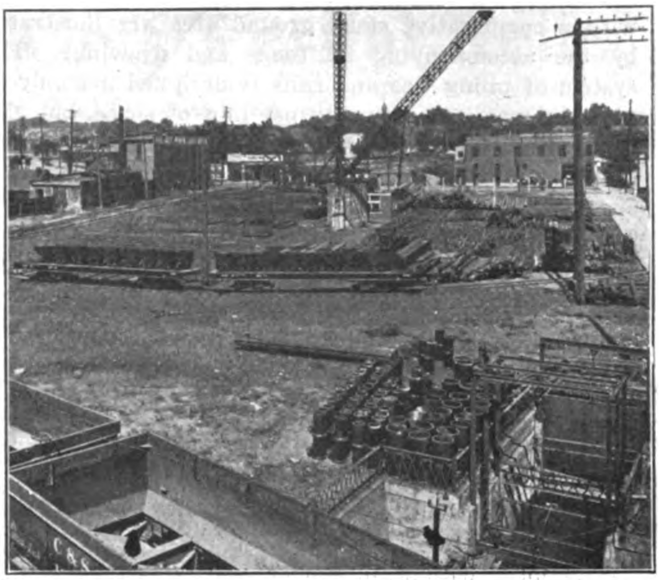


DENVER STORAGE YARD—FIG. 5—MUD SILLS FORMING A FOUNDATION ON WHICH TO PILE MATERIAL for future expansion. In making this study the old stock records of the company were carefully gone over and data were made up to show what the average and maximum stocks of various materials were. In addition to utilizing the available space most efficiently, it was the aim to have a definite place for everything and everything in its place, so that it would not be necessary to look in several places for "that special frog which was removed six months ago and is now badly needed in a hurry." The assignment of space is shown in detail in Fig. 2, and a blueprint similar to this drawing is used by the material yard foreman in distributing supplies as they arrive at the yard.

The space underneath the Fourteenth Street viaduct has been made use of to good advantage for storing rail fastenings, spikes, bolts, switch tongues, angle bars, etc., with space assignments as shown in the drawing. Fig. 7 also shows how material is piled under the viaduct. The viaduct provides some protection from the weather for the materials stored underneath. The space underneath the Water Street approach to the viaduct is utilized for storing various utility equipment such as line wagons, plows, scrapers and scarifiers. A foundation of old paving blocks laid on their sides has been put underneath both viaducts, thus facilitating the storage of material and equipment and affording a solid foundation for teams and auto trucks to back in for loading and unloading supplies.



DENVER STORAGE YARD—FIG. 6—METHOD OF HANDLING TIES WITH DERRICK



DENVER STORAGE YARD—FIG. 8—GENERAL VIEW OF YARD, SHOWING HOW IT IS SERVED BY LARGE DERRICK

An idea of the capacity of this 2¼-acre storage plot is gained from the fact that besides boiler tubes, grate bars, brick, horse and auto-drawn utility equipment, etc., space has also been provided for the storing of the following amounts of poles, lumber, and the more common track materials:

2,500	tons of 30-lb to 100-lb. section rail in 30-ft. and 60-ft. lengths.
25	shutups.
100	frogs
25	crossings.
900	poles, 25 ft. to 60 ft. in length.
25,000	ties.
20,000	paving blocks.
100,000	ft. board measure bridge timber.
5,000	pairs angle bars.
1,500	pairs angle bar offsets.
1,500	pairs compromise joints.
200	mate tops.
2,000	rail braces.
200	electric switch magnet boxes.
100	cast-iron drain boxes.
100	iron switch boxes.
100	iron pole caps.
2,000	tie rods.
150	switch points.
250	switch tongues.

DENVER STORAGE YARD—FIG. 7—SHOWING MATERIAL PILED UNDER VIADUCT

The schemes devised for securing this large capacity with a comparative small ground area are illustrated by the accompanying halftones and drawings. The system of piling ties and rails is designed not only to give the maximum capacity per unit of space, but also to facilitate the handling of ties and rails with the derrick. A complete unit of ties, consisting of from six to forty-five ties, depending on the size and length, can be picked up at one lift of the derrick. The specially designed lifting beam and a derrick load of ties are shown in Fig. 4 and Fig. 6.

SAND AND GRAVEL STORAGE AND HANDLING

The sand and gravel storage bunkers which are installed at the back end of the yard and adjacent to the river belong to the Platte River Sand & Gravel Company. These are placed on the tramway company's property under a leasing agreement whereby the company has the exclusive use of the four bunkers nearest the viaduct. One of these bins is equipped with a steam coil, supplied with steam from the company's generating station on the opposite side of the viaduct and is used continuously for drying sand for use in the cars. This bunker turns out about 15 cu. yd. of dry car sand per day with no labor expense. The other bunkers are used for the storing of sand, pea gravel, large gravel and crushed rock. Sand and gravel are supplied to these bunkers by conveyors, and are taken from them by gravity. The supply is brought into the yard over the Colorado & Southern Railroad from pits at one end of the city. Bottom dump cars are employed and these are emptied into a large concrete grizzly from which the material is elevated and distributed to various bins by means of bucket conveyors.

The bunkers are so constructed that wagons, trucks and standard or narrow-gage cars can be moved underneath them and loaded by gravity. Trucks and wagons are loaded from a different level than the railway cars, so that there is no congestion or confusion in the yard and no danger of trains running down horse-drawn or auto conveyances.

A shed for the storage of cement was built along the same tracks that serve the bunkers. By means of an overhead carrier system, sacks of cement can be dropped aboard cars standing in front of the cement house at the same time other cars in the train are being loaded with sand and gravel. Only one man is required to operate the bunkers and load the cement.

A new tie-treating plant is to be installed in the yard in the near future. The tie-treating process as it is carried out in the company's old yard requires the labor of seven men, but it is expected that with the new tanks installed, the three men employed in the new yard will be able to take care of this work.

Steam mains from the generating station have been run through the yard to supply live steam to the sand dryer, the tie-treating tanks, the derrick house, and the space underneath the derrick which has been fitted up to serve as a locker and toilet room for the yard crew. The yard has also been piped throughout for water, and fire hydrants are located at various points. Night work has been made possible when necessary and the yard has been protected from theft by the installation of several high-power nitrogen lamps, making all parts of the yard plainly visible from the viaduct.

The fence surrounding the yard is of rather unique construction. It was made by setting short pieces of scrap rail in the ground as posts and pouring concrete in forms around the rail. Heavy meshed wire was stretched along the posts before the concrete was poured. The result is a very substantial and good-looking fence, which is shown in the foreground in Fig. 3.

New Freight Terminal at New Haven

N. Y., N. H. & H. R. R. Completes Plans for Cedar Hill Yard in New Haven at Eastern End of Electrified Zone

DETAILS have been announced of the plans for the new freight terminal being constructed by the New York, New Haven & Hartford Railroad at Cedar Hill, in the eastern part of the city of New Haven, which marks the end of the company's electrified zone. In this terminal the extension of the electrification will cover only the New York-Maybrook receiving yard and three or four tracks in the Shore Line departure yard. The New York-Maybrook departure yard is already electrified to the extent necessary for the electric locomotives to handle outbound trains.

The location at Cedar Hill—which is the junction of the Shore Line, the Air Line and the Hartford Line—places the terminal between the converging routes from the West and Northwest and those diverging eastward and northward. A location west of New Haven was originally considered, but was abandoned on account of the large quantities of solid rock found by tests, as well as other difficulties. The present site is on both tide lands and upland consisting largely of sand, which provides excellent material for grading. The course of the Quinnipiac River necessitated a location along the Air Line, with a connection to the Hartford division at the northern end of the yard.

The design of the yard was determined by the economical policy of continuing existing facilities so far as practicable. It embodies among other features the separation of grades at several points and an arrangement to minimize the deadhead mileage of road power and yard power. A transfer station for less-than-carload freight will be located approximately in the center of the yard. This will be most convenient for receiving such cars from the various routes and for delivery of outbound cars from the various points from which trains will depart. A second turntable 95 ft. in length has been installed, and an additional roundhouse of eighteen stalls is under construction. Additional facilities will be provided later for inspection and care of electrical equipment. These include a small shop, inspection pits and pantograph inspection platforms. The yard is to be completed in about a year.

Notice to Subscribers Who Bind Their Copies

THE volume numbers on the front cover and on the bind of the issue of Oct. 6, 1917, of the ELECTRIC RAILWAY JOURNAL were erroneously printed "Vol. 51, No. 1," whereas they should have been "Vol. 50, No. 14." The proper numbers appear on the reading pages of the issue and on the covers of subsequent issues. To prevent any error when the volume for the half-year is bound, the publishers recommend that subscribers correct the numbers as they now appear on the front cover and on the bind of the issue for Oct. 6 so as to read "Vol. 50, No. 14." This can be done very readily with a pen.

Portland Company Gets Partial Relief

Oregon Commission Grants Ticket Increase and Is Not Sanguine as to Possibility of Escaping a Further Increase—Speaks Broad-Mindedly of Railway Burdens

THE application of the Portland Railway, Light & Power Company for a 6-cent fare has not been granted. Yet, as was briefly noted last week, the decision of the Oregon Public Service Commission was not altogether unfavorable to the company. Some material aid was offered in the form of authority to raise the rates for unlimited tickets and limited school-children's tickets, and moral support was given to the ideas of relief from taxation, commission recognition of wage demands, public co-operation in spreading rush-hour traffic, and one-man car operation. The opinion of the commission on these and other important topics is presented in the following abstract of the complete decision, just now available.

QUESTION OF JURISDICTION QUICKLY ANSWERED

The first question confronting the commission was as to whether or not it was clothed with authority to grant the relief sought, (1) because of the provisions of an act of the Legislative Assembly of 1901, which provides that it shall be unlawful to charge in excess of 5 cents for one continuous trip in one general direction between any two points within the corporate limits of cities having a population of more than 50,000, and (2) because of the fact that the fares were fixed by the franchises under which the company occupied the streets.

In a few words, practically as here stated, the commission expressed its conviction that the 1901 statute was repealed by implication by the public utility act of 1911, and that the franchise provisions were made subject to the sovereign power of the State to regulate rates. The State having chosen to exercise that power, and having constituted the commission to administer that function, the franchises must yield to the commission's determination. The commission saw no legal reason why it should not proceed to a determination of the case.

LATEST RATE OF RETURN ONLY 2.8 PER CENT

In a case recently decided (P. U. R., 1916, D977, and 1917, D962), the commission had determined the value for rate-making purposes of the operating properties of this utility to be, as of Dec. 31, 1916, $46,862,971. Of this amount, $18,233,371 was apportioned to the electric railway system. Inventories were prepared in great detail. To these were applied normal unit prices, which were derived from independent sources and upon which the company's stocks and bonds had not even the remotest bearing. Upon this appraisal, together with the original cost, the accrued depreciation and the history of the plant and its operations, were based the conclusions of the commission. The statement on page 758 for the electric railway department shows the revenues, expenses (including charges for depreciation properly assignable to that department), taxes and bridge rentals, for the five years ended June 30, 1917.

Applying the net income for the year ended June 30, 1917, to the valuation above mentioned shows a rate of return for the year of 2.8 per cent. This return represents the total amount available for the payment of both interest and dividends. Similarly, the net income for each year since the adoption of public regulation indicates the following rates of return: 1912-1913, 6 per cent; 1913-1914, 5.3 per cent; 1914-1915, 3.6 per cent; 1915-1916, 2.3 per cent; 1916-1917, 2.8 per cent.

For several years low prices and wages prevailed, but even under these conditions the profits of the company were not excessive. After the opening of the war there was a general increase in the prices of supplies and materials. The utility also found it necessary to grant increases in wages, which had amounted, on July 1, 1917, to about 10 per cent in the case of platform men, although somewhat less in other departments.

The Basis for Hope

We desire to be plainly understood, however, as entertaining no sanguine hopes as to the possibility of escaping a further increase in fares unless the heartiest co-operation is afforded the utility. . . . The commission will keep closely in touch with the entire situation. . . . Should it, in the opinion of the commission, become necessary, further action will summarily be taken.—MAJORITY DECISION OF OREGON COMMISSION.

I firmly believe the increase in rates is absolutely necessary if a reasonably high standard of service is to be maintained and a just increase in the wages of employees granted. Delay in applying a proper remedy may necessitate a later increase in fares in excess of the 6-cent fare now suggested, and for a much longer period.—COMMISSIONER COREY, DISSENTING.

RULING ON WAGE DEMANDS

Recently the organized employees, comprising practically the entire operating and maintenance forces, presented a demand for a further increase of wages and a betterment of working conditions. The company asserted that its revenues were insufficient to permit compliance, and placed before the employees a statement of operating expenses and revenues with an invitation to verify its accuracy. Together with this action the company promised the employees that their demand would be met if sufficient revenue could be obtained for the purpose.

To obtain the extra revenue to meet the demands of its employees, therefore, was one of the reasons set forth in the application as justifying an increase in fares. Conceding the fairness of the company's action, the employees petitioned the commission to ascertain the accuracy of the utility's contention and, if it was determined to be well founded, to prescribe a remedy to enable the company to meet the demands on it.

The present hourly wage scale of the trainmen is as follows: First six months, 28 cents; second six months, 29 cents; second year, 30 cents; third year, 31 cents; fourth year, 32 cents; fifth year, 33 cents; after the fifth year, 34 cents. The basic day is ten hours, but no increase in the hourly rate is allowed for overtime.

The wages and working conditions of the trainmen in the Ankeny and Piedmont divisions, which are deemed to be fairly representative, are revealed in the accompanying table, in which the figures are all based upon week-day schedules. The rates of pay per month represent what the maximum, minimum and average runs would pay if worked thirty days per month. In actual practice this is not done, and the earnings from these runs would ordinarily be 15 per cent less.

Viewing this question from the standpoint of all parties concerned, the commission said that the granting of a shorter basic day and a reasonable increase in wages would be justified. However, it is not clothed with authority to fix schedules of wages. As to what would constitute a reasonable decrease in hours and increase in wages, from the standpoint of the patron, no definite figure need now be determined. The company should exercise full discretion in the fixing of wages and working conditions, and its actions should only be questioned when the resulting operating expenses reach the point where they affect the rates charged or the service rendered.

> **It is evident the situation is critical; the company is facing an impairment of its already low earnings that cannot be borne under present conditions. To meet this situation there are but five remedies: the removal of unjust burdens imposed by the public, increased efficiency, additional business, reduced service and higher rates.—OREGON COMMISSION.**

The stockholder, the commission stated, through his executive officer is in a position to protect his earnings against the unreasonable demands of employees. If the patron by the payment of a reasonable fare provides the funds to meet all reasonable operating expenses and fixed charges due to the furnishing of adequate service and the establishment of fair working conditions and wages, any depletion of earnings due to the payment of excessive wages should and does become the stockholder's responsibility.

POSITION OF COMPANY IS CRITICAL—THE REMEDIES

In addition to the outlay necessary to meet reasonable demands of its employees, the company is confronted with largely increased expenses due to the present high material prices. Aside from the materials and supplies covered by unexpired contracts, it is estimated by the company that the expenses during the ensuing year, by reason of the recent advances in prices of materials and wage increases already granted, will greatly exceed those of 1917. A budget for 1918, as compared with actual expenditures during 1917, shows items as follows: Maintenance of way and structures—1917, $134,991; 1918, $247,600; maintenance of equipment—1917, $150,691; 1918, $260,686; traffic—1917, $6,474; 1918, $7,100; conducting transportation—1917, $1,122,901; 1918, $1,345,961; general and miscellaneous—1917, $228,365; 1918, $258,702; total expenses—1917, $1,633,422; 1918, $2,120,049. No anticipated increases in wages or material prices are reflected in these figures.

HOURS OF LABOR AND WAGES OF TRAINMEN ON REPRESENTATIVE DIVISIONS OF PORTLAND RAILWAY, LIGHT & POWER COMPANY

Present Runs	Ankeny Division	Piedmont Division
Number of men having regular schedule runs..	201	302
Number of men having "first class" runs*......	18	35
Number of men having regular runs with elapsed time over twelve hours and less than thirteen hours	71	68
Number of men having regular runs with elapsed time over thirteen hours and less than fourteen hours	87	127
Number of men having regular runs with elapsed time over fourteen hours........	14	72
Number of men on extra list........	50	61
Present Rates and Schedules		
Maximum pay per month........	$119.10	$115.26
Rate per hour for above run........	34 cents	34 cents
Elapsed time of above run........	11:41	13:53
Working time of above run........	†11:41	11:19
Minimum pay per month........	$70.50	$67.50
Rate per hour for above run........	30 cents	30 cents
Elapsed time of above run........	14:29	13:41
Working time of above run........	7:47	7:30
Average pay per month........	$102.00	$98.09

*A "first class" run is a day run quitting before 6 p. m. and without a tripper piece.

†This is an owl run with a layover which is paid for.

It is evident, the commission remarked, that the situation is critical. The company is facing an impairment of its already low earnings that cannot be borne under present conditions. To meet this situation there are but five remedies: the removal of unjust burdens imposed by the public, increased efficiency, additional business, reduced service and higher rates.

To the commission it seems doubtful whether any one of these alone will solve the problem. Excessive reductions in service or undue increases in rates would but invite the resumption of jitney competition, backed by public opinion, and the utility would again be facing a crisis graver, if anything, than the one which now confronts it.

1—*Removal of Unjust Burdens Imposed by Public*

It is the practice in Portland to require the company, when streets are improved, to meet the original cost of, and thereafter maintain, all paving between its rails and to the end of the ties. The company has to date been compelled to lay approximately $2,000,000 of paving. Interest, depreciation and maintenance on this paving amounts to about $225,000 per annum.

COMPARATIVE INCOME STATEMENT OF RAILWAY DEPARTMENT OF PORTLAND RAILWAY, LIGHT & POWER COMPANY

	1913	1914	1915	1916	1917
Operating revenue	$3.272,210	$3.225,268	$2,794,639	$2,612,210	$2,787,854
Operating expense	2,120,119	2,139,579	1,962,704	2,016,763	2,019,588
Net operating revenue	$1,152,091	$1,085,689	$831,935	$595,447	$768,266
Miscellaneous income	72,378	78,955	78,443	80,032	11,981
Gross income ..	$1,224,469	$1,164.643	$910.378	$675,479	$780.247
Taxes	$151.154	$185,854	$217,800	$224,085	$202,821
Bridge rentals	39,044	44,350	43,457	45,883	66,637
Net income	$1.034,271	$934,439	$649,121	$405.511	$510,788

According to the commission, the question arises as to whether this paving should be installed and maintained by the car rider, when, as such, he derives no benefit therefrom, or whether the burden should be borne by the abutting property owner, who enjoys not only the benefit of the paving but any advantage which may accrue from the proximity of the car service. In its opinion since the presence of the tracks upon the street results in added cost both in the installation and in the maintenance of the paving, the car rider should bear such added expense, because he is directly responsible therefor, but beyond this additional cost he has no responsibility and should bear no burden.

In this same category the commission mentioned the franchise requirement for free transportation for certain city employees, resulting in an aggregate loss in revenue of approximately $16,000 annually. This burden, it was said, should be borne by the taxpayer and not by the car rider. Bridge rentals and franchise fees, if they exceeded the added cost due to the existence of the railway system, also might well be shared by others.

2—*Increased Efficiency*

The commission felt that if the industries of Portland would co-operate with the company in spreading heavy rush-hour traffic over a longer period, a considerable saving could be made. Some of the large industries of Portland co-operated with the company in this manner, and the results were highly beneficial. The commission commended this feature and promised any assistance within its power.

On the subject of one-man car operation the board stated:

"With the exception of a small number of cars in the outlying districts, two-men cars are operated upon all the lines of this company. On lines where heavy grades are encountered, and in the congested downtown district, two platform men ordinarily are necessary to insure safety of operation and greater dispatch in the handling of traffic. When a car is loaded and has left the congested district, however, the conductor may well leave the car at an appropriate point and double back on the next car. Most of the owl cars may well be operated with a single man. These adjustments require careful planning, but the results will justify the effort."

3—*Additional Business*

The company estimated that the number of passengers to be transported upon its lines during the twelve months ended June 30, 1918, would be 15 per cent greater than during the preceding twelve months. Because of the increased commercial activity and the elimination of jitney service in Portland, the commission concurred in this estimate and expressed a belief that the gain might reach even a higher figure. Returns for July and August of this year indicate an increase in traffic of approximately 25 per cent over the corresponding period last year. Of course, the increase in gross earnings has been accompanied by an increase in operating expenses, but in less proportion, resulting in a net gain.

4—*Reduced Service*

According to the commission, frequency of service should be governed primarily by the traffic offered. The application of this principle should be limited only by the approach of the resulting service to the minimum which will stand the test of reasonableness. As a general proposition, in the absence of unusual circumstances, the commission believed that no street cars within the city of Portland should be operated at greater than twenty-minute intervals.

Moreover, it was of the opinion that the present service in Portland in many respects is in excess of the reasonable demands of the traffic. Under the present schedule on two lines, for example, by actual count on a typical date, the company furnished 1807 empty seats between 9 a. m. and 4.30 p. m., as against 1793 seats occupied by paying passengers. Under the suggested withdrawal of three cars there would still have been more than 800 empty seats.

By slight changes in the routing of cars other savings could be accomplished. For instance, two cars now engaged in shuttle service could through this means be discontinued. Moreover, at present through service is maintained from short branch lines which might reasonably be served with shuttle cars. This feature should receive careful consideration, as should also the advisability of attaching trailers to through no-stop cars and the elimination of the trippers which might become unnecessary under such a plan.

The fallacy of imposing undue public charges upon utilities as a condition precedent to their right to engage in a public service has been repeatedly demonstrated. We are not unmindful of the difficulties which would be encountered in attempting to accomplish an equitable readjustment of these and other like conditions, but they should not be insurmountable.—OREGON COMMISSION.

The commission said that it did not wish to be understood as suggesting an indiscriminate curtailment of service, or any reduction lowering the standard of service that the public is entitled to receive. Choosing between an increase of rates or the impairment of a reasonable service, in the absence of peculiar local conditions, the commission would unhesitatingly adjust the rates. But if the service was in excess of that reasonably required, then the service and not the rates should be adjusted.

5—*Higher Rates*

Under a tariff effective Feb. 22, 1916, and now in force, an unlimited ticket book containing fifty coupons, each good for one ride with full transfer privileges, is sold for $2.25. The same tariff also names a rate of $1 for school tickets in books of thirty-three coupons, good only for children attending public, private and Sunday schools. These rates, the commission said, are unduly low, and it authorized rates of 5 cents each for the unlimited tickets and 4 cents each for school children's tickets.

In stating that the case would still be held open, however, the commission concluded as follows:

"We feel that with the application of measures of economy along the lines here suggested, coupled with hearty co-operation of the people of Portland, both individually and collectively through their city government, in the working out of this problem, the company may be able to meet all reasonable demands of its employees and its prospective increased expenses without resorting to further rate adjustments. Until the effect of these measures can be more accurately determined, the commission hesitates to add to the public burden by the imposition of any further increase of rates.

"We desire to be plainly understood, however, as entertaining no sanguine hopes as to the possibility of escaping a further increase in fares unless the heartiest co-operation is afforded the utility. Slight personal inconveniences and purely technical considerations must give way to broadness of mind and fairness of spirit with the ultimate object of the greatest good to the greatest number.

"The company will be required to submit monthly statements covering its railway operations, together with full information as to the action taken with regard to the suggestions herein contained. The commission will retain jurisdiction of this matter and will keep closely in touch with the entire situation. As the actual effect of this order is demonstrated, should it, in the opinion of the commission, become necessary, further action will summarily be taken."

Experience has taught us that ordinarily, next to safety of operation, adequate service is of prime importance in public utility activities. Choosing between an increase of rates or the impairment of a reasonable service, in the absence of peculiar local conditions, the commission will unhesitatingly adjust the rates. On the other hand, if the service is in excess of that reasonably required, then it should be adjusted.—OREGON COMMISSION.

DISSENTING OPINION URGED TRIAL OF 6-CENT FARE

The decision of the commission was rendered by Chairman Miller and Commissioner Buchtel. In a dissenting opinion Commissioner Corey criticised the decision as not affording the prompt relief which seems necessary. He also said that a considerable reduction in car service would create a strong demand for the return of the jitneys. Continuing, Mr. Corey said:

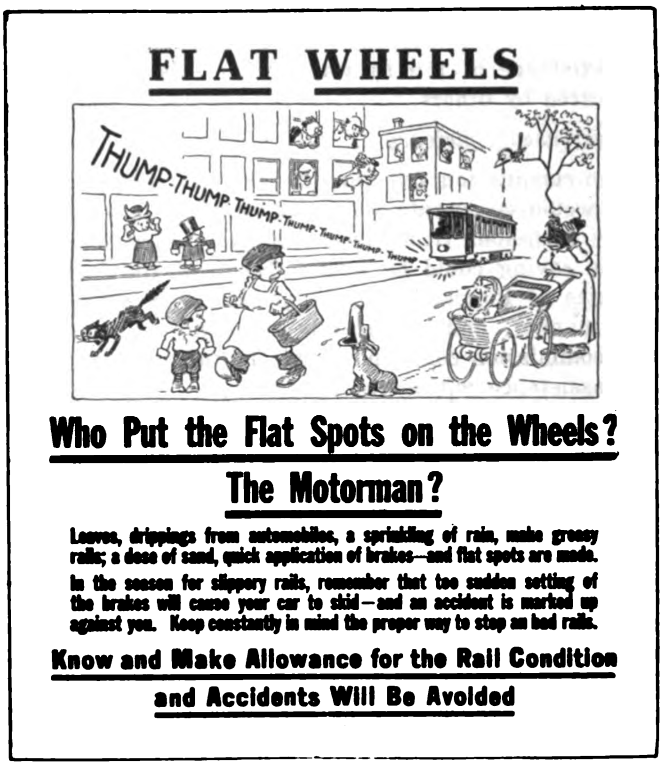
"A 6-cent fare is open to objection on many grounds, and it may seriously be doubted whether such a fare will result in any substantial net benefit to the company. In this case, however, the change is open to less than the usual amount of objection, for the percentage of the short-haul traffic is small. The average haul being 4.5 miles, the average rate would be less than 1.5 cents per mile even with a 6-cent fare. The company is reasonably entitled to make this experiment in fares, provided no undue burden is placed upon its patrons and no more is charged for the service than it is reasonably worth.

"In order to provide for a necessary increase in revenues, I favor a reduction in service where practicable and a temporary six months' trial increase in fares to 6 cents (six rides for 35 cents), the present school children's tickets being retained; and workingmen's week-day ride books upon the basis of fifty-two rides during one month for $2.60. The theory is not founded upon the fact that the purchaser is a working man or belongs to any other class of individuals, but because he makes constant use of the railway facilities.

"I firmly believe the increase in rates is absolutely necessary if a reasonably high standard of service is to be maintained and a just increase in the wages of employees granted. Delay in applying a proper remedy may necessitate a later increase in fares in excess of the 6-cent fare now suggested, and for a much longer period."

Flat Wheels and Safety

The accompanying illustration, reproduced from a recent poster of the electric railway section of the National Safety Council, indicates the kind of appeal for co-operation which the section is making. The poster will be found on many electric railway bulletin boards.



FLAT WHEELS

Who Put the Flat Spots on the Wheels?

The Motorman?

Leaves, drippings from automobiles, a sprinkling of rain, make greasy rails; a dose of sand, quick application of brakes—and flat spots are made.

In the season for slippery rails, remember that too sudden setting of the brakes will cause your car to skid—and an accident is marked up against you. Keep constantly in mind the proper way to stop on bad rails.

Know and Make Allowance for the Rail Condition

and Accidents Will Be Avoided

POSTER ISSUED BY ELECTRIC RAILWAY SECTION, N. S. C.

College Representation in Doherty Organization

Fifty-five engineering colleges are represented by men in the cadet schools of the Doherty organization. The colleges which have contributed ten or more of the cadets now in the organization are as follows: Purdue University, eighteen; University of Missouri, sixteen; University of Wisconsin, sixteen; University of Kansas, fourteen; University of Colorado, thirteen; Kansas State Agricultural College, eleven; Georgia School of Technology, ten; Pennsylvania State College, ten. Since the schools, as now constituted, were organized in 1906, the organization has hired 375 men. Of these 305 or 81 per cent are still in the organization.

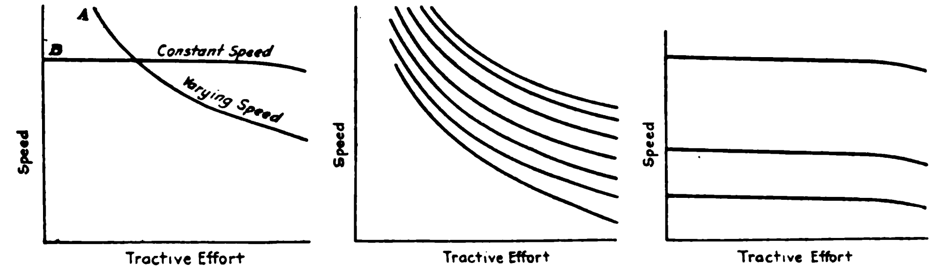
Do Changing Conditions Favor Constant-Speed Railway Motors?

The Author Believes that from the Standpoint of Economy the Tendency Should Be Toward Constant-Speed Operation, Especially for Roads with Heavy Traffic—He Cites as Evidence the Fact that Steam Railroads Are Electrifying Mountain Divisions in Order to Decrease Their Schedule Speeds and Thereby Make the Speed Over the Entire System More Uniform

By R. E. HELLMUND
Engineer Westinghouse Electric & Manufacturing Company, East Pittsburgh, Pa.

WHEN the electric propulsion of street cars was first experimented with, both shunt and series direct-current motors were tried out. At that time little attention was given to economical operation, troubles being so numerous that any motor working with some degree of reliability was considered satisfactory. The line regulation was very poor, the voltage varying between a maximum and zero, due to the lack of rail bonding. Since the direct-current shunt motor is very sensitive to voltage fluctuations, it is not surprising that it was soon discarded for traction purposes. The series motor was adopted, and has done excellent work in practically all of its applications to electric traction. As a consequence, everybody has grown so accustomed to the idea of using series motors for traction purposes that scarcely anyone doubts their superiority over motors of other types. Most people even go so far as to assume as a matter of course that the varying-speed characteristic of the series motor is the only desirable one for traction purposes. In many cases this belief is further strengthened by the fact that the steam locomotive, which has done such good work in the past, also has a varying-speed characteristic.

In order to preclude misunderstanding in connection with the following discussion, it should be understood that "varying-speed characteristic" in this connection means that the speed of the motor decreases inherently with increasing load (see Curve *A*, Fig. 1), while "constant-speed characteristic" means that the speed remains practically constant over a wide range regardless of load (Curve *B*, Fig. 1). Varying speed should, therefore, not be confused with adjustable speed, *i. e.*, one which can be adjusted at will for different speed-torque curves. Such adjustments may be possible and desirable with either constant-speed or varying-speed characteristic motors, Fig. 2 and Fig. 3.

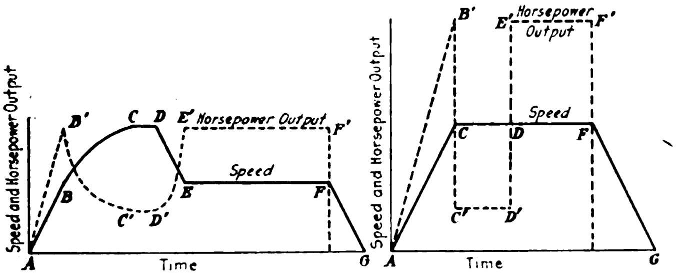


MOTOR CHARACTERISTICS—FIG. 1—SPEED CHARACTERISTIC CURVES FOR CONSTANT-SPEED AND VARYING-SPEED MOTORS. FIG. 2—SPEED-TORQUE CURVES FOR VARYING-SPEED MOTOR. FIG. 3—SPEED-TORQUE CURVES FOR CONSTANT-SPEED MOTOR

Changed Conditions in the Industry

It is the purpose of this article to point out briefly that in a great many cases the constant-speed characteristic is superior to the varying-speed characteristic under present-day conditions and that the superiority of the former will increase in the future. It should be considered in this connection that the use of a varying-speed characteristic for steam locomotives as well as locomotives of other types is hardly a matter of choice but has been so far an absolute necessity since these have no other characteristics. The capacity of the steam locomotive is to a large extent limited by the size of the boiler which can be transported, which means a constant limited horsepower and, therefore, decreased speed with increased tractive effort. In connection with electric railways it should be remembered that conditions have materially changed since the days when the series motor was adopted in preference to the constant-speed shunt motor. While the original applications were entirely limited to small trolley cars, we now have electric elevated roads, subways, trunk line electrifications, etc. As compared with the very imperfect original direct-current shunt, series and compound motors, we now have highly perfected motors of the same types, and in addition many new types with almost any desired characteristic. There are, for instance, separately excited direct-current motors, induction motors and single-phase commutator motors. The control apparatus and auxiliary devices have also been highly perfected.

Other important changes have taken place with regard to the traffic conditions. While in the early days most railroads were able to take care of the traffic with the existing tracks, a great many railroads are now unable to handle the traffic with double tracks and many of them use four and six tracks along certain lines. Further changes have been brought about by different relative costs of labor and materials. The most important change is, however, that all railroads are now forced by present conditions to consider everything from a purely economic point of view whereas in the past it was possible to earn dividends as long as things could be kept running. In view of these numerous important changes it seems well worth while for any railroad contemplating electrification to consider carefully whether a varying-speed characteristic is really what is wanted or whether better economical results can be obtained with a constant-speed equipment.



MOTOR CHARACTERISTICS—FIG. 4—SPEED-TIME AND POWER-TIME GRAPHS FOR VARYING-SPEED MOTOR. FIG. 5—SPEED-TIME AND POWER-TIME GRAPHS FOR CONSTANT-SPEED MOTOR

The financial success or failure of a railway is entirely dependent upon its net income. The question is, therefore, how revenues and expenses may be affected by the choice between varying-speed and constant-speed characteristics for the locomotives. In considering expenses the following subdivision of items may be adopted for convenience:

1. *Fixed Charges.* These are chiefly made up of interest and depreciation charges, both of which are usually assumed to be about proportional to first cost. The first cost, in turn, may be subdivided as follows:

(*a*) Track, trolley or third rail construction, real estate for right of way, etc.

(*b*) Rolling stock.

(*c*) Power supply system, comprising generation, transmission, transformation and distribution.

Most taxes may also be considered as part of the fixed charges.

2. *Expenses for Power Generation.* This item covers expenses in connection with the power supply system, and these are about proportional to the amount of generated energy. Such expenses are chiefly affected by:

(*a*) The efficiency of generation, transmission, transformation and distribution.

(*b*) The efficiency of the electrical equipment of the rolling stock.

(*c*) The weight of the rolling stock.

(*d*) Expenses for labor in connection with the power supply system, for both operation and maintenance.

3. *Labor Expense of the Transportation Department.* We are here principally concerned with the wages of motormen, engineers, trainmen, etc.

4. *Cost of Maintenance and Inspection.* This may be subdivided into cost for:

(*a*) Tracks, signal system, etc.

(*b*) Rolling stock, including its electrical equipment.

(Power supply maintenance is included in item No. 2.)

5. *Expenses Caused by Lack of Reliability of Operation.* These are governed principally by the reliability and simplicity of the electrical equipment and the safety of operation.

PERFORMANCE OF THE TWO TYPES OF MOTOR COMPARED

Before discussing the influence of the speed characteristic upon the above-mentioned items, some of the principal inherent differences between constant-speed and varying-speed equipments will be pointed out, making use of Figs. 4 and 5. The full-line graph of Fig. 4 is the speed-time graph for a car with motors of varying-speed characteristic, while Fig. 5 shows the corresponding graph for one with constant-speed motors. It is assumed in Fig. 4 that a series motor is accelerated at a uniform rate from *A* to *B*, where the varying-speed motor curve is reached. From there on the speed increases, but at a reduced rate, until at *C* the maximum safe speed is attained. It is kept constant as long as possible (*C* to *D*). It is further assumed that at *D* a steep grade is reached, necessitating very much increased tractive effort. With a varying-speed characteristic the speed of the car decreases between *D* and *E* until balanced conditions between required tractive effort and motor tractive effort are reached. Thereafter the speed remains constant on the grade, until the power has to be shut off at *F* to accomplish a stop at *G* with the permissible rate of retardation between *F* and *G*. The time consumed in making the run is represented by the line *AG* and the distance traveled by the area *ABCDEFG*.

In Fig. 5 the same work done by a constant-speed motor is represented. In this case the maximum permissible speed is reached with a uniform rate of acceleration between *A* and *C*. The result is, of course, that the maximum speed is attained more quickly than in the preceding case. At this maximum speed, the foot of the grade at *D* is reached somewhat earlier on account of the quicker acceleration and the longer period of operation at full speed. Upon the grade maximum speed will be maintained long enough to reach point *F*, at which the power has to be shut off in order to effect the stop at *G*. Since the same distance has been traveled as before the area *ACDFG* is the same as the full line area in the previous figure. The time consumed in covering this distance is, however, materially reduced so that, under the assumptions made, the constant-speed motor can make a 25 per cent faster schedule speed than the varying-speed motor. The difference depends, of course, upon the particular conditions and is especially affected by the number of starts and stops to be made and by the up-grade mileage.

Incidentally it requires more powerful motors to accomplish this result, for if a train moves up-grade at higher speed more horsepower will be necessary. The dotted lines in Figs. 4 and 5 represent the horsepower output of the motors in the two cases. A comparison between the two shows that under the assumed conditions the average horsepower over the run is 25 per cent larger, and the maximum or peak horsepower output about 85 per cent higher with the constant-speed motor. A constant-speed equipment must therefore be heavier and more expensive. On the other hand each equipment can cover a greater mileage on account of the higher schedule speed and as a consequence the number of equipments can be reduced. In a great many cases the saving accomplished by the reduction in the number of equipments is even greater than the extra expense caused by the use of more powerful motors. Although the constant-speed motor requires more powerful equipment, the total energy consumption in horsepower-hours is not materially different in the two cases, assuming, of course, the same number of ton-miles. In other words, the areas under the dotted lines in Figs. 4 and 5 are about equal.

The greater peak or maximum power used by the constant-speed equipment for a given run is likely to increase the maximum amount of power taken from the line, especially in cases where the traffic is not very dense. This, in turn, means that the constant-speed equipment may require greater expense for most parts of the power supply system. On small railways with light traffic this item may be important, while on the other hand it may be negligible on roads with large power stations and dense traffic. As already pointed out, the total energy consumption in kilowatt-hours is approximately the same no matter whether a certain tonnage is transported over a given distance at high speed or at low speed. The difference, therefore, can be only in the load factors in the two cases.

From the standpoint of safety a constant-speed equipment is superior since with power on it cannot exceed a safe maximum speed, while the varying-speed equipment has a tendency to overspeed. It is true that the constant-speed equipment climbs a grade at higher speed, but this does not introduce any material risk, because a stop can usually be accomplished quickly on an up grade.

COMPARISON OF TRAFFIC REQUIREMENTS

With the above general conclusions in mind, let us first consider a case in which the existing trackage can handle the small traffic available at the schedule speed of either a constant-speed or a varying-speed equipment. The higher schedule speed with the constant-speed motor may have the advantage of increasing the gross earnings of the road by giving quicker service. It will also reduce the time spent by the crews in operating the cars or trains, which means a saving of labor. In addition, we have increased safety.

These advantages are partly or entirely counterbalanced by the increased fixed charges which may be involved in a more costly power supply system. Moreover, while the same weights can be moved with equal energy consumption at either high or low speed, we have increased weights to move with the more powerful constant-speed equipment. This increased weight, in turn, will increase the power consumption to some extent. The increased maximum power demand which may be caused at certain times may increase the labor expense in connection with the power supply system, but, this item, as a rule, is negligible. The possible smaller load factor may also reduce slightly the efficiency of the equipment or power supply system.

It is evident that with the assumption of light traffic a great number of details and working conditions must be considered in deciding as to which equipment will give the best results. Higher schedule speed may be a great business getter where there is keen competition, while it may be of practically no value in other cases. The variations in cost of labor, power, etc., may throw the balance in one direction or the other. If the labor is paid for on a mileage basis, for instance, no labor saving can be accomplished. There is no doubt that with the conditions which have prevailed in the past the varying-speed motor in the majority of cases gave better economical results than the constant-speed motor, or at least as good ones. This is due to the fact that most electric railways had no competition and that the expense for operating labor was relatively low. On the other hand, the costs of power and power equipment were high. All of this tended to favor the varying-speed equipment. These conditions are, however changing rapidly with increasing competition and cost of labor. Under the present war conditions the costs of power and equipment may be relatively high, but there is little doubt that both will again decrease after the war, there having been a steady decrease previously. This means that most of the items considered will change in favor of the constant-speed equipment.

While in spite of these changing tendencies it may still be doubtful in a great many cases of light traffic as to whether the one or the other speed characteristic is to be preferred, everything seems to be in favor of the constant-speed motor in most cases of very dense traffic. With many roads, especially subways, elevated roads and Eastern trunk lines, as well as mountain sections of Western trunk lines, the present traffic can barely be handled with the existing trackage. Any increased business, therefore, can only be taken care of by additional trackage, larger trains or higher schedule speeds. Since in a great many cases it is not safe to increase the maximum speeds and not practicable to increase the size of trains, the schedule speed can best be increased by using the maximum safe speeds constantly. The possible increased expense involved in the power supply system required is as a rule only a small percentage of the expenses for additional trackage. This is particularly true in densely populated sections, as well as in mountain sections. Therefore the balance swings in such cases quite in favor of the constant-speed equipment with regard to fixed charges, and in addition we have the advantage of chances for increased business, reduced cost of operating labor, and increased safety on account of definitely limited speeds, especially on down grades. The slight increase in power consumption caused by the greater weight of the equipment and lower load factor is of little practical importance as compared with the other items.

In the foregoing comparative considerations little has been said with regard to reliability and cost of maintenance, because these items depend more upon the details of the individual system chosen than they do upon the difference between constant and varying speed. The direct-current motor of varying-speed characteristic is undoubtedly superior at present in regard to maintenance cost and reliability, for the straight-series motor equipment is simpler, more reliable and cheaper to maintain than any other direct-current equipment at present available. With alternating-current equipment, however, the reverse is true. The simplest and most rugged alternating-current motor at present is the induction motor, which happens to be of the constant-speed type. Therefore it is quite possible in a great many cases that with direct-current energy a varying-speed motor would be more economical, whereas under otherwise similar conditions the constant-speed characteristic would be preferable for alternating current.

The efficiency of the equipment also depends more upon the individual type of equipment than upon the speed characteristic. Disregarding the slight differences caused by load factor, the efficiency of most motors when running at their proper speed usually does not vary to any great extent. The principal differences in efficiency among the various systems are usually caused by the auxiliary devices and by certain losses during acceleration. A detailed discussion of this subject would require too much space and be of little value in this connection, since conditions are continually changing as the art progresses.

APPLICATION OF THE CONSTANT-SPEED MOTOR

It is evident from the previous discussion that most of the conclusions are governed by the speed characteristic of the car. This does not mean that the inherent speed characteristics of the motor and the car must necessarily be identical, it being quite possible, by means of the proper controlling devices, to obtain a constant car speed with a motor having an inherent varying-speed characteristic and sufficient capacity. With long and uniform grade sections fairly constant-speed operation may also be obtained in connection with a varying-speed motor and pusher service on the grades. It is also evident that a varying-speed motor with constant load and always running on the level will give practically constant-speed service.

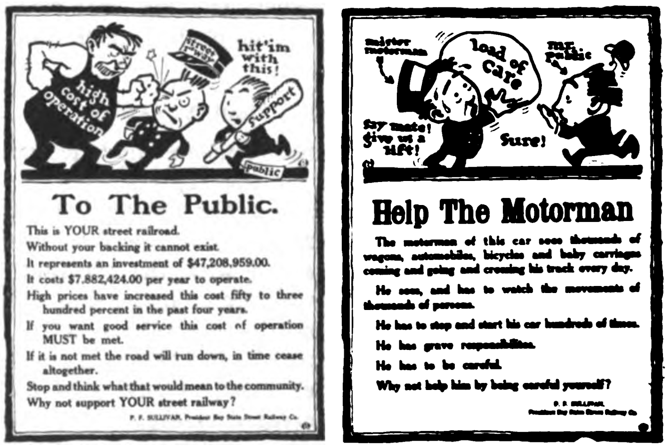
Further, as pointed out in the beginning, the use of a motor of constant-speed characteristic does not necessarily limit the car or train to only one characteristic of the constant-speed type. There is no doubt that the constant safe speed on different parts of the same railway system may vary somewhat with the track condition, especially on account of curves, and that it is, therefore, desirable to be able to adjust the constant speed to various values for different sections. Constant speed in the foregoing simply means that if the speed has been adjusted for a certain maximum permissible value, it should not inherently decrease whenever the load increases as, for instance, when an up-grade is encountered.

Many railway men are under the impression that a varying-speed characteristic is desirable in order to permit the making up of time. This is altogether erroneous, for it it is impossible to make up time with either a varying-speed or a constant-speed equipment if during normal operation the car is operated continually at the highest speed possible. The chances for making up lost time exist in either case only when a margin is provided in the normal schedule speed. This can best be done in either case by introducing a certain period for coasting, which incidentally increases the efficiency of the equipment. If such a period of coasting is provided it is possible to make up time by shortening or eliminating the coasting period. Therefore ability to make up time is the same in both cases, so long as the maximum safe speeds are adhered to. The varying speed characteristic gives, of course, the possibility of exceeding the maximum safe speed, and thereby of making up time, this being done, however, at considerable risk. On the other hand the constant-speed equipment has the great advantage of not being likely to lose time as much as the varying-speed equipment. In many cases time is lost with the latter on days of heavy traffic, because the increased load reduces the speed of the vehicle and just at times when it is most objectionable.

Obviously the short space available for this article made impossible a complete and exhaustive study of the question as applying to the great variety of local conditions, but the arguments advanced should undoubtedly be sufficient to give evidence to the effect that while the varying-speed motor has done good service in the past, the present and future tendency should be towards constant-speed operation. One of the strongest evidences along this line is the fact that steam railroads are about to electrify mountain sections in order to get increased speeds and to avoid the necessity of extra tracks. This means nothing more nor less than that they feel the necessity of making the speed on the mountain sections more nearly equal to the speed on the level. In other words, they are trying to get constant speed over their entire systems.

More Bay State Window Posters

The Bay State Street Railway, Boston, Mass., is using some catchy window posters in its accident reduction and public co-operation campaign. The first of these was reproduced in the issue of the ELECTRIC RAILWAY JOURNAL for Aug. 4, 1917, page 190, and two more are given herewith. The posters are 14 in. x 18 in. in size and they are printed in black on white paper. It would be a dull reader who would miss the point or the wit of these clever drawings and sentences.



To The Public.

This is YOUR street railroad.
Without your backing it cannot exist.
It represents an investment of $47,208,959.00.
It costs $7,882,424.00 per year to operate.
High prices have increased this cost fifty to three hundred percent in the past four years.
If you want good service this cost of operation MUST be met.
If it is not met the road will run down, in time cease altogether.
Stop and think what that would mean to the community.
Why not support YOUR street railway?

P. F. SULLIVAN, President Bay State Street Railway Co.

Help The Motorman

The motorman of this car sees thousands of wagons, automobiles, bicycles and baby carriages coming and going and crossing his track every day.

He sees, and has to watch the movements of thousands of persons.

He has to stop and start his car hundreds of times.

He has grave responsibilities.

He has to be careful.

Why not help him by being careful yourself?

P. F. SULLIVAN,
President Bay State Street Railway Co.

WINDOW POSTERS JUST ISSUED IN BAY STATE PUBLICITY CAMPAIGN

The Regina (Sask.) Municipal Railway is considering the use of one-man cars. The matter of increasing fares to 5 cents straight is also before the City Council.

Rates, Service and Public Ownership

From the Electric Railway Point of View, These Were the Most Important Subjects Reported Upon by Committees at the Convention of the National Association of Railway Commissioners in Washington Last Week

FIRST, an electric railway rate on the mileage basis with a minimum charge seems to be the most promising resource available. Second, the light quick-service car developed and operated as a competitor of the automobile may soon be expected to come into general use. Third, although no report can now be written with definite conclusions for or against public ownership, the trend of the times unmistakably is in the direction of complete public control and of public ownership and operation of utilities. These three assertions will undoubtedly be, to electric railway men, the most important parts of the committee reports presented at the convention of the National Association of Railway Commissioners in Washington, D. C., on Oct. 16-19. The reports were received and filed, with practically no discussion.

ELECTRIC RAILWAY RATES

The report of the committee on public utility rates—signed by Thomas W. D. Worthen, New Hampshire; Edwin Corr, Indiana; C. L. Glasgow, Michigan; Henry R. Trumbower, Wisconsin, and E. H. Walker, Nevada—contained a subdivision on electric railway rates. This covered the following points:

1—*Flat-Rate System*

In the committee's opinion the flat 5-cent rate was probably fixed because early electric railway operators felt that the nickel was easy to collect and the passenger was as willing to pay this as any smaller amount. In the early days all lines were comparatively short, and the cost of carrying passengers was more or less uniform. Now, however, the chief objection that can be made against a flat-fare system is that there is no proportional relation between the amounts paid and the service rendered. If there had been a coin of a denomination close to 5 cents, above or below, the committee remarked, there would have been more of a demand for a revision of fares.

The flat-rate system has been advocated in many quarters as a means of preventing the congestion of population within a restricted area. In the committee's opinion, however, it is difficult to measure the extent to which this system has checked congestion following the great industrial development of centers of population in this country. In spite of the flat fare, American cities are obliged to contend with the problem of congested urban areas and tenement districts.

2—*Transfers*

It is claimed, the committee stated, that transfer passengers are more expensive to carry than cash-fare passengers because: (1) They require more time in handling and involve a larger amount of platform labor. (2) The cost of transfer printing, paper, punches, etc., is chargeable directly to this traffic. (3) Transfer passengers board and alight twice as much as cash fare passengers, and the injury and damage risks are increased without any corresponding increase in revenue. (4) Opportunity for fraud exists, particularly where a transfer is issued on a transfer.

Where the transfer privilege is extended under a flat-fare system, the committee averred, the number of short-haul passengers is reduced. In many instances, however, companies are not free to restrict transfers, because there may be specific franchise provisions governing the issuance. Moreover, if an attempt is made to curtail the privilege, a demand may be made for new lines affording through routes, which in the end will be less economical than carrying the transfer passengers. The question of issuing transfers must be considered as a local problem. In some cases the routing of cars may be so revised as to eliminate to some degree the demand for the privilege.

3—*Zone System*

The theory of the zone system, the committee said, contemplates a fixed minimum charge for the first zone and a fixed amount for each additional zone. According to the cost-of-service principle, the fare may be said to consist of two parts—a terminal and a movement charge. The terminal charge is a fixed amount disregarding the distance traveled; the movement charge varies directly with the distance. This charge, however, may be modified to some extent by taking into account the density of traffic in a certain area or a zone.

A common objection against the zone system is that passengers whose destination is but a short distance beyond the zone limit are discriminated against. In cases where the zone distance is fairly long and the fare a nickel, this objection is urged all the more strongly. In order to overcome such objections, there are established in some instances overlapping zones, but these are also subject to criticism.

The problem of establishing fare zones is more frequently encountered in suburban and interurban business. In many cases the first nickel zone extends to the city limits, beyond which additional nickel zones are established. Dissatisfaction is likely to arise in such cases on account of the discriminatory aspects of fixing the limits. Yet this difficulty, the committee said, can be overcome to a degree by shortening the length of the zones and putting them on a 1-cent or a 2-cent basis. Such a copper-zone system removes a great deal of the discrimination and causes the local fares to be more equitable.

4—*General Statements*

In concluding its remarks, the committee said: "No fixed standard can be applied in testing or establishing street railway fares, since the factors are so numerous and varied that each particular case must stand on its own merits. Inequality of fare zones may not be discriminatory, as fares may reasonably depend on density of traffic, location of town and city boundary lines, centers of population or attractions, and other conditions.

"Increases in fares to 6, 7 and even 8 cents per fare zone have been allowed by commissions, but it is doubtful whether much larger revenue will be received, on account of the lessening of travel at the higher rate. The motor bus and truck are in every-day use for transportation of passengers and freight even for considerable distances, and they seem likely to prevent further extension of electric railway lines.

"With increasing costs of operation, an increase of revenue is necessary in order that street railway service, which is very important in urban and interurban development, may not be crippled or destroyed, and a rate on a mileage basis with a minimum charge seems to be the most promising resource available."

ELECTRIC RAILWAY SERVICE

The committee on service of public utilities stated that a large number of state commissions appear to have expended the greater portion of their time and effort in making valuations and rate adjustments without giving any particular attention to the effect of the new rates on the quality of service. While recommending the adoption of standards of service for each class of utilities, the committee did not feel that it is either possible or advisable to lay down a set of definite rules or standards that will cover all points that constitute adequate service. In its opinion, good service has to do with the entire operation of the utility, the conduct of its business and all its relations with its patrons. Such matters could not, and should not, be covered by definite rules. On the other hand, it would be a mistake for any utility to consider that its obligations to give service do not extend beyond the requirements of the state rules and laws. The report of the committee was signed by M. H. Aylesworth, Colorado; H. A. Floyd, Wyoming; J. H. Hall, Connecticut; W. D. Humphrey, Oklahoma; G. C. Mathews, Wisconsin, and J. J. Murphy, South Dakota.

In discussing particularly electric railway service, the committee stated that competition from automobiles has brought home to such utilities the demand for fast, frequent service and has led to the development of the light-weight quick-service car. The 10 to 15 per cent increase in revenue secured by the operation of such cars is almost sufficient to offset the loss from the private automobile. Aside from improved service and one-man operation, they have the advantages that they are faster than the large cars, owing to fewer stops and more power in proportion to weight; safer, owing to better design and undivided responsibility, and quieter in operation, owing to light weight. The extreme lightness, it was said, also results in a considerable reduction in power consumption and will in all probability bring about a material reduction in wear and tear.

In the present stage of development, these cars are being used on relatively light lines, but in the opinion of the committee there seems to be no fundamental reason why they should not prove advantageous on long, heavy lines, if satisfactory means are devised for coupling them quickly in trains at junction points. "Thus," the committee said, "it seems that the light, quick-service car developed and operated as a competitor of the automobile may soon be expected to come into general use to the benefit of both the traveling public and the operating companies." On this particular point a qualification was made by Mr. Mathews, who mentioned the problem in Milwaukee of getting cars through the downtown streets during the rush hours as a very serious one and said that it is much more likely that a given volume of transportation can be gotten through these streets with large cars than with small ones.

As for the interurban field, the committee stated that no worthy competitor for the motor truck operated on good roads has been developed, and it appears that in the future the interurban railway will be frequently limited in many communities to the handling of interchange freight in connection with steam railroads.

The committee also mentioned the effect of the war upon service. In all probability, it said, the draft and the demand for agricultural and industrial workers will make it necessary in many cases to substitute women for men as conductors. With pay-as-you-enter cars and comfortable seats, there seems to be no reason why women employees should not serve as conductors on many systems without any impairment of service.

PUBLIC OWNERSHIP AND OPERATION

The report on public ownership and operation, signed by E. O. Edgerton, California; John Guiher, Iowa, and Shelby Taylor, Louisiana, disclaimed any attempt to make definite conclusions or recommendations for or against public ownership, for the committee felt that these must await a most exhaustive and careful study of all phases of the problem. In its opinion, however, based on a résumé of conditions here and abroad, the trend of the times unmistakably is in the direction of complete public control and of public ownership and operation of utilities, especially the means of communication such as railroad, telephone and telegraph. In countries at war the march in the direction of complete public control appears to be more rapid than in those leading a normal existence, but the direction is clear in both cases.

The committee said that the association should continue to study the question through a permanent committee, which should marshal all underlying facts before attempting to draw any conclusions. The work should involve the formulation of standards by which the success or failure of public ownership and operation would be measured. The recommendation for a permanent committee was adopted by the association.

OTHER MATTERS AT THE CONVENTION

The committee on statistics and accounts of public utilities said that commissions should adopt a "work-order" system for new construction, at least for the larger electric railway, lighting and telephone companies. The committee mentioned the lack of unanimity among commissions in adopting the I. C. C. classification of accounts for electric railways, and said that undoubtedly the differences of opinion would ultimately be disposed of satisfactorily through co-operation of all interests concerned. It also suggested that the federal commission should waive supervision over all electric railways except those whose freight traffic is largely interstate in character, and that state commissions should not impose upon such actual interstate carriers the burden of conflicting accounting and statistical rules.

The committee on federal valuation recommended the continuance of the work until all the railroads had been fully appraised and the value of the several classes of property determined. The committee on capitalization and inter-corporate relations stated that there is increasing evidence of dissent from the complete reliance on valuations which has marked the experimental years of regulation. Commissions and courts are concerning themselves more and more with the distinctively reliable facts of investment and reaching conclusions which, however broadly expressed, are clearly influenced chiefly by such facts. The committee recommended the immediate adoption of legislation providing for federal control over the issuance of securities by interstate carriers (except electric railways) and giving the state commissions the right to sit with the Interstate Commerce Commission on applications therefor.

The committee on grade crossings and trespassing reported that uniformity of action by the states and co-operation among the state commissions looking to the elimination of grade crossings had become a necessity. Federal legislation, enforceable by state and local authorities, was urged to eliminate trespassing on rights-of-way.

The association voted unanimously for the creation of a special war committee to act in an advisory capacity to the state commissions and the utilities and to transmit the desires and needs of the government in the conduct of the war. The name of the association was changed by inserting the words "And Utilities" before "Commissioners" to show that it is not solely a body of steam railroad commissioners. Washington was chosen as the place for the next convention, the date set being Nov. 12.

The officers for the ensuing year are as follows: E. C. Niles, New Hampshire, president; C. E. Elmquist, Minnesota, first vice-president; C. M. Candler, Georgia, second vice-president; James B. Walker, New York, secretary, and L. S. Boyd, librarian of the Interstate Commerce Commission, assistant secretary.

What Have the Company Sections Done During the Past Year?

A Brief Analysis Based on Reports Furnished for the Purpose by the Section Secretaries—This Brings Out the Great Value of the Educational Work Being Done as Well as the Patriotism of the Rank and File of the Electric Railway Personnel

TO many men in the electric railway industry the local company section is the American Electric Railway Association, hence the success of the sections is in a degree the success of the association. The close of the association year furnishes an opportune time to gage the degree of this success, which must largely be done through the eyes of the local officials. In view of the lack of opportunity this year for the sections to make their usual convention exhibit the editors of this paper asked the local secretaries to state what they considered the most effective features of their work during the past year, whether or not they have made any modification in their plans due to the experience of the year, and what they had observed to be the most prominent benefits of the section work to the members and to the company. The following notes are based largely upon their replies. The attempt is made to indicate the individual characteristics of the several sections as far as possible.

In general it may be said that the chief benefit of section work observable is the spirit of co-operation and friendliness which pervades the meetings. The men come together to learn something, to have their enthusiasm stimulated, to enjoy diversion in congenial company. As a result they become better friends, they come to regard the management as human, and the executive officers also come to know and appreciate the men more completely. It is apparent also that the educational element must be provided, using that term in a general sense and not confining it to lectures and class instruction although these are good. The men want to get something tangible in addition to good fellowship, and a supply of interesting and helpful information meets this desire.

CLASS WORK A SUCCESS AT TOLEDO

The youngest section, the joint section of the Toledo Railways & Light Company, believes that educational work is of paramount importance. It successfully maintained twenty-two classes with a total enrollment of 232 members and an average attendance of nearly 200. The total membership in the four divisions of the section (railway, electric lighting, gas and heating) was 370, of which a very creditable proportion was engaged in class study. This section plans for next year to hold educational classes during the first and third weeks of each month, the subjects to be determined by the members. The second week will be occupied with departmental meetings over the entire property. During the fourth week the stated meeting of all members will be held and an unpretentious section publication issued.

TRAINMEN PROMINENT IN PUBLIC SERVICE SECTION

Last fall the Public Service Railway section experienced a remarkable growth in membership, 107 new men being added, including eighty-seven trainmen. More than one-third of the membership now consists of platform men. At a very largely attended meeting held in April more than 60 per cent of those present were trainmen and the men participating in the discussion were largely from their ranks. These men have proved to be enthusiastic members and their presence in the section has led to a modification of the meeting programs more completely to meet their needs. That is, the topics selected were less general than formerly, and more in the field from which the men could speak on the basis of their experience. The result was that latent talent was discovered and excellent contributions to the discussion were made.

Current Events Reports Pleased Milwaukee Members

One of the most effective features of the work of the Milwaukee Electric Railway & Light Company section was the practice of having "current events" papers presented by members of the several departments. These papers possess considerable news value and give the members of all departments accurate, first-hand and interesting information regarding the activity of each The men who read these papers spoke from intimate and recent experience and were thus in a position not only to discuss their topics enthusiastically but they were also well prepared to answer any questions that might result. The section has also continued the practice of issuing monthly reviews of relevant articles in the technical press, including brief outlines of these articles. In addition to the departmental papers speakers have been invited in from outside to acquaint the local members with the latest practice in construction work, manufacturing, preparation of materials used by electric railways, etc.

The Milwaukee section has always made a great deal of entertainment, and the original one-act musical comedy, "The Garden of Romance," produced at the March meeting, was well up to the high standard set by previous performances.

Company Officials Always on Hand at Washington

The Washington Railway & Electric Company section has suffered this year through the labor disturbances which culminated in an unfortunate strike. As a consequence but four meetings were held during the year but at these a fine spirit of good fellowship prevailed and this was enhanced by the regular presence of a number of the officials of the company. The section took advantage of their presence to gain a better conception of administrative problems and to become acquainted personally with their employers. The effort of the program committee has been to get away from cut and dried procedure, making the meetings as informal as possible. Entertainment is alternated with "shop." This section naturally takes advantage of the presence in Washington of a number of government officials to secure informal talks on general but vital subjects.

Practical Operating Questions Were Taken Up at Denver

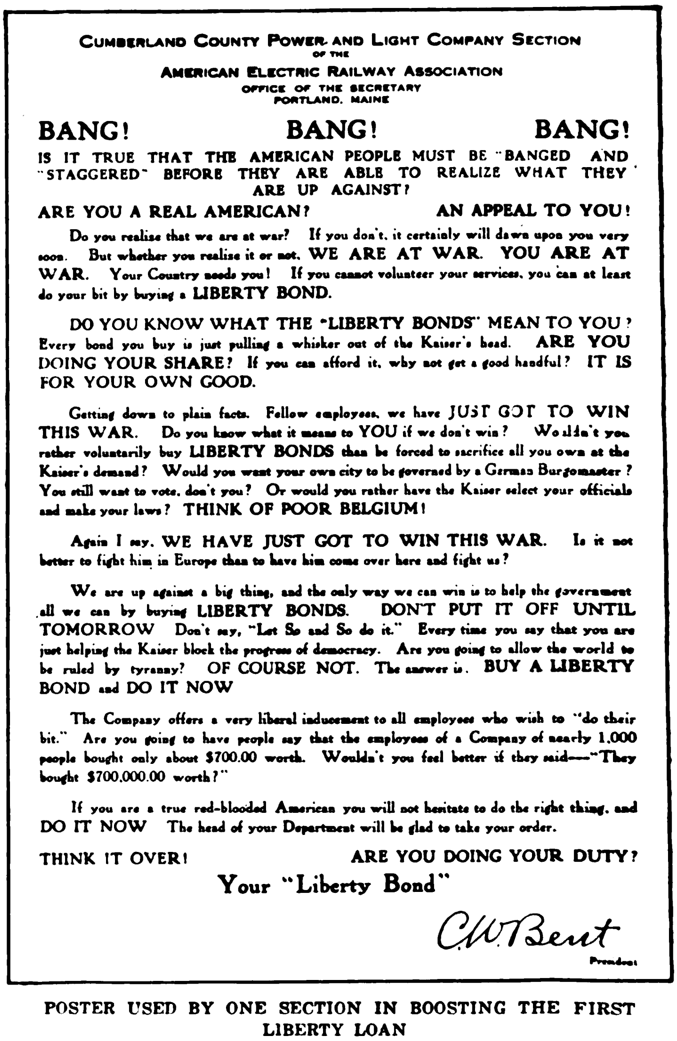
Such questions as snow fighting, track repair, forms required by motormen and conductors, etc., were considered by the local members in Denver to be the most profitable ones which could be raised at their meetings. The papers presented were never technical and the discussion was participated in by a large number of those present at the meetings. A special effort was made to develop among the men the idea that the meetings were constituted an open forum where employees could discuss their views fully and freely without in any way injuring their standing with the company. The result was that a very encouraging atmosphere of helpfulness prevailed at the meetings. Members were invited at alternate meetings to bring relatives and friends for the purpose of having a social good time. Frequently music was provided and refreshments and dancing were utilized to foster good feeling.

Professor Woodworth's Lectures Successful at Chicago

Three lectures were delivered during the past season before the Elevated Railroads section at Chicago by Prof. P. B. Woodworth of the Armour Institute of Technology. These lectures were on the fundamental principles of electric circuits and were illustrated with appropriate experiments. The lectures proved to be just what the men wanted to give the foundation for a clearer understanding of their work. In the opinion of the local officers the lectures formed a most notable section of the year's work. In addition to the professor's lectures the section discussed a wide variety of topics, embracing, among others, Chicago transportation problems, aeronautics, signal oil, patriotism, power plant matters, electrolysis and travel. All of this has, as in the other sections, been incidental to the fostering of good fellowship.

Section at Portland Boosted Liberty Loan

The Cumberland County Power & Light Company section looks back with greatest pride to its efforts to



CUMBERLAND COUNTY POWER AND LIGHT COMPANY SECTION
OF THE
AMERICAN ELECTRIC RAILWAY ASSOCIATION
OFFICE OF THE SECRETARY
PORTLAND, MAINE

BANG! BANG! BANG!

IS IT TRUE THAT THE AMERICAN PEOPLE MUST BE "BANGED AND "STAGGERED" BEFORE THEY ARE ABLE TO REALIZE WHAT THEY ARE UP AGAINST?

ARE YOU A REAL AMERICAN? AN APPEAL TO YOU!

Do you realise that we are at war? If you don't, it certainly will dawn upon you very soon. But whether you realise it or not, WE ARE AT WAR. YOU ARE AT WAR. Your Country needs you! If you cannot volunteer your services, you can at least do your bit by buying a LIBERTY BOND.

DO YOU KNOW WHAT THE "LIBERTY BONDS" MEAN TO YOU? Every bond you buy is just pulling a whisker out of the Kaiser's head. ARE YOU DOING YOUR SHARE? If you can afford it, why not get a good handful? IT IS FOR YOUR OWN GOOD.

Getting down to plain facts. Fellow employees, we have JUST GOT TO WIN THIS WAR. Do you know what it means to YOU if we don't win? Wouldn't you rather voluntarily buy LIBERTY BONDS than be forced to sacrifice all you own at the Kaiser's demand? Would you want your own city to be governed by a German Burgomaster? You still want to vote, don't you? Or would you rather have the Kaiser select your officials and make your laws? THINK OF POOR BELGIUM!

Again I say, WE HAVE JUST GOT TO WIN THIS WAR. Is it not better to fight him in Europe than to have him come over here and fight us?

We are up against a big thing, and the only way we can win is to help the government all we can by buying LIBERTY BONDS. DON'T PUT IT OFF UNTIL TOMORROW Don't say, "Let So and So do it." Every time you say that you are just helping the Kaiser block the progress of democracy. Are you going to allow the world to be ruled by tyranny? OF COURSE NOT. The answer is, BUY A LIBERTY BOND and DO IT NOW

The Company offers a very liberal inducement to all employees who wish to "do their bit." Are you going to have people say that the employees of a Company of nearly 1,000 people bought only about $700.00 worth. Wouldn't you feel better if they said—"They bought $700,000.00 worth?"

If you are a true red-blooded American you will not hesitate to do the right thing, and DO IT NOW The head of your Department will be glad to take your order.

THINK IT OVER! ARE YOU DOING YOUR DUTY?

Your "Liberty Bond"

C W Bent
President

POSTER USED BY ONE SECTION IN BOOSTING THE FIRST LIBERTY LOAN boost the first Liberty Loan. Taking hold but a few days before the closing of the subscription list the section sold about $15,000 worth of bonds, mostly in small denominations. The poster used, reproduced herewith, will prove suggestive in connection with future campaigns. The section also actively supported, through a committee, the "war garden" movement. The company assisted the section committee by placing ample land at its disposal and agreeing to plow and harrow it free. Seventy-three men chose plots and crops of 500 bushels potatoes and smaller quantities of other staples are the result.

This section adopted last year the plan of having illustrated talks by representatives of the several departments who told what their own duties comprised and how the internal workings of the departments were organized. Further to improve this feature prizes are to be offered next year as a stimulus to departmental speakers to put more time and thought into their addresses. These talks were secondary last year, the main dependence of the section for speakers being upon outside sources. An explanation by an officer of the State Militia regarding military matters, a talk by a member of the public utilities committee of the State and another by M. C. Brush, president Boston Elevated Railway, were examples of the type of program which at least partially produced an increase of a third in section membership.

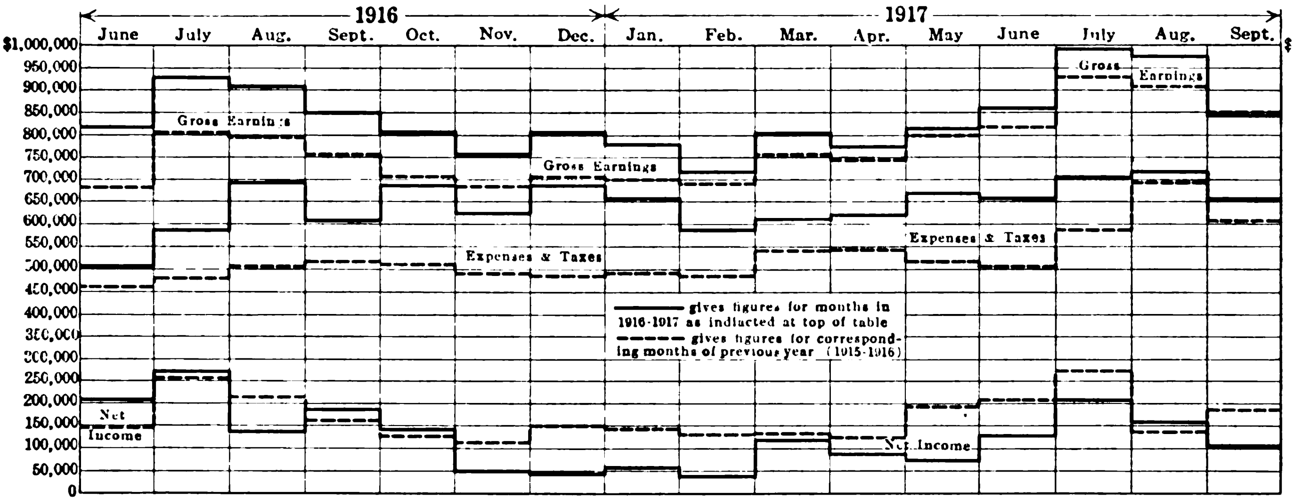


CHART OF REVENUES AND EXPENSES EXHIBITED AT CONNECTICUT COMPANY SECTION MEETING BY STATISTICIAN TO PROMOTE A CO-OPERATIVE SPIRIT

MERALCO IS AN ALL-THE-YEAR-ROUND SECTION

Unlike the sections in the States the joint section of the Manila Electric Railroad & Light Corporation meets every month in the year. Possibly more than in any other section the effort has been to develop local talent in the preparation of papers. The result is seen in the award of the company section medal to one of its members last year and honorable mention at the Oct. 9 association conference to another. The experience of the electrical division of the section has been similar. The remoteness of the section from those in this country and the desire of the leaders to make the section a bond between the Filipino and his American employers have combined to give an unusual unity and coherence to the section plans. The use of both the Tagalog and English languages at the meetings conduces to homogeneity of spirit. During the past year visits of members of the organization to the United States have provided sources of fresh interest to the section. At present J. C. Rockwell, manager of the electrical department, is in this country.

A specially valuable feature of the Manila programs is the assigning of topics and speakers for the meetings months in advance. This gives ample time for preparation and as manuscripts are due some time in advance of the meetings there is little danger that the program will go awry. Full and carefully edited records of the talks and discussion are preserved so that a prospective speaker can consult the files if he so desires. Generous money awards for meritorious section work have furnished a considerable stimulus to effort and are indicative of the desire of the company officers to assist the section officers.

CONNECTICUT COMPANY SECTION HOLDS MONTHLY DINNERS

Since beginning the section work the members in the Connecticut Company organization have made a practice of meeting for dinner at a hotel in one or other of the large cities served by the system, the members remaining at table during the addresses and entertainment. This has given a highly social character to the meetings and will be continued if the members feel that they can afford the expense. The holding of the meetings under the auspices of different divisions has had the effect of consolidating and unifying the interest of the men in the company as a whole. The programs were of two general types, one designed to familiarize the men with departmental and divisional problems, the other of an inspirational character. One of the most effective meetings of the year was that at which heads of departments told and illustrated the story of higher costs as these affected their individual lines of work. The statistician of the company exhibited a chart showing the financial situation as a whole.

A promising start was made last year in the line of special committee work by the section for the benefit of the company, and a report on snow fighting was very practical in its information and suggestions. While this line of work was not original with the section, it proved to be effective in bringing out the kind of discussion which is difficult to get. The Connecticut Company section is to some extent developing along the same lines as the Milwaukee section.

CAPITAL TRACTION SECTION HAD NOVEL CHRISTMAS CELEBRATION.

The cordial spirit of the Capital Traction Company section, Washington, D. C., was evident in the "stunt" meeting held prior to Christmas, 1916. A Christmas tree was the central feature, and the distribution of mirth-provoking gifts formed an important part of the program. This section is one of the youngest, last year having been its first full year, but a great deal has already been accomplished. Like its neighbor, the W. R. & E. Co. section, it utilized the presence of government officials to bring it into touch with the outside world, and the officials of the company took an active interest in the young organization. The spirit of the organization was voiced in these words by George E. Hamilton, president of the company, at the first anniversary meeting held in January, 1917:

"An organization of this kind brings us together, makes us all see what each is doing, and gives new impetus to our minds and a firmer and fuller purpose to every man who is striving to do what is right. It teaches us what a service corporation is; shows us that because we are members of this service corporation we have assumed duties that we cannot lightly consider, duties that will compel us thoughtfully to perform all of the obligations that we assume. It shows us the part that each is playing in the performance of this duty. If we learn our lesson well, if all of us engaged in this common enterprise feel and, feeling, measure up to the obligations that we assume, then indeed are we doing the work of men. This close contact teaches us more. It brings into the lives of all of us the spirit of service and teaches us what service is."

FLAG RAISING AT HAMPTON WILL LONG BE REMEMBERED

The activities of the Newport News & Hampton Railway, Gas & Electric Company section came to a climax at a meeting in May, when an intensely patriotic gathering assembled for a flag raising exercise at the Hampton car house. Addresses by several public men gave the members a fresh impression of the esteem in which the company is held in its section and thus promoted a spirit of local pride. The section also took an active part in encouraging the home garden movement, a whole meeting being devoted to this subject. The technical phases of electric railroading were not forgotten, however, and a number of talks on departmental matters, general principles of operation and some outside developments were included in the programs. A beginning in educational work was made also.

SUMMARY AND CONCLUSION

A composite picture like the one given herein of the activities of the sections during the past year, supplemented by a study of the minutes of the meetings printed from week to week in the Association News column and the longer abstracts of important papers will form an excellent basis for plans for the current year. Already the work is under way and a determination to carry on the section meetings in spite of all possible discouragement is manifest. While it is not to be expected that the number of sections will increase materially during the war, those already organized can do much to contribute to the welfare of the industry while operating conditions are unsettled, as they must be for several years. A definite program will be of great assistance in this connection.

Franchise Limitations in Fare Increases

The Author Takes the Logical Position That if a Commission Can Specify Operating Conditions Not Contemplated in a Franchise It Can Increase Fares Having Franchise Limitations

BY R. W. PALMER
General Manager Auburn & Syracuse Electric Railroad, Auburn, N. Y.

WHEN street railway franchises were accepted in the early days of railroading, the restrictions fixing the rates of fare as well as other stipulations embodied in the franchises were in keeping with the times. On this account they were reasonable as measured by other existing standards. Likewise, city taxes during the same period were based on existing conditions and the tax rates were reasonable as measured by similar standards.

When electric railway franchises containing limitation as to rates of fare were accepted public service commissions were not in existence, and all regulations were in the hands of the city authorities who granted the franchises. After public service commissions were formed, however, conditions to a certain degree were changed. For instance, among other things the commissions have the authority to order changes in schedules, providing that after due investigation they find that changes are for the public good. Likewise they have the authority to order railways to increase the amount of heat in their cars, if after investigation they find that these are insufficiently heated. The railways do not question this authority, even though the question of heating or regulating schedules was not made a part of the original franchises.

Taking into consideration the fact that the commissions have the power to change one or more conditions covering the operation of street railways within municipalities, it would appear that the same commissions also have authority to change other conditions. This includes the fixing or regulating of the fares to be charged, providing that after due investigation the railways are found to be unable to earn a reasonable return on their investment, especially after they have been required to meet a number of conditions imposed upon them by law and otherwise which were not in existence or even contemplated by either the railways or the municipalities at the time the former agreed to furnish transportation at a maximum of 5 cents.

It may be objected that some later franchises were granted to street railways for extensions, and were accepted by them with fare limitations, after public service commissions came into existence. The answer to this is that the companies were forced to accept the franchises with these restrictions if they were to secure any privileges at all, just as railroads were forced to accept a lot of unreasonable conditions before the law granting the right of eminent domain to railroads became effective.

Passengers to-day are traveling in clean, well-lighted and well-heated cars, operated on schedules giving fast, frequent and regular service. Compare this with the conditions as they existed when the franchises were granted on a 5-cent basis. Then there were slow-moving horse cars with oil lamps at the ends, and in some instances one in the center. The cars were unheated or at best there was only an attempt to heat them with small stoves which supplied sufficient heat for the comfort only of those who were fortunate enough to be in the immediate vicinity. No sane person now would be satisfied with the old conditions of railroading, any more than he would be with oil street lamps, dirt streets, wooden sidewalks, or the lack of a sewer system, an up-to-date water works, or an efficient fire department. The old-time conditions existed when city taxes were low and when franchises fixing the fare at 5 cents were granted.

No reasonable citizen objects to an increase in tax rates if necessary to provide up-to-date conveniences, and no one would be satisfied to return to the oil-lamp and horse-car age. Therefore, providing improvements in railway service are in keeping with the times the public should be willing to pay such a rate of fare as is necessary to insure a fair return on the actual investment, even though such fare is more than that agreed upon when conditions were not comparable with those now existing.

I repeat, therefore, for purpose of emphasis that as the public service commission has the right to regulate the operation of street railways within municipalities, and to impose conditions which did not exist at the time the fare-limiting franchises were granted, it would appear that the same commission has a similar right to change other conditions, such as fixing or regulating fares, providing that after investigation such increase is found to be justified.

The Indianapolis & Louisville Traction Company, Scottsburg, Ind., has completed its garden prize contest. Gold pieces were distributed, the first prize of $20 going to Ben Eggersman, now a soldier at Camp Zachary Taylor, near Louisville, Ky.

B. R. T. Employs Women as Guards

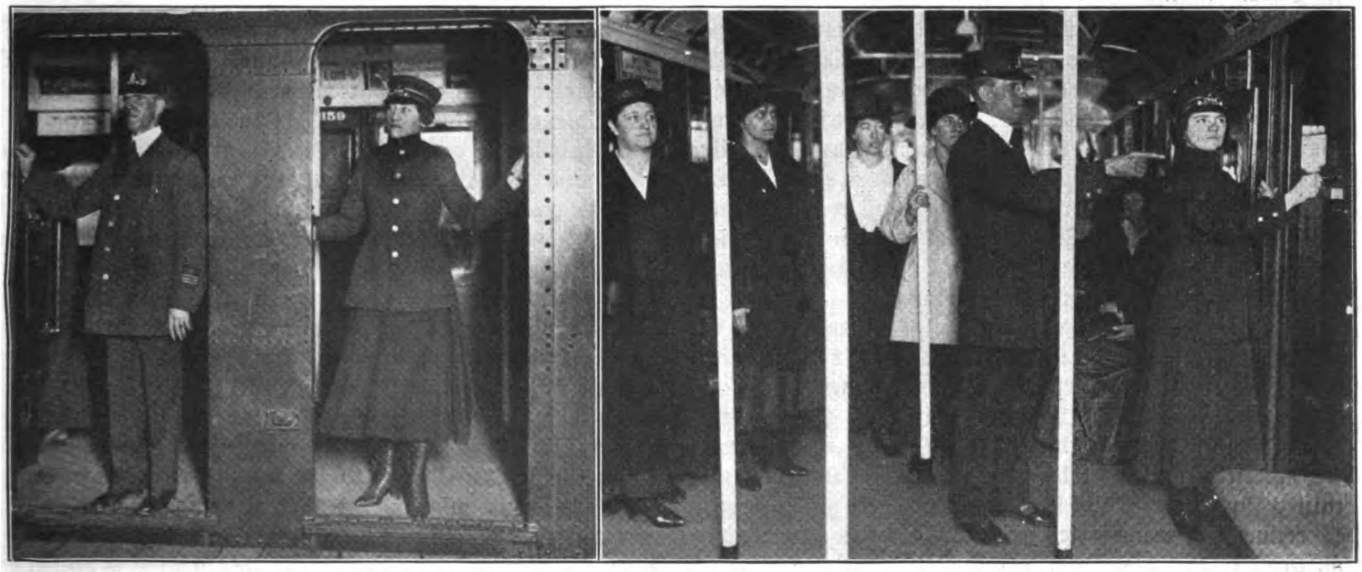
Fifty Girls Appointed Guards on Brooklyn Subway Trains This Week—350 May Be in Service by End of Year

THE Brooklyn (N. Y.) Rapid Transit Company has taken a very decided step toward the employment of women in the train service which is likely to develop on a large scale as the need for their services becomes more acute. Fifty girls began work on Oct. 24 as guards on the subway trains after a short period of instruction, which was devoted principally to teaching them the operation of the car doors and the stops along the line of the subway. Those now appointed work only during the rush-hour periods. They will be followed by other groups and will gradually be assigned to the regular service to fill the existing vacancies caused by the war.

For some time the company has employed women, to the number of possibly 800, as changemakers in the booths on its subway and elevated lines. It was principally from this force that the present guards have been recruited, and as they were already somewhat familiar with the work and necessarily with many of the company's rules, little additional instruction has been needed to fit them for the position of guards. It will be the policy of the company, therefore, to secure women for work on the trains by a general system of promotion. In making appointments the company will select those who seem best qualified and will then make acceptance of the position voluntary on the part of the employee. The women will receive the same rate of pay as men and they will be required to work substantially the same number of hours.

The uniform adopted is shown in the accompanying illustration. It consists of a blue cap and sacque coat of the same material as that used for the men's uniforms and skirt made from cloth of any dark color. No definite specifications were drawn for the skirt in order to lessen the demands upon the manufacturer. The coat is very plain with five large regulation buttons and military collar. The badge is worn on the cap, which is also of military style.

Although no statement as to the probable success of the women for this service can be made at this time,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WOMAN SUBWAY GUARD AND INSTRUCTOR ON BROOKLYN RAPID TRANSIT SYSTEM—CLASS OF WOMEN RECEIVING INSTRUCTION the company does not anticipate any difficulties, especially in view of the fact that the work is extremely simple. The car doors in the Brooklyn subway are air operated and controlled from switches at the center door. Assuming that the increasing shortage of men continues, the company may have upward of 350 women working as guards by Jan. 1, according to present plans. No plans have been made for their employment on cars of either the surface or elevated lines.

Hearing on Fare Jurisdiction

New York Commission in Albany Listens to Conflicting Views Before Rendering Any Decisions in Pending Fare Cases

BEFORE the Public Service Commission for the Second District of New York arguments were heard on Oct. 25 in Albany on two questions of law involved in the petitions of a large group of electric railways for authority to increase their rates of fare. At the outset Chairman Van Santvoord stated that the meeting was called not so much to hold a hearing as to give the parties interested an opportunity to present their viewpoints before the commission reaches its decisions in nine cases in which hearings have been held and all the evidence submitted.

The questions under discussion were: (1) Has the commission authority, after investigation and upon the principles indicated in the Ulster & Delaware case, to permit an electric railway to charge a greater rate of fare than that fixed by Section 181 of the railroad law? (2) Has the commission authority after investigation to permit an electric railway to charge a greater rate of fare than the maximum provided in the franchise granted by the municipality?

The railways were represented by Joseph K. Choate, Charles E. Hotchkiss, Martin H. Decker and Lewis E. Carr. The cities' case was argued by Richard C. S. Drummond of Auburn, chairman of the cities' steering committee; Corporation Counsel Frank Cooper of Schenectady; Corporation Counsel B. B. Cunningham of Rochester and Joseph B. Thompson, attorney for the town of Greenburg, Westchester County.

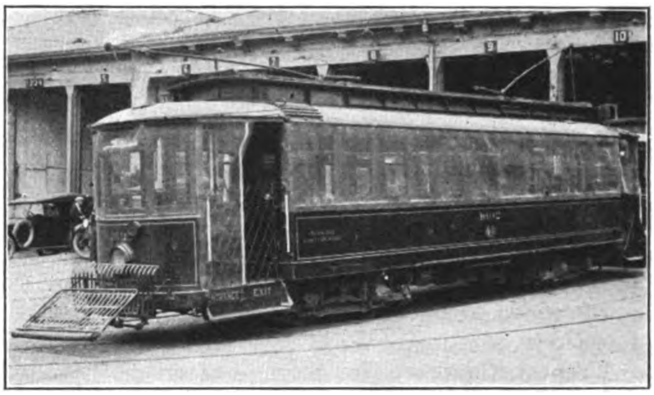
Mr. Hotchkiss argued that the commission has, should it deem fit to exercise it, the right to grant the increases sought by the petitioners. He advanced the opinion that Section 181 of the railroad law has been repealed by implication. In support of his claim that the commission has the right to set aside limitations of rates of fare stipulated in franchises granted by municipalities, he cited numerous decisions in similar cases. He contended that the commission, should it fail to find that it has power to stipulate and regulate rates of fare, would nullify State legislation. In his opinion, the rate of fare of railways should at all times be subject to the police power of the State.

Mr. Drummond, appearing as spokesman for the cities, denied that Section 181 of the railroad law had been repealed by implication in any way whatever. He asserted that this section explicitly bars the commission from increasing the rate of fare of electric railways. In citing the Ulster & Delaware case, he maintained that Section 181 has only been affected in respect to reduced passenger transportation rates and that it, as to ordinary passenger rates, still stands unaffected. Mr. Drummond also advanced the claim that the constitution of the State of New York plainly gives cities the right to consent to franchises and to barter and that neither the State legislature nor the commission has the right to abrogate the terms or stipulations of such franchises.

Cars Protected During Strike

Wire Screen Over Car Windows Found Effective in Withstanding Strike Violence in San Francisco

DURING the strike a few weeks ago of the employees of the United Railroads, San Francisco, Cal., "armored cars" were used by that company on some of its lines south of Market Street. Galvanized wire screen, tacked on the cars with staples, was found to afford excellent protection to passengers. The cars so equipped suffered no broken windows, although they were subjected to severe bombardments of bricks and other objects. All of the glass was destroyed, however, on several cars not so protected.



CAR WITH WINDOWS SCREENED IN DURING STRIKE

A hole was made in the roof of the car vestibule for the trolley rope to give the crew control of the trolley from within the car. This made it unnecessary for the train crew to leave the car at ferry terminals which are stub tracked. A small hole was cut in the screen also to provide an unobstructed view for the motorman. These features are shown in the above illustration.

What Could Be Done with the Coal

The Chicago *Daily News* recently printed some calculations as to what could be done with the coal saved by the electrification of the present electrical division of the Chicago, Milwaukee & St. Paul Railway. It says: "The abolition of locomotives on one division of the coast line of that railway is shown to have saved enough coal in one year to send a United States torpedo boat destroyer on 2368 trips about the British Isles in the search for German submarines. Forty-five such destroyers on the coal conserved in the Rocky Mountain division alone could be kept steaming in a constant procession, week in and week out, for the whole year on the circuit about England, Ireland and Scotland. The annual saving on this division is sufficient to send ninety ocean liners of 13,000 tons displacement on the voyage from the United States to France. Yet this conservation of fuel is only half of that already effected on the electrified divisions, and one-third of what will be accomplished when the Cascade Mountain zone is added to the electrified mileage next year."

COMMUNICATIONS

Continued Publicity for Standard Safety Code Needed

TERRE HAUTE, INDIANAPOLIS & EASTERN TRACTION COMPANY
INDIANAPOLIS, IND., Oct. 17, 1917.

To the Editors:

I have read with considerable interest the summary of the National Electric Safety Code in the ELECTRIC RAILWAY JOURNAL of Sept. 15 and Sept. 22. Publicity of this kind is very necessary to the introduction of the code and I believe will be helpful to the railway men and encourage the adoption of the rules for trial.

One of the greatest obstacles to overcome in the adoption of a set of rules is the lack of familiarity with them on the part of the men directly responsible for their application, and it will be impossible to expect uniform interpretation and application until all concerned have had ample time to become familiar with the requirements.

Unfortunately at this time there appears to be insufficient activity in railway construction to demonstrate the practicability of the code, therefore this would be an opportune time for further publicity to acquaint persons interested in the code with its intentions. The summary prepared by Dr. Rosa and Mr. Canada is a step in the right direction, as it tends to act as an index or key to the code and should be read by those who have found difficulty in understanding the rules.

On our line we have issued some thirty-two copies of circular No. 54 to the various line foremen, operators at power stations and substations with the request that they read the rules carefully and submit criticisms, amendments and suggestions, but thus far no replies have been received. The writer has personally taken up the question with these men and they have stated that no reports have been made because of the fact that they have not as yet become sufficiently familiar with the code to offer any suggestions.

It is, therefore, quite evident that additional publicity along the lines of the summary referred to will be necessary to secure proper results.

A. SCHLESINGER,
Superintendent of Distribution and Substations.

The "More Service at Less Cost" Issue

THE J. G. BRILL COMPANY
SAN FRANCISCO, CAL., Oct. 13, 1917.

To the Editors:

I have been reading with unusual interest and profit the special number of the ELECTRIC RAILWAY JOURNAL containing various contributions by experts in the railway field on the story of the one-man, light-weight safety car.

The manner in which this subject has been handled by your editorial staff, indicating an enormous amount of time, labor and energy expended, a very keen analysis of electric railway conditions and a practical solution of the high cost of operation problem, deserves the highest possible appreciation on the part of both manufacturing and operating fields.

I had been looking forward to this special number for weeks before it appeared, feeling that this issue would in reality be a handbook for a number of us who are interested in keeping the electric railway transportation vehicle at the front of the procession, and the receipt and study of this issue have more than fulfilled my expectations. I am making this light-weight, safety car issue the subject of a special letter to every railway company in my territory, directing the operators' attention to the various articles which they cannot afford to miss studying carefully.

I wish to express my keenest appreciation to Mr. McGraw and his efficient staff for the splendid service which has been rendered the railway industry.

F. A. RICHARDS,
Pacific Coast Sales Manager.

PUGET SOUND TRACTION, LIGHT & POWER COMPANY
BELLINGHAM, WASH., Oct. 12, 1917.

To the Editors:

I wish to congratulate you on your issue of Sept. 22. Bellingham certainly got a great deal of favorable advertising, more, perhaps, than we deserve, but which shall be amply repaid if our experience here is of help to other railway companies.

L. R. COFFIN, Manager.

The Future of the One-Man Car

PHILADELPHIA HOLDING COMPANY
PHILADELPHIA, PA., Oct. 15, 1917.

To the Editors:

The data contained in your issue of Sept. 22 on one-man cars present an interesting study to both railway men and manufacturers of equipment and invite efforts to visualize the future.

In the first place, what will be the final size and passenger capacity? Or will there ever be a standard in these respects?

Reference to the list of properties given as operating one-man cars shows that, at present, the over-all length ranges from 20 ft. 0 in. to 46 ft. 6 in. The average is 31 ft. It is true that by far the greater number of the one-man cars operated at present consist of remodeled equipment, in many cases for experimental purposes only, and these cars should be largely disregarded when final limits either way are being considered.

At the same time, the average over-all length of *new* one-man cars, so far as can be learned from the JOURNAL'S list, is 26 ft. 11 in., which would indicate a present impression that very small cars are best for one-man operation.

The one-man car is in its infancy, and in these days when inspired prophets are supposed to be as extinct as the dodo, he would be a rash man who ventured on a prophecy as to the final shape which this handy piece of equipment will take. Taking, however, a leaf from the old Roman priests, who always played safe in such situations, an opinion may with propriety be hazarded that the trend will be toward longer bodies and in the end there will be at least three standard lengths.

So far as safety is concerned, the experience at Spokane, where 44 ft. 10 in. cars were operated on the Fourth of July without an accident, is the best kind of evidence that this important factor is not going to prove an obstacle to the use of larger cars than just now seem to be the rule.

In the final analysis it would, therefore, appear that the same factors that now determine the proper size of car to use in each case will apply equally to the one-man car. This ought enormously to increase the present accepted limits.

The next question is the extent of the probable field for the one-man car. To determine this I went through the last edition of your directory and find that 959 towns, with a population of from 3500 to 100,000, are served by electric railways, according to the directory. In this list I included only such towns as are indicated by separate mention in the directory and not the large number of towns given in the directory as being on the routes of interurban lines. I also included towns of less than 2500 inhabitants when they were mentioned as the headquarters of a railway system. I find that about 16,500,000 people live in the towns included in this list. The population figures were taken from the directory, which is based, for the most part, on the census of 1910.

You may be interested to know also that the Corpus Christi cars went into service on or about Dec. 1, 1915, and, therefore, antedated Fort Worth cars by a year. Of course, the Corpus Christi cars were not equipped with all the control devices, but they had air brakes and safety doors.

J. R. DICKEY, Sales Manager.

American Association News

Association May Have Special Representative at Washington to Confer with Governmental Bureaus Regarding War Matters—Manila Section Secures Interest of Public Officials—Other Section Activities Reported, Including Discussion on Power Saving at Chicago

Important Meetings of Military Transportation Committee at Washington

Members of the American Association committee on military transportation met in Washington on Tuesday and Wednesday of this week, and on Tuesday there was also a long conference with Daniel Willard, chairman of the advisory committee of the Council of National Defence. The purpose of the meetings was to place before the government authorities the facilities of the electric roads and to explain the desire of the electric railway managers to aid in military transportation to the extent of their ability. The meetings were attended by L. S. Storrs, A. W. Brady, E. C. Faber, F. R. Ford, C. L. Henry, J. N. Shannahan, C. Loomis Allen, R. I. Todd, Britton I. Budd, G. T. Seely, W. H. Bloss and E. B. Burritt.

Mr. Storrs first read a letter which he had written to Mr. Willard outlining the ways in which the electric railways can assist in the movement of freight. While the cost might be more than by steam roads, the result would be satisfactory because each electric express car employed would release several freight cars. The steam roads would have no cause to fear a permanent transfer of business to the electric railways because the latter would be obliged to charge higher rates. There might be some public prejudice against the use of electric railway facilities for this purpose due to possible interference with passenger service, but this could be justified as a war measure with Mr. Willard's backing.

There was next some discussion as to the importance of having men familiar with electric railway facilities in charge of the routing of supplies, otherwise these facilities could not be used adequately. Another point brought up was in connection with the location of the proposed storage warehouses for war supplies which may be built in accordance with the suggestions of the sub-committee on storage facilities of the Council of National Defence. This sub-committee proposes the establishment of warehouses on the seaboard and also at interior points where the production of different classes of articles centers. The electric railways naturally have a vital interest in the location of the warehouses and at the Wednesday meeting G. T. Seely was selected to represent the association in the matter. He agreed to give a reasonable amount of time if desired to the sub-committee on storage facilities of the council.

On both Tuesday and Wednesday the committee discussed the relation of the electric railways to the motor truck industry, which is bound to play an important part in transportation during the war and thereafter. The desire of the electric railways is to divide the field with the motor truck in such a way that each can do its best work for the country as a whole.

Tuesday afternoon was spent in conference with Mr. Willard, the committee having during the morning selected Mr. Brady to act as spokesman for it. This he did, explaining clearly the whole transportation situation as it affects the electric railway industry. He cited several cases of discrimination in favor of the steam railroads as against the electric railways. Mr. Willard assured the committee that he would take steps to have the whole situation thoroughly considered as far as any orders from Washington have a bearing upon it. He also outlined a plan which he had formulated to co-ordinate all of the transportation interests. The conference lasted for several hours and the problems of the hour were faced fully and frankly.

The Wednesday session was devoted to a discussion of the broad phases of the relations of electric railways to the war. It was the sense of the committee that they should have a representative in Washington to keep in touch with all branches of the service, a man to be selected who would be well qualified to furnish all needed information regarding the electric railway industry. President Stanley was requested to call a meeting of the executive committee at an early date to act upon this matter and to provide plans for raising the necessary funds. It was deemed desirable that such funds should be raised by subscription among the companies. A tenth or more of the necessary amount was subscribed at the meeting.

Lecture at Milwaukee on Wire Manufacture

Fifty members attended the meeting of The Milwaukee Railway & Light Company section held on Oct. 11, at which the principal feature was a lecture on "The Manufacture of Wire" by Dr. H. Horton of the American Steel & Wire Company, Chicago, Ill. With the aid of lantern slides the speaker covered the history of the iron industry from the discovery of iron up to the perfection of present-day steel furnaces. He was prepared to show a four-reel film covering the manufacture of wire from the mining of crude ore up to the finishing of the product, but through a misunderstanding this proved to be impossible. The usual "Review of the Technical Press," a ten-page mimeographed bibliography, was distributed.

Two Interesting Meetings at Manila

At the meeting of joint company section No. 5 held on Aug. 8 C. Nesbitt Duffy, vice-president and general manager of the Manila Electric Railroad & Light Corporation, Manila, P. I., addressed those present on the subject of public utility management. About 125 prominent citizens of Manila were in attendance besides 127 members of the section. President Santiago delivered a short address of welcome in which he explained the aims and objects of the company section. This was followed by Mr. Duffy's paper on "Management," which will be abstracted in a later issue.

Major D. P. Quinlan, judge advocate U. S. Army, spoke extemporaneously on the value of the human element and its service to the public. He said a divine responsibility rests upon fellow creatures to co-operate; that reciprocal action is demanded between employees and their superiors in all lines of endeavor. Major Quinlan was in military work in Manila at the time of the American occupation in 1898. He drew some interesting comparisons between the transportation systems there then and at the present time.

Following the speeches the members and guests were entertained with singing and dancing, two three-round boxing contests, a Japanese wrestling match, music by the "Meralco" orchestra and refreshments.

At the meeting held on Sept. 4 Secretary M. E. Chaves read in Spanish the address made by Major Quinlan at the August meeting. The guest of honor at the September meeting was Hon. Justo Lukban, M.D., Mayor of the city of Manila. He addressed the meeting in Spanish, and his address was also interpreted by the secretary in English.

Dr. Lukban paid a high tribute to the management of the Manila Electric Railroad & Light Corporation. He said that while he belonged to a political party which stands for Filipino independence, he considered the American occupation of the Philippines as being of great benefit to them. Although the Filipinos had fought unsuccessfully for their independence, yet they had much to thank the Americans for, and one of the instances of the great progress made under American rule was to be seen in the city of Manila itself with its many great improvements and particularly its street railway system. During the Spanish régime the transportation facilities in Manila passed through three epochs. The first, when the Mayor was a schoolboy, was the period of four-horse omnibuses, the second was that of small horse-drawn cars operating very inefficiently on rails, and the third was that of the steam tramway from Pretil Bridge to Malabon. The present system came into being while Hon. W. H. Taft was governor-general. One of the conditions laid down at the time was that one-half of the capital stock was to be reserved for Filipino investors, but due to lack of confidence or initiative none of them took advantage of the opportunity.

Dr. Lukban said that in his capacity as Mayor he has always made it a point not to meddle in the affairs of "Meralco," leaving the company all the latitude possible. He took the opportunity, however, to mention that when employees desire an increase in wages they should first be sure that they have a just cause, and second that they present their case in a proper way. He advised the company's employees always to take into consideration the earnings of the company so as to determine whether or not its earnings justify compliance with the demands which they might plan to make.

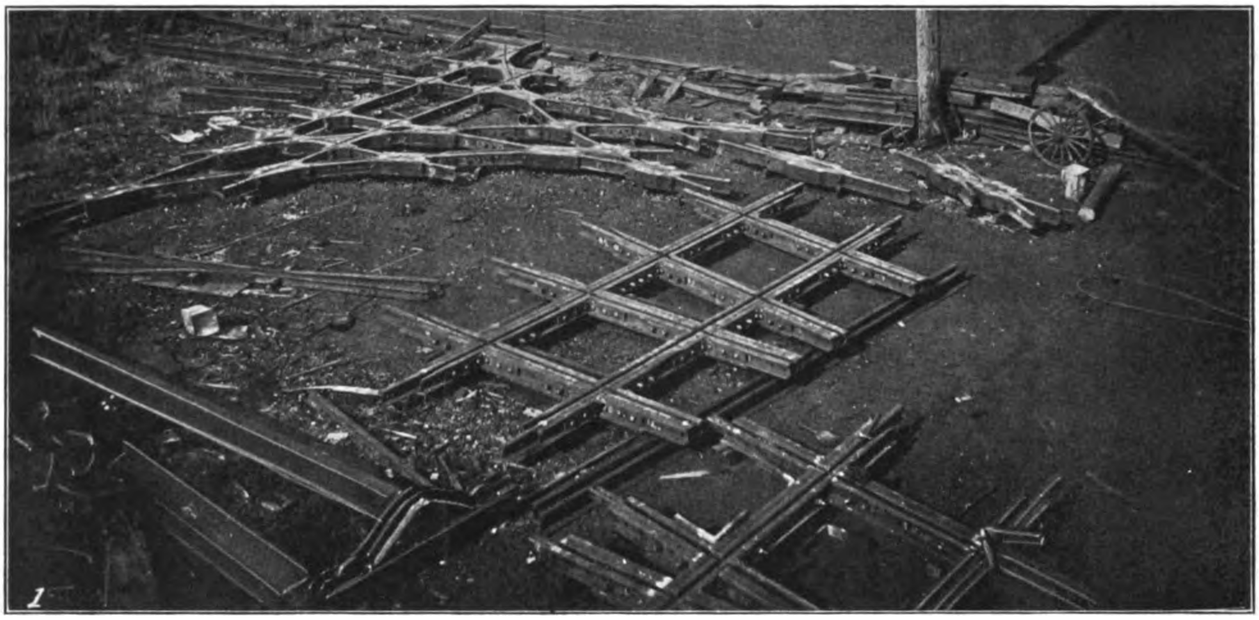
Following the Mayor, C. N. Duffy, vice-president of the corporation, briefly summed up the remarks of the Mayor and explained to him that in the local organization there is no struggle between labor and capital. He took the opportunity to point out the effect of high costs of materials on a company whose output—street car rides and electric service—has its prices fixed by franchise or law. In spite of this the company, on July 1 of this year, put into effect a wage system by which the pay of employees is automatically advanced with length of service, and every occupation of the rank and file of the company has been classified. Since then a rate of wages has been fixed for each occupation and trade.

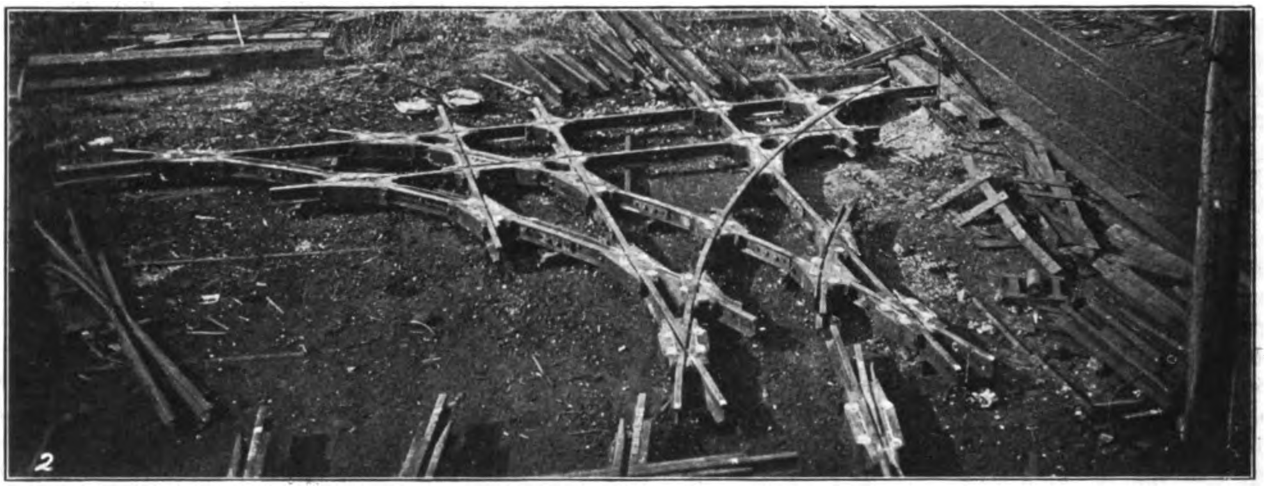
B. J. Fallon Elected President at Chicago

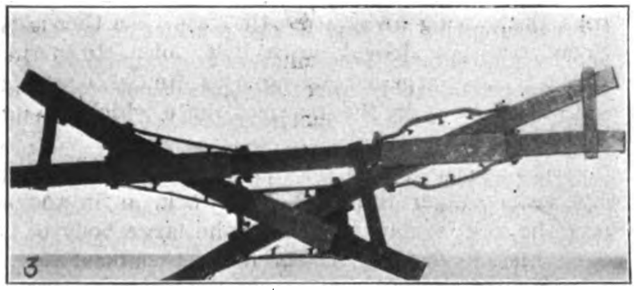
The topic of the meeting of the Elevated Railroads Company Section held on Oct. 23 was "Power Saving," the subject being approached from several angles. E. C. Noe, general manager, first gave data relating to the consumption of fuel in the production of electrical energy and showed how small savings could in the aggregate considerably affect the total fuel consumption. M. J. Feron, general superintendent of transportation, followed with a paper on personal experience with coasting clocks, in which he explained how he had been converted from a skeptic to an enthusiastic advocate of their use. H. A. Johnson, master mechanic, gave valuable information as to what can be accomplished through proper coasting, illustrating the principles with the aid of time-speed graphs. W. B. McKinney, engineer Railway Improvement Company, New York City, explained the purpose and mechanism of the "Rico" coasting clock, with the aid of diagrams and a sample clock.

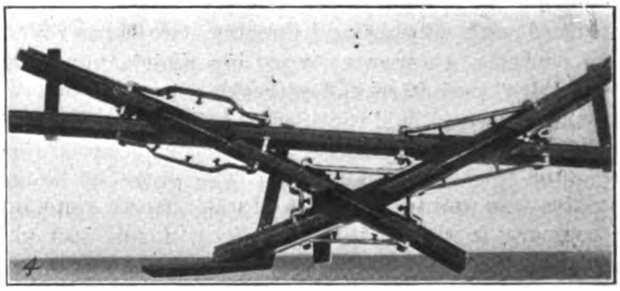
The following were then elected to serve for one year except as indicated: President, B. J. Fallon; vice-president, R. N. Griffin; secretary-treasurer, P. V. Lyon; librarian, G. H. Pierce; director for two years, H. A. Johnson; director for one year, J. A. Jarvis.

Among other features of the meeting the most prominent was a talk on the liberty loan by W. V. Griffin, secretary and treasurer of the Elevated Railroads. The work of a local charity was also explained. The attendance at the meeting was about a hundred.









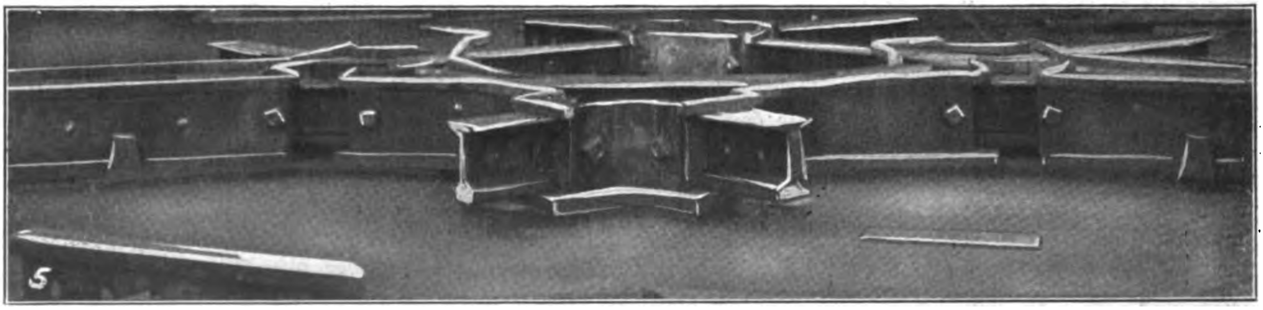


Fig. 1—Home-made special work, showing bolted steam and interurban crossing in center of picture.
Fig. 2—Double crossover and turnout made without chillers.

Figs. 3 and 4—Forms made of welded steel base plates and bolted side plates
Fig. 5—Special work ready to be poured.

Special Work Made by Portland Railway, Light & Power Company Without Cast-Iron Forms

EQUIPMENT and MAINTENANCE

HAVE YOU A GOOD WAY
OF DOING A JOB?
—Pass It Along

These Articles Have Been Selected to Provoke Thought and Stimulate Discussion. All of the Technical Departments Are Represented

Railway Manufactures Special Work Without Cast-Iron Forms

Cost of Pattern Work and Cast Iron Avoided by Using Steel Shapes Which Are Bolted and Welded in Place

BY F. P. MAIZE
Master Mechanic Portland Railway, Light & Power Company, Portland, Ore.

The Portland Railway, Light & Power Company has been manufacturing special work for a number of years, and recently some changes have been introduced that improve the special work so that it has a greater life. A large saving has also been effected in cost of manufacture. Several pieces made recently are shown in Fig. 1. The bolted steam and interurban crossing seen in the center of the picture is made of 80-lb. T-rail. The fillers are made of cast steel, and the short rails are reinforced with boiler plate, being electrically welded to the base of the rail. The joints as well as the nuts are also electrically welded.

In Fig. 2 is a section of a double cross-over and turn-out for city cars. The cast-welded work with manganese center was formerly made by casting in chillers, or cast-iron forms, and as nearly every piece was different it was necessary to make a great many new chillers. On this cross-over the expense of new forms was saved in the following manner: The rails were held together by welding plates on the base of the rail, Fig. 3, and the sides were formed with ½-in. mild steel pieces bolted through the rail, Fig. 4. Anchor pins were put in to strengthen the sides. The base plates also reinforced the sides so that less metal was necessary in the casting. A piece of this special work set up and ready to be poured except for banking the sand around it is shown in Fig. 5. As the rails were held rigidly together it was not necessary to clamp them when casting, and we had no trouble with the rails warping out of shape. The manganese centers were bolted and wedged and poured with spelter, which was reinforced with hard spots, as shown in Fig. 6. These spots were faced off, making a hard, true bearing for the bottom of the center. By making the special work in this way instead of using chillers we have saved 7650 lb. of cast iron and 450 hours of pattern work on the cross-over illustrated in Fig. 2.

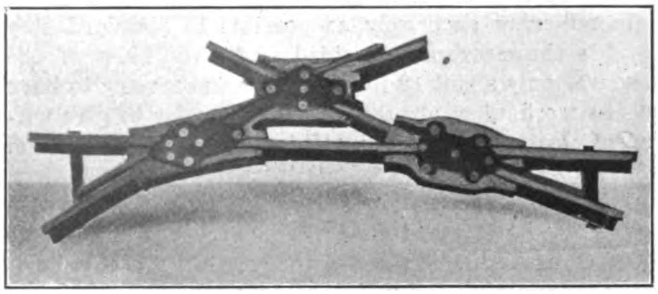
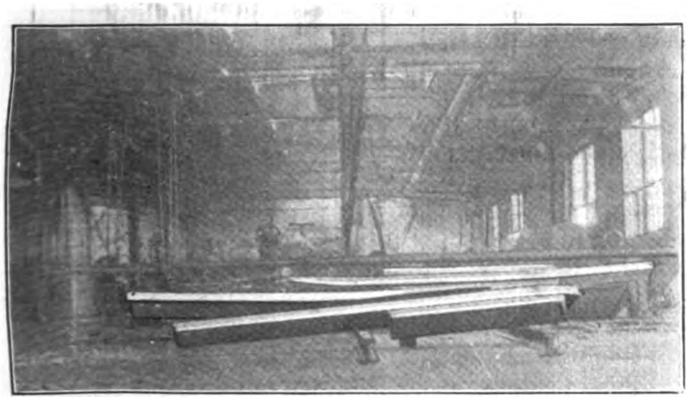
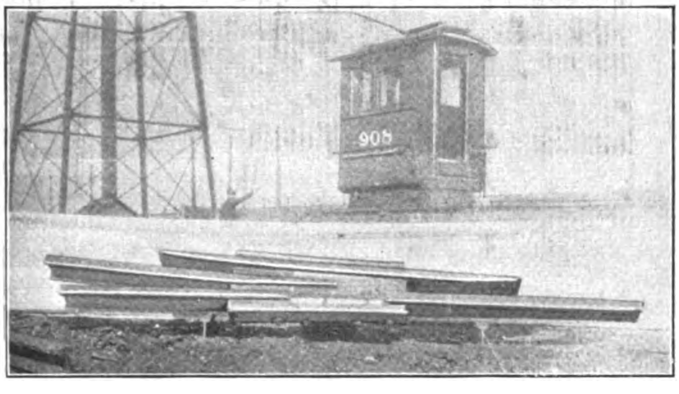


FIG. 6—HARD-SPOT REINFORCEMENT FOR MANGANESE CENTERS

To repair a standard mate on which the through rail was broken off, as shown in Fig. 7, we drilled holes through the cast iron and drove in tapered wedges to break the casting away from the rail. We then put in a new rail and drilled extra bolt holes through the casting. The broken casting was finally electrically welded, resulting in the repaired mate which is shown in Fig. 8.

We have found that special work repaired in this way wears longer than the new work, as in the new work the rail is made softer by the large body of cast iron which by cooling slowly tends to anneal the rail and thus reduces its wearing qualities.

FIGS. 7 AND 8—STANDARD SWITCH-MATE WITH BROKEN THROUGH-RAIL, AND AFTER BEING REPAIRED

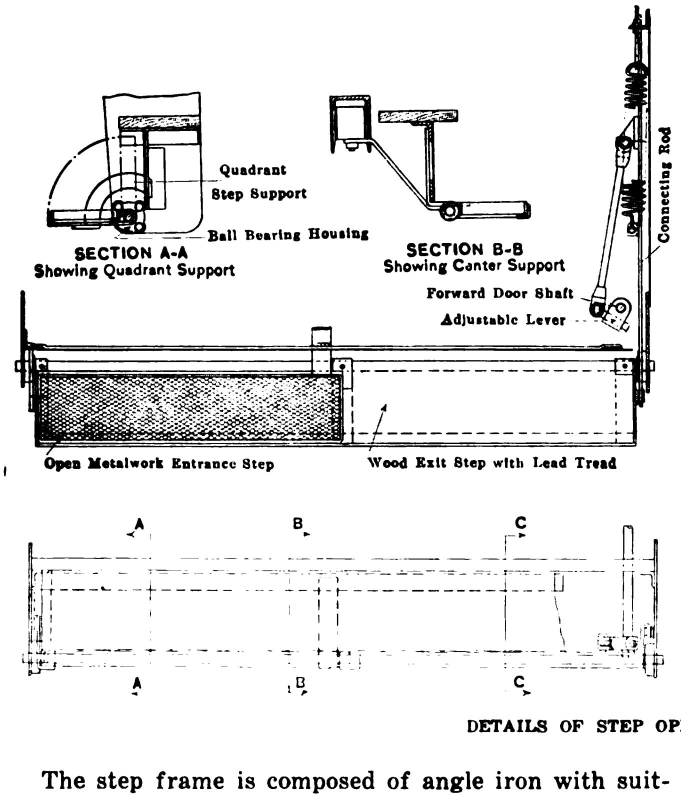
Step Mechanism That Does Not Foul Snow

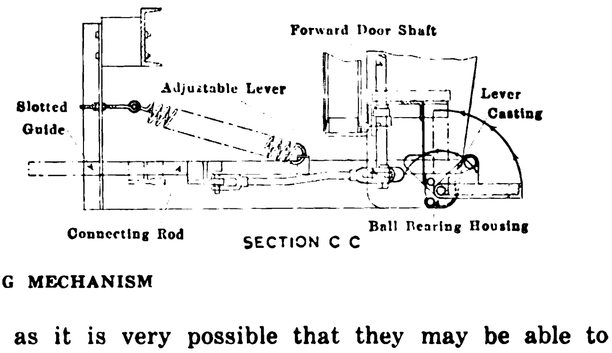
Device Arranged so That None of the Operating Levers Extend Below the Lower Step

BY KEITH MACLEOD
Engineer of Equipment Montreal (Que.) Tramways

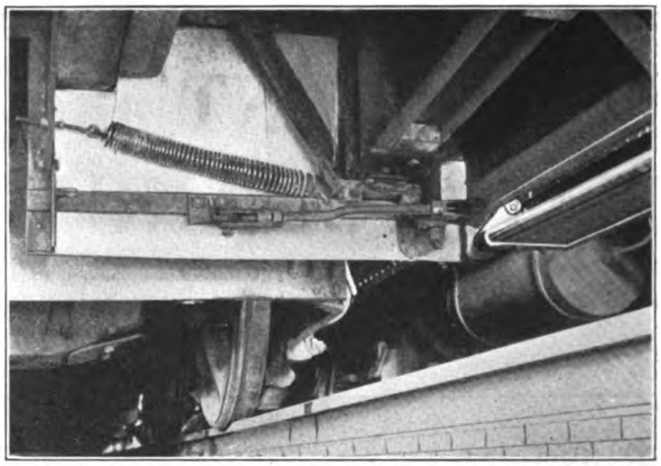
When the Montreal Tramways decided to inclose the rear platforms of their standard city cars, one of the problems encountered was the design of a step mechanism which would minimize the trouble due to the ice and snow which accumulates on practically all exposed parts of equipment. As it was necessary to have two steps between the ground and the platform floor the lower step only was folded.

In adhering as closely as possible to standard step heights the clearance provided under the sides of the step was only about 12 in., and it was necessary to have all the mechanism above this level in order to give sufficient clearance for snow. This was done by a system of levers and guides arranged to operate the step from a point above the center of the shaft on which the step swings. The forward door shaft carries an adjustable lever which connects the shaft through a rod to a horizontal connecting rod which operates the step. A slotted guide is arranged to receive the free end of this connecting rod, allowing it to slide horizontally. While there is considerable vertical motion at the outer end of the step connecting rod, there is none at the guide. A coil spring is connected as shown in the drawing to balance the weight of the step in its lowered position.





DETAILS OF STEP OPERATING MECHANISM



VIEW OF STEP OPERATING MECHANISM FROM BENEATH CAR

The step frame is composed of angle iron with suitable stops to receive an open metal-work step for the entrance side and a wood step with a lead tread for the exit side. The step-connecting rod is connected to the step by a lever casting which forms part of the step frame. This lever casting is pinned to one end of the step shaft, and the angle-iron frame is pinned to the other end of the shaft. The shaft operates in dust-proof ball bearings attached to the fixed part of the step as shown.

Two supports are provided for the step when lowered. One is a quadrant-shaped iron which hooks behind an angle iron fastened to the side of the step. The other support is on the other end and is obtained by the connecting rod resting on the ball bearing housing, the latter being suitably shaped for this purpose.

A sheet steel guard shown in the picture is placed in front of the mechanism so as to protect it as far as possible from wheel splash. The whole mechanism is designed with a view of adapting all parts to the various types of cars to which folding steps will be applied. The operating mechanism is actuated by the National Pneumatic Company's air engines as described in the ELECTRIC RAILWAY JOURNAL for Aug. 18, 1917, page 262.

Hard and Tough Gears Produced by Special Heat Treatment

BY W. H. PHILLIPS
Research Engineer R. D. Nuttall Company, Pittsburgh, Pa.

With many industries of the country working over capacity, the necessity for reliability of machine parts was never so desirable, or the consequences of breakdown so costly as at present. The gear situation is one in particular which will bear careful study by railway men as it is very possible that they may be able to make certain changes in the type of gearing used which will increase reliability of service and effect an economy at the same time.

Steel gears may be divided into two general classes, the alloy steels and the carbon steels. Alloys of nickel, chrome-vanadium and similar elements with the steel produce a very strong, tough gear which, however, due to its high cost, is practicable for only a few special uses. Hence the great field of gearing is served by carbon steel products. Since it is possible by heat treatment to increase the life of carbon steel gears by as much as 200 to 400 per cent with a cost increase of but 25 to 50 per cent these processes have received much attention. There are now three general classes of treatment, viz: oil treatment, case hardening and special treatment. Gears of the first two classes mentioned have helped in solving many problems, and each has its advantages for certain services. There are conditions encountered, however, in which these two grades are not applicable, and therefore a third grade has been developed in an effort to combine the best qualities found in the other two grades.

Services in which the gear must transmit a uniformly high torque without sudden jars or dynamic blows require a surface hardness such as found in the case hardened product. Here the question is one of wear alone. In other applications where the load is uniformly low but with occasional shocks a gear with only medium hardness but with high ductility, such as the oil treated gear, is required. However, in a larger number of installations the service imposes heavy duty with its resultant wear as well as shocks with the liability of breakage. It is for such service that the third class or special grades have been developed.

It was found that by slight changes in the chemical structure of carbon steel a combination could be obtained which when subjected to a special treatment produces hardness at the surface of the steel tooth from three to four times that of untreated steel. This hardness grades off slightly toward the center of the tooth where the steel is from two and one-half to three times as hard as untreated steel. The reduction in hardness is in a straight line ratio, and each fiber of the steel from the surface to the center, or neutral axis, of the tooth is stressed in proportion to its ability to carry the load. The ductility of this steel is comparatively high and is in inverse ratio to the strength. The metal is homogeneous, there being no line of demarkation between any two fibers, and while the surface of the tooth is hard it is also tough and will not check nor spall. It is often advisable to treat the pinion only, as it is the weaker and harder-worked member. A pinion so treated, due to the nature of the hardness, is not liable to cause excessive wear on the meshing untreated gear.

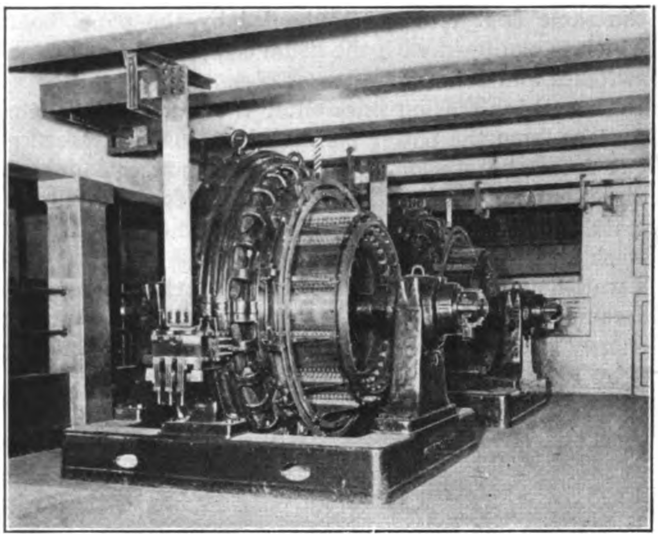
If by increasing the cost of gearing from 25 to 50 per cent a gear is produced that will more than triple the life of the untreated steel gear and at the same time eliminate breakage with its consequential damage, there can be no doubt of its economy. For example, assume that an untreated gear costs $20 and runs one year. The treated gear will cost $30 and run three years. This shows a saving of $30 on initial cost alone. The hazard of breakage with its consequences is an unknown factor, but it may be a serious one.

According to a paragraph in the London *Times*, the German War Office has decided to stop the tramway service at Crefeld, and place the tramway material at the disposal of the army. Similar measures are contemplated in other industrial centers in western Germany.

Boston Substation Built Between Subway and Surface Tracks

Cheaper to Build Substation in This Space than to Fill In—Apparatus Transported on Subway Cars and Lifted Through Floor Opening

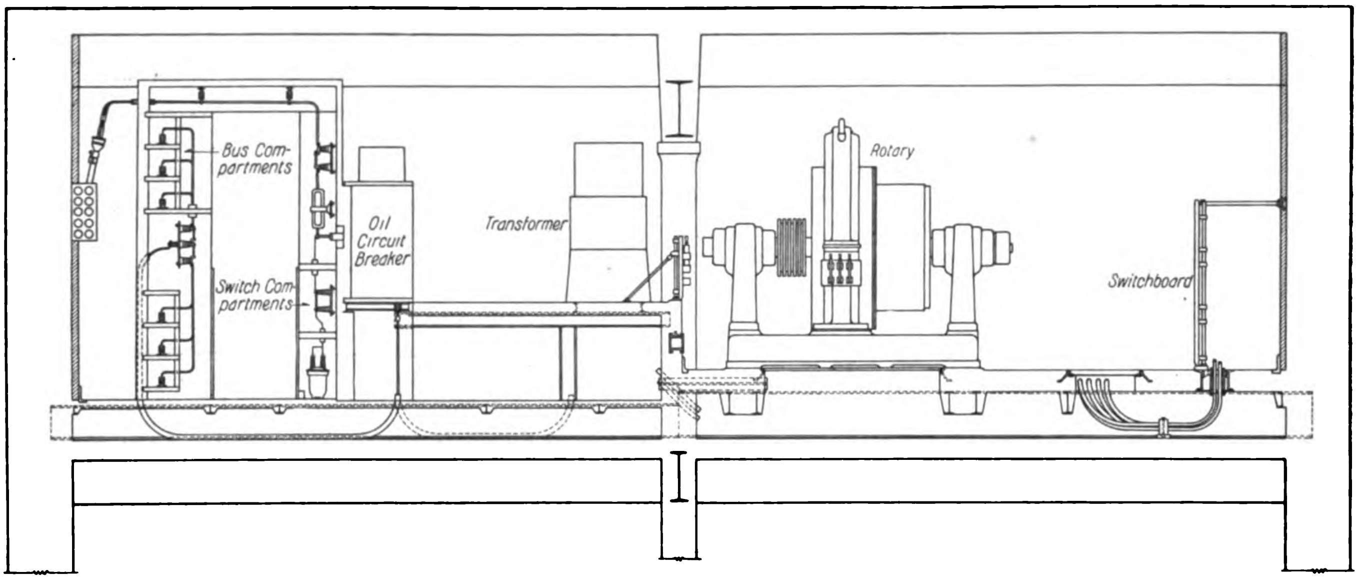
Marking another step in the plan of changing over its supply system from direct to alternating current the Boston Elevated Railway a short time ago placed in operation its Dewey Square substation. A unique feature of this station is its location between the roof of the Boston Subway and the street surface, a space that otherwise would have been filled in, and it is said that it was more economical to build a station here than to fill in the space. The point at which the station is located is at South Station, the terminal of the New York, New Haven & Hartford and Boston & Albany Railroads. This point is the center of an unusually dense traffic movement, and when the time came to locate a substation to feed this territory where real estate is naturally very high-priced, a happy solution was afforded when the Rapid Transit Commissioners built the South Station depot of the subway, making it possible to locate the substation there.



ROTARY CONVERTERS IN BOSTON UNDERGROUND SUBSTATION

The station has a floor space approximately 83 ft. x 56 ft., and a height of about 16 ft. As may be seen from the accompanying drawings, the apparatus is very compactly arranged and yet there is ample room for the three 3000-kw. rotary converters which represent the ultimate capacity of the station. Two of these have already been installed. At the time of installation the apparatus was loaded on cars and brought in on the subway tracks to a point directly underneath the substation, and from there it was lifted by cranes up through openings provided in the floor.

Alternating current is brought into the station at 13,200 volts and 25 cycles. There are two sets of three 1050-kw. Westinghouse air-blast transformers in which the voltage is stepped down to the rotary potential of 452 volts. The conversion to direct current is effected by two 3000-kw. 25-cycle, 600-volt, 250-r.p.m. six-phase Westinghouse rotary converters. Incoming and outgoing lines are controlled by a thirty-three-panel slate switchboard mounted on the same floor with the convert-

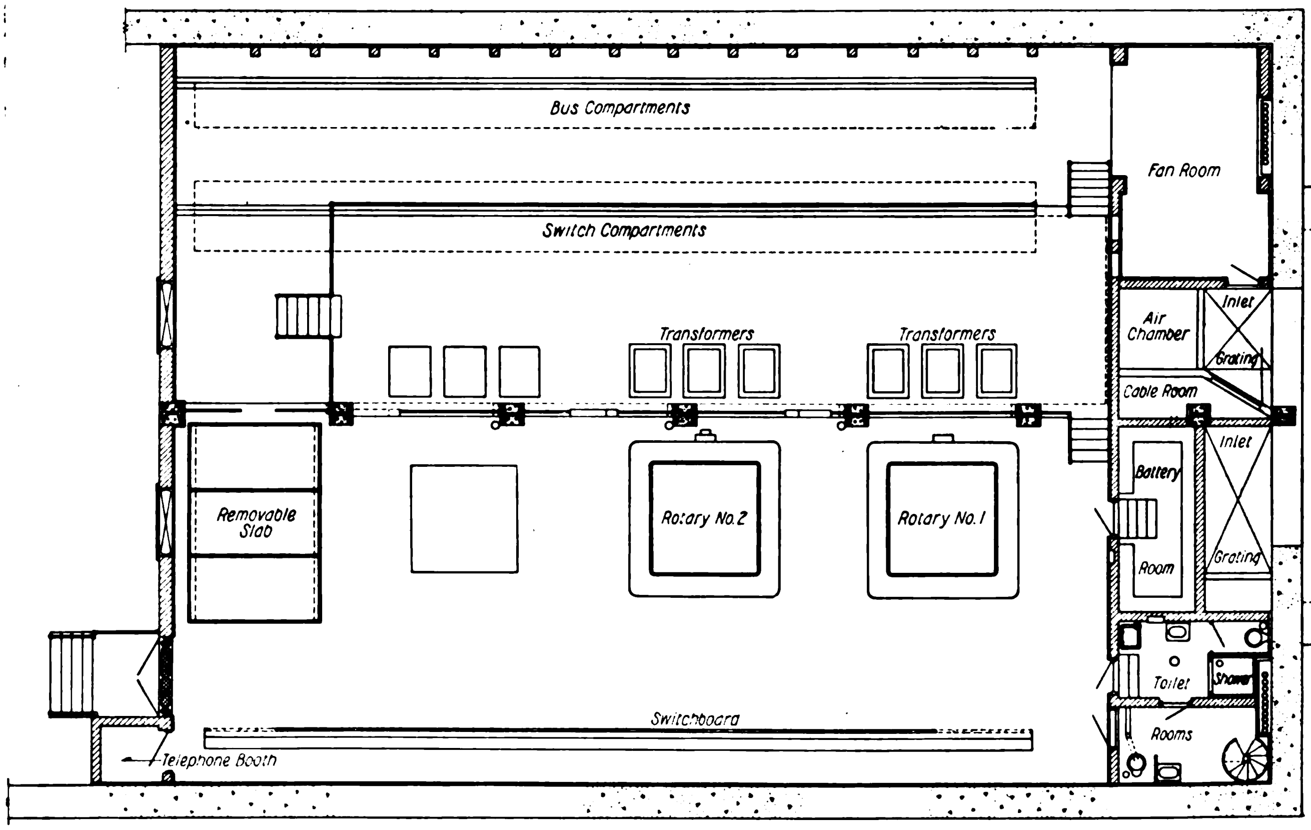

Bus Compartments
Switch Compartments
Oil Circuit Breaker
Transformer
Rotary
Switchboard

ELEVATION OF SUBSTATION SHOWING BUS COMPARTMENTS, AND TRANSFORMER AND ROTARY ROOMS

ers. The oil circuit breakers for the control of the high-tension circuits are located back of the transformers on the same floor and are controlled by the panel board which is equipped with the usual complement of meters, switches and relays.

Three high-tension lines enter the station, two being feeders from the power plant and one used for feeding out from the station. There are at present nineteen direct-current feeders but about thirty feeders will ultimately be required properly to take care of this district. Each outgoing direct-current feeder is equipped with a watt-hour meter. This is done primarily to assist the accounting department in keeping track of the supply of energy to different sections. The current from the negative terminal of the rotary converter is carried directly from the rotary to the cable room by a bus shown in an accompanying illustration. For the operation of the oil switches a storage battery having a capacity of 120 amp.-hr. is provided. This is located in a separate well-lighted and ventilated room.

A feature of the station is the ventilation. Air is taken from the subway, the ventilation of which is unusually good, and forced by blowers through the air-blast transformers and out into the station rooms. From there it is again drawn into the subway by exhaust fans. This system has insured a good ventilation for the transformers and an ample change of air for the substation.


Bus Compartments
Fan Room
Switch Compartments
Air Chamber
Inlet
Grating
Cable Room
Transformers
Transformers
Battery
Room
Inlet
Grating
Removable Slab
Rotary No. 2
Rotary No. 1
Toilet
Shower
Rooms
Switchboard
Telephone Booth

PLAN OF SUBSTATION SHOWING COMPACT ARRANGEMENT OF APPARATUS

Cost Data on Special Work Renewals—V

By M. BERNARD

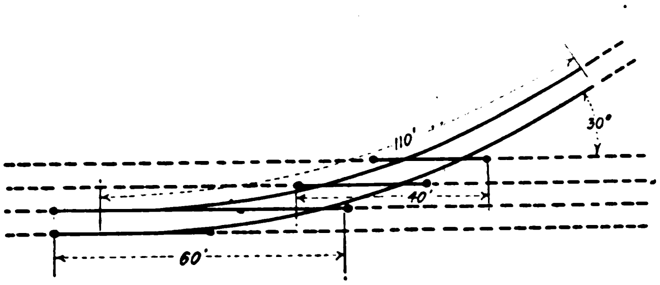
Assistant Engineer Way & Structures Department,
Brooklyn (N. Y.) Rapid Transit System

This is the fifth plate of the series of Cost Data on Special Work Renewals. The previous plates were published in the issues for July 21, page 108; Aug. 18, page 279; Sept. 8, page 406, and Sept. 29, page 588.

Fig. 15—Single Track Outer Branch-off (30 Deg.)

Length—210 ft. single track

Construction removed—9-in. girder rail—8-in. granite on sand
New construction—9-in. girder rail—8-in. granite on concrete

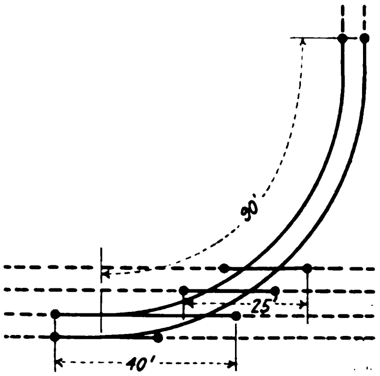


	Light Traffic	Average Traffic	Heavy Traffic
Labor	$420.00	$530.00	$640.00
Handling	135.00	150.00	170.00
Miscellaneous	75.00	90.00	105.00
Total (except materials)	$630.00	$770.00	$915.00
Cost per single track foot	3.00	3.67	4.36

Fig. 16—Single Track Outer Branch-off (90 Deg.)

Length—155 ft. single track

Construction removed—9-in. girder rail—8-in. granite on sand
New construction—9-in. girder rail—8-in. granite on concrete

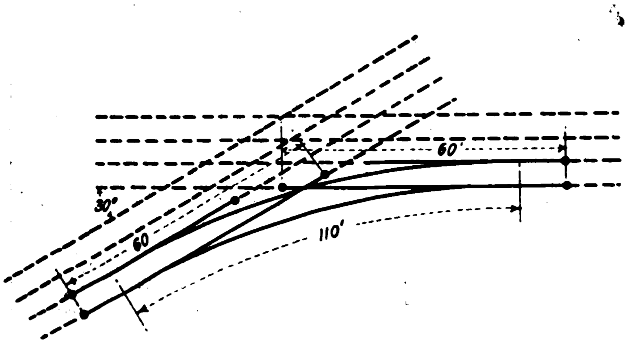


	Light Traffic	Average Traffic	Heavy Traffic
Labor	$300.00	$370.00	$445.00
Handling	95.00	105.00	120.00
Miscellaneous	50.00	60.00	70.00
Total (except materials)	$445.00	$535.00	$635.00
Cost per single track foot	2.87	3.45	4.10

Fig. 17—Single Track Inner Connecting Curve Including Three-way Frog (30 Deg.)

Length—230 ft. single track

Construction removed—9-in. girder rail—8-in. granite on sand
New construction—9-in. girder rail—8-in. granite on concrete

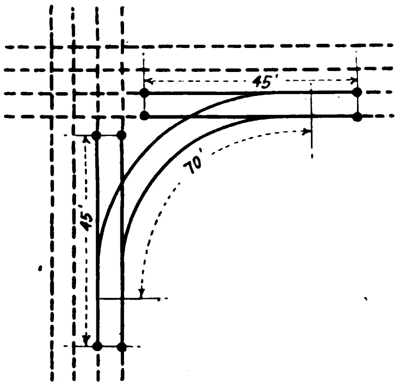


	Light Traffic	Average Traffic	Heavy Traffic
Labor	$400.00	$505.00	$610.00
Handling	130.00	145.00	175.00
Miscellaneous	60.00	75.00	90.00
Total (except materials)	$590.00	$725.00	$875.00
Cost per single track foot	2.56	3.11	3.80

Fig. 18—Single Track Inner Connecting Curve (90 Deg.)

Length—160 ft. single track

Construction removed—9-in. girder rail—8-in. granite on sand
New construction—9-in. girder rail—8-in. granite on concrete



	Light Traffic	Average Traffic	Heavy Traffic
Labor	$265.00	$330.00	$400.00
Handling	90.00	100.00	120.00
Miscellaneous	35.00	45.00	55.00
Total (except materials)	$390.00	$475.00	$575.00
Cost per single track foot	2.44	2.97	3.59

Hard-center construction used. *Explanation:* By "light traffic" is meant either the divergence of cars during progress of work, or a traffic of not more than 150 cars per day of twenty-four hours. "Average traffic" denotes the passage of about 325 cars per day of twenty-four hours, and "heavy traffic" that of 750 or more.

By "labor" is meant the labor cost of tearing out the old paving and special work and installing the new at the location where the work is done. "Handling" signifies the cost of loading the necessary materials at the various storage yards as well as the unloading of same at the place of renewal. It also includes the cost of transportation and the cost of removal of old or left-over material. Since the transportation is done by a subsidiary company, which adds profit and overhead expense to the net cost, this item may differ considerably from that obtained on other railways. Under "miscellaneous" are included the expense of city inspectors, expense incurred when portable crossovers are used for divergence of cars during renewal, watchmen's wages, and incidental engineering expense. The total of these three items—labor, handling and miscellaneous—therefore includes everything except the cost of materials.

On account of the unsettled labor conditions prevailing since the beginning of the war, the costs given are based on pre-war wages, the average track labor on which these costs are based is 20 cents per hour, including the foreman's wages.

High-Speed Saw Used for Cutting Track Rails

With the continual increases in the cost of rails electric railways are finding it more and more practical to reclaim rails which are badly worn at the joints by cutting off the bad ends. There are also numerous other cases in which rails have to be cut to fit certain locations. On large-sized properties, therefore, it is essential that a means be provided for doing this sawing as rapidly as possible.

For some months the Boston (Mass.) Elevated Railway has been sawing rails at its South Boston yard by means of a high-speed friction saw, manufactured by Joseph T. Ryerson & Son, Chicago, Ill., and shown in the illustrations. While the machine is as yet a novelty in electric railway work, the results obtained show a low cost of operation, and the work is done in a much shorter time than is required with the other types of circular saws.

The machine consists of a heavy cast-iron box, on top of which a horizontal sliding table is mounted on roller bearings. This table carries the circular cutting disk and its driving motor. The table which holds the rail is stationary and is of such a height that the rail will be below the horizontal center line of the saw. The action of the saw is to press the work against the table, and for this reason no clamps are necessary. The saw itself is a soft steel disk ¼ in. thick and 52 in. in diameter. It is hollow ground and nicked on the edge to increase the friction and to provide a clearance for the blade to pass through the rail. The disk is driven at a peripheral speed of about 25,000 ft. per minute and is held against the work by a pneumatic feed.

During the cutting operation the disk is cooled by jets of water which play upon it from orifices in pipes located in the inclosing hood. The water is collected in a small well from which it is pumped back to the machine. One man operates the machine, and the rails are usually set on the operating table by a traveling crane. One blade will average about 650 cuts before replacement is necessary.

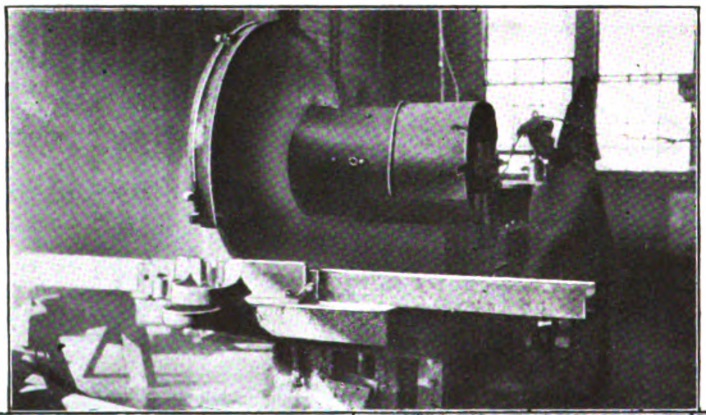
To illustrate the speed at which the machine will operate the following cutting periods were timed on the saw in the Boston Elevated yard:

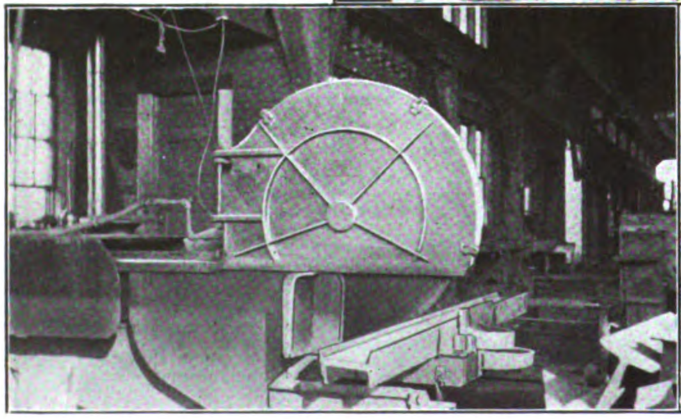
Type of Rail	Weight	Time
9-in. girder guard rail	150 lb.	2 min. 23 sec.
9-in. girder rail	132 lb.	2 min. 5 sec.
9-in. girder rail	95 lb.	1 min. 25 sec.
7-in. girder guard rail	140 lb.	2 min. 13 sec.
7-in. girder rail	122 lb.	1 min. 30 sec.
8-in. T-rail	79 lb.	1 min. 6 sec.
7-in. T-rail	70 lb.	1 min. 1 sec.
A.S.C.E. T-rail	85 lb.	1 min. 7 sec.
3⅝-in. T-rail	36 lb.	0 min. 30 sec.

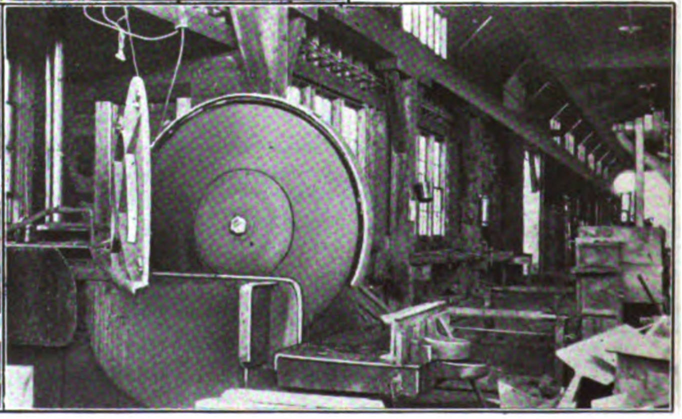
Spectacular and Utilitarian Floodlighting Compared

Floodlighting the coal yards of The Milwaukee Electric Railway & Light Company so that the coal can be handled at night was illustrated in the Sept. 8, 1917, issue of this paper, page 385, and there is no doubt that this system of lighting is becoming more and more popular. However, as it has been very extensively used for the illumination of monuments, public buildings, fountains, and for similar artistic purposes, the name "floodlighting" is associated in many minds with the artistic rather than the practical objects which can be obtained by it. For this reason the Electric Service Supplies Company, makers of the Golden Glow and white light projectors, have called attention to the two distinct classes of floodlighting, at the same time pointing out that there is a different kind of light best suited for each class.

For spectacular effects, where the object as a whole is the main consideration, white light should preferably be used. It should not, however, be used on objects requiring the disclosure of very fine detail or on objects on which the eye is to rest continuously. For the latter class of objects the Golden Glow light is recommended. This light is already familiar to electric railway men as a headlight. It is greenish-yellow in color and the advantage in using it is that the high-frequency light rays which are unpleasant and blinding have been largely eliminated through the use of a glass which absorbs them.







THREE VIEWS OF HIGH-SPEED SAW SHOWING HOW THE RAILS ARE CUT AND THE CUTTING DISK IS REMOVED

News of Electric Railways

Traffic and Transportation

Financial and Corporate Personal Mention **Construction News**

St. Louis Grant Near Completion

Council Committee Near the End of Its Work on the Compromise of Differences Between the City and the United Railways

The public utilities committee of the Board of Aldermen of St. Louis, Mo., decided on Oct. 16 not to include in the United Railways settlement ordinance any provision by which the company may obtain from the board of control any blanket franchise to construct subway or elevated lines. The committee intimated after a lengthy discussion of the settlement bill which it is drafting that it will reduce the powers of the board of control to the authorization of surface extensions of existing lines. Under the terms of the amended bill subways, elevated lines and new surface lines can be constructed by the railways only after obtaining a special franchise ordinance from the Board of Aldermen. The settlement ordinance that is being remodeled provided that the United Railways could build new surface, elevated or subway lines in any part of the city on a permit by the board of control. The board of control was to consist of one member representing the city, one appointed by the company, and in case of disagreement, a third member to be selected by the Court of Appeals. The action of the utilities committee means that the old bill will be amended in these important particulars:

HOW THE BILL HAS BEEN AMENDED

1. Instead of a fifty-year franchise, the company will get an extension of not more than thirty-one years to 1948, when the Central Traction franchise expires.
2. The company will get no additional franchise rights to build lines on streets not now occupied, except such extensions of existing lines as may be ordered by the board of control.
3. Instead of paying a tax of 3 per cent on its gross earnings, in lieu of mill tax and all other special taxes, some other basis of special tax will be suggested.
4. The company will be required to agree to sell its lines to the city for $60,000,000 plus the cost of future expenditures, and to reduce the face value of its bonds and capital stock to this amount.

FURTHER PROGRESS ON OCT. 18

On Oct. 18 the committee decided to eliminate the mill tax and the franchise tax and substitute a 3 per cent tax on gross earnings, plus 25 per cent of the net earnings above 7 per cent on a $60,000,000 valuation, and 50 per cent of net earnings above 8 per cent. The committee also decided on Oct. 18 to pay the expenses of its member of a board of control and to divide the expense of a third member, whenever one is appointed by the Court of Appeals, to break a deadlock between the city's and the company's member.

The question of withdrawing the blanket franchise to the United Railways to construct subways and elevated lines in any part of the city on a permit from the board of control was debated on Oct. 18 a second time. The committee may make a few minor changes in the new bill as agreed upon, but the only matter of importance that was undecided after the meeting on Oct. 18 was whether the city could exact a definite increase in cars during rush hours, in accordance with traffic increase, in view of the fact that the power to regulate service is now vested solely in the Missouri Public Service Commission.

It was decided at the meeting on Oct. 18 to invite Richard McCulloch, president and general manager of the United Railways, to meet the committee on Oct. 23 to comment on the proposed new measure.

Chattanooga Strike Renewed

Union Repudiates Organizer Who, It Charges, Deceived President Mahon with Respect to Settlement Terms

Almost immediately after the agreement settling the strike of the employees of the Chattanooga Railway & Light Company, Chattanooga, Tenn., the work was begun of signing up the men individually under the terms of the contract noted in the ELECTRIC RAILWAY JOURNAL of Oct. 20, page 732. This process was made difficult for the company, however, by the labor leaders, and on Oct. 13 the company in self-protection sought an injunction to restrain the officers of the local union and J. H. Reardon, who succeeded Chris Cline as the Amalgamated organizer at Chattanooga, from interfering with the 215 employees who had executed the individual contracts with the company. It was charged in the application to the court that the men named by the company had conspired to induce the employees who had executed the contracts to break them and quit the service.

Further misgivings that all was not well were furnished by the failure of the union officials to appoint an arbitrator to represent them on the board of three which was to decide in regard to the return of the men who had been refused reinstatement by the company. On Oct. 15 the representatives of the local union who had been to Detroit to talk over the situation with W. D. Mahon, international president, returned to Chattanooga. The appearance of these men in the city was followed by two meetings of the union behind closed doors. The next day, Oct. 16, the men went out on strike again, without official warning to the company or the public.

COMPANY STATES ITS CASE

F. W. Hoover, vice-president of the company, promptly announced that the cars would be kept in the carhouses until a new force could be organized from local Chattanooga men. The *Times* asked Mr. Hoover to come to its office and make a statement. That paper quoted him editorially as saying that he had been ready from the first to arbitrate the cases of those whom he had refused to take back into the employ of the company; that he had not required any man since the settlement to sign any agreement or paper "not to join the union," and that he had carried out his contract with the men to the letter. The *Times* demanded that the issue be faced promptly and courageously.

About the time the men were turning in their cars Chancellor W. B. Garvin granted an injunction restraining the men from "combining together to breach their several contracts."

THE UNION'S CONFESSION

On Oct. 17 a statement was issued by Judge Bancroft Murray, attorney for the union, in which he set forth the reasons for the strike. There was no charge that the company had broken faith in refusing to reinstate officials of the union. The strike was laid to Organizer Cline's alleged deception of President Mahon and the union, under which the men were said to have been led to accept a settlement in violation of the association's national constitution. The statement said that "it was never supposed by the officers and members of the union that the company would refuse to take back all the officers and committeemen, but that the excepted few who were not to be taken back was meant to apply to such employees as had been discharged by the company before the strike."

E. D. Reed, general superintendent of the company, announced on Oct. 21 that the men would have until 4 p.m. on Oct. 22 to report for duty. Mr. Hoover announced that 100 men were being trained to replace those on strike. He made no prediction about resuming service.

Wichita Differences Settled

Company and City Agree on Payments to Be Made Out of Net Earnings of the Future

The differences which have existed between the Wichita Railroad & Light Company, Wichita, Kan., a subsidiary of the Illinois Traction System, and the city have been settled by the company agreeing to pay $50,000 to the city as the amount due to it as its share of the net earnings of the company in past years. The case grew out of the law enacted in 1903 by the State Legislature, providing that as a consideration for franchise rights certain public utility corporations should pay into the city treasury a percentage of their net receipts if more than 10 per cent were earned by the company on its investments in plant and equipment.

The city declared that for a number of years since 1909 the company earned an amount sufficiently large to warrant a claim for a share in the net earnings. Demand for a settlement was served on the company in 1914. The company considered the request of the city to be excessive and, as payment was not made, suit was filed in the district court in February, 1916, by the city in order that, first, the proper construction might be placed on the law, and, second, a rule laid down making it possible to calculate the sum properly due to the city. The suit was removed by the company to the Federal Court. Judge Pollack of that court then referred the whole controversy to Judge Sluss, who was authorized to take all the testimony as referee and report to the court in regard to the law and facts. On this report the court was to render a final decision.

Rules to Govern Future Settlements

The agreement now reached between the City Commissioners and the company covers the whole ground. It provides both for the amount to be paid for the accrued years and lays down the rules to be used for future calculations. Both the city and the company made concessions. According to the settlement, the company may convey to the city a tract of land consisting of 12 acres lying immediately west of the Riverside Park Zoo and obtain credit therefor at $15,000. The company further agrees to build before Jan. 1 an extension of its line south on Douglas Avenue to the Orient shops and to extend its Emporia Avenue line to Harry Street. That portion of the agreement relating to future calculations provides that the assessed valuation of the company's property as determined annually by the State Tax Commission is to be accepted as the amount of its investment. Settlements will be made annually hereafter on April 1 for the calendar year preceding. The city is to have the right to inspect the company's books of account and its other records.

Signal Corps Needs Electrical Men

The Illinois State Council of Defense has appointed an advisory committee of the electrical industry which has been assigned the duty of interesting electrical men of draft age and subject to call in the possibilities for their services in connection with the army signal corps. The committee has thought that if electrical men knew the requirements and advantages of this service and would prepare themselves for it, when called in the draft, they would be more readily classified and could make themselves eligible for work in this division of the army.

In promoting this idea, the advisory committee of the electrical industry has prepared an attractive signal corps folder, printed in red, white and blue, which is being widely distributed, not as a call for volunteers but rather as an appeal to the men subject to draft. This folder contains some general information about the signal corps work and calls attention to the fact that more complete information may be had by applying at the office of the committee at 120 West Adams Street, Chicago. Louis A. Ferguson, of the Commonwealth Edison Company, Chicago, is chairman, and Henry M. Byllesby and Bernard E. Sunny are members of the consulting board, while the officers of the advisory committee are Harry L. Grant, chairman; Homer E. Niesz, vice-chairman; Arthur S. Huey, treasurer, and Alva H. Krom, secretary.

Portland (Ore.) Wages Fixed

Arbitration Board Reports in Favor of Eight-Hour Day and Twenty-Cent-a-Day Increase in Pay

The board of arbitration appointed to settle the question of shorter hours and increased wages for the trainmen of the Portland Railway, Light & Power Company, Portland, Ore., has announced its finding. The men will receive the basic eight-hour day. The new schedule of wages is as follows: for service less than one year, 38 cents an hour; for carmen employed more than one year and less than two years, 40 cents an hour; for carmen employed for more than two years, 45 cents an hour. A provision for overtime is also made on a time and a half over eight and one-half hours' basis. The old wage schedule was 28 to 34 cents, with no overtime arrangement. The decision of the arbitration board holds until June 1, 1918, but if, after Jan. 1 conditions are unbearable, the matter can again be arbitrated.

While the decision of the arbitration board stated that the men were entitled to a basic eight-hour day and increased wages, the members were agreed that the financial condition of the company cannot afford these things, and strongly intimated that the company will have to receive relief from the Public Service Commission.

In the meantime, the company will keep the Public Service Commission advised constantly as to the progress of affairs, as directed by the commission itself. All of the suggestions for retrenchment and economies made by the commission will be carried out as far as the company can go without serious impairment to the service.

M. O. Bug Bites Tammany Candidate

Wigwam Looks with Loving Eyes on $1,600,000,000 of Private Property

In the present municipal campaign in New York City Tammany is pledged to municipal ownership of public utilities. The platform of the city Democratic party declares that "we are in favor of public ownership and operation of all public utilities, including traction, gas, electric light and power and the telephone." Judge John F. Hylan, the Tammany candidate, loses no opportunity to impress upon his hearers this program of the party he represents. His words vary from time to time, but he sounds continuously the tocsin of the coming of the time when municipal ownership shall do away with "immense profit to a small group of individuals."

In few other municipal elections in New York have so many issues been involved. On that account the grandiose municipal ownership program that Tammany and its candidates "are in favor of" has not received all the attention that it deserves from the thoughtful. Out of the welter of the mud of the campaign, however, has arisen a man with both the time and the inclination to show what the Tammany municipal ownership program means. He is ex-Corporation Counsel William Bruce Ellison. Against the Tammany candidate's talk without figuring Mr. Ellison has set his figures without talking. Here are some of his facts, taken almost at random:

It would cost the city of New York from $1,600,000,000 to $2,000,000,000 to acquire for municipal ownership and operation all of the public utilities in the city. The present bonded indebtedness of the city is $1,054,907,915. There are 140 utility companies doing business in the greater city. It would cost the city at least $840,000,000 to acquire the physical property of the chief local utilities alone, excluding companies which do a large business outside of the city. The estimates follow:

Gas property	$150,000,000
Electric plants	110,000,000
Electric subways	30,000,000
Water works	6,500,000
Electric railways	180,000,000
Elevated roads and subways (company's investment only)	361,000,000
Steam and refrigerating plants	2,500,000

Judge Hylan says that "we must take over the great public utility properties of this city." The flood of loose talk by him will probably continue, but Mr. Ellison has done a public service by showing how unbridgeable is the gap in this instance between desire and achievement.

Another Philadelphia Hearing Held

The joint committee of finance and street railways of the Councils of Philadelphia, Pa., on Oct. 19, held another meeting on the terms of the lease of the high-speed rapid transit lines to the Philadelphia Rapid Transit Company. Charles L. Fluck, president of the Northwestern Business Men's Association, made a long speech which contained some suggested amendments to the proposed lease. In the course of his remarks Mr. Fluck attacked A. Merritt Taylor, former director of city transit of Philadelphia, who is opposed to the wording of certain of the clauses of the measure now before Councils. It appeared that Mr. Taylor and Mr. Fluck had worked in harmony for several years on rapid transit matters, but that in 1915 Mr. Fluck withdrew his support from Mr. Taylor because Mr. Taylor had agreed to accept $6,000,000 from Councils for beginning the rapid transit work instead of insisting upon his original request of $30,000,000. Mr. Trainer, one of the Councilmen, came to the defence of Mr. Taylor by saying that Mr. Taylor had fought hard to get the whole amount, but that the appropriation of $30,000,000 had been found impossible at that time. Mr. Seger, another member of Council, asked Mr. Fluck to consider what the present status would have been if no appropriation had been made.

Mr. Taylor announced at the meeting that he would take the transit lease into the courts unless exchange tickets were abolished. He made this statement following a remark by another speaker who called for the abolition of the tickets.

At the beginning of the meeting Councilman Seger said that he understood that Mr. Taylor and his counsel were to confer with Dr. William Draper Lewis, counsel for the city, and with City Transit Director Twining, and offer amendments to the proposed lease. Dr. Lewis said that certain clarifying amendments had been submitted, but that he had not had an opportunity to examine them and other suggestions carefully and to formulate his own ideas.

Wage Conferences in Kansas City

Kansas City Railways and Its Men Begin Negotiations Looking Toward Revised Wage and Working Conditions

Committees of employees and officials of the Kansas City (Mo.) Railways began on Oct. 22 their conferences on the subjects of wages and working conditions. The working conditions are being considered first. Many matters have already been settled harmoniously.

WHAT THE EMPLOYEES WANTED

The employees presented their suggestions for new wage scales and changes in conditions about three weeks ago. These were far beyond the possibility of acceptance by the company. The employees' presentation referred occasionally to the "association," although the company could not under its franchise, or the agreement by which the strike was settled, treat with the union as such. About ten days after the employees presented their requests, Clyde Taylor, vice-president of the company, announced, at meetings of employees called for the purpose, voluntary increases in wages for trainmen. His statement at that time, Oct. 15, suggested that the increases were all the company could afford to give now, and that it was hoped long controversies over the schedules presented by the men could be avoided by taking up the matter in that way.

In their presentation the employees had asked for 35 cents an hour for beginners, and 45 cents an hour after the third year of service. This would have meant an increase of 59.7 per cent in trainmen's wages, and with overtime, reporting time and other working changes asked by the men would have increased the present platform expense by 71.58 per cent. The employees' presentation also asked increases amounting to 31 per cent in other departments, the total advance over the payroll costs to the company for the year being estimated at $1,457,744, or 53.5 per cent.

The company's voluntary increase to the men would have meant an increased cost of operating of nearly $500,000, almost to the limit of the surplus after fixed charges earned by the company as shown by figures of city accountants. It has been made plain that if the men get this additional advantage the city will probably not receive any income soon to be expended by the company on permanent improvements. In addition to the advances to trainmen of 3 cents an hour, the company has raised the wages of electrical men 2 cents an hour, while shopmen, carhouse men, car cleaners and mechanics have received an advance of 3 cents an hour. The increases are retroactive to Oct. 1.

Chicago Transit Program Revived

This Time It Is Proposed to Draw a Merger and Subway Ordinance, and Then Seek Enabling Legislation, Thus Reversing Previous Process

The proposition of a new franchise ordinance for Chicago, including a merger of the elevated and surface lines, is being revived in meetings of the local transportation committee of the City Council. At a meeting of this committee on Sept. 26, it was decided to put the matter before the Council in the hope of reviving the merger transportation scheme, which involved the building of a subway.

At a meeting on Oct. 22 the City Council ordered the local transportation committee to draw up a suitable ordinance. This will probably be followed by a series of hearings for the public and companies extending over several months. This time the ordinance will be drawn and the enabling legislation sought. This is in contrast with the previous attempt at a merger, when it was stated that the cart was placed before the horse by the enabling legislation being sought before a definite ordinance had been drawn.

When the local transportation committee has drawn the ordinance, the measure will then go before the City Council for approval. This will be followed by submitting the matter to popular vote, probably in April or at a special election before that time. If approved by the people of Chicago, the matter will then be put up to the State Legislature at Springfield. The first opportunity to do this will be at the opening of the Assembly in January, 1919, unless there is a special session before that time.

The enabling legislation that is required is for a longer term franchise than twenty years, for home rule, for authority of the city to build subways, and for authority to merge the elevated and surface lines.

Municipal Extensions Hard Sledding

Seattle Not Over-Hilarious About Further Municipal Railway Extensions

Work on the extension of Seattle's municipal railway system into Ballard, by the extension of Division A, is being rushed by the streets and sewers department under supervision of Superintendent Case, and by order of Mayor Gill. It is expected that the line will be ready for operation not later than Jan. 1. It is believed that construction of the line into Ballard will convert the municipal system from a losing into a profitable venture.

The latest development in the fight of Mayor Gill and a majority of the Council over the extension is a threatened suit by the Chamber of Commerce and Commercial Club, to enjoin the city from further "illegal" expenditure on the railway. The suit will be instituted immediately if the plan meets with the approval of the members' council of the chamber. The trustees of the chamber authorized the bureau of taxation to institute injunction proceedings, following a report from the bureau protesting against the incurring of any more debt by the city, under existing conditions, without a vote of the people, and recommending that extension work on Division A be enjoined.

Following the recent opinion by Walter F. Meier, assistant corporation counsel, that money could not be legally transferred from the light depreciation fund to the street railway fund for such a purpose, and that money could not be taken from the general fund to build a railroad until the people had approved such an expenditure at an election, Mayor Gill issued orders instructing C. R. Case, superintendent of streets, to proceed with the work, using funds appropriated from the street department. When the work is completed Mr. Case will bill the utilities department, which will pay the street department.

San Francisco Strike Settled

On the night of Oct. 18 the United Railroads, San Francisco, operated owl cars all night and in other ways gave service entirely normal. Oct. 17 was set by the company as the last day on which strikers would be returned to their old positions without loss of seniority and corresponding wage scale. For several days prior to this date, many strikers applied for reinstatement and were accepted. About 250 strikers are now back on the platform jobs. Most of the men who have not returned to the company have left town or have sought other employment. It is reported that about 200 men were drafted.

At a night meeting of the strikers held on Oct. 18, the total attendance, including women, was only 315, indicating the rapid thinning down of the ranks. Three of the ten charter members of the new union have applied to the company for reinstatement. This is taken to indicate that the union movement "died out from the top down." No concessions whatever were made on the part of the company to the men who deserted their cars in their effort to force the company to meet their demands.

Three Divisions for I. C. C.

Under authority recently granted by Congress the Interstate Commerce Commission on Oct. 17 divided itself into three sections to facilitate the work of disposing of its ever-growing docket.

The first division, consisting of Commissioners McChord, Meyer and Aitchison, is charged with the conduct of the work of the bureau of valuation, "other than considering and deciding proceedings relating to the valuation of carriers' property."

The second division, consisting of Commissioners Clark, Daniels and Woolley, is charged with action upon certain rate applications and requests for suspensions, the transportation of explosives and dangerous articles and tariffs carrying released rates.

The third division, consisting of Commissioners Harlan, Hall and Anderson, is charged with the disposition of all board of review cases which have been submitted "and those not hereafter orally argued before the commission or any division thereof."

All three divisions will alternate in hearing cases set for argument, each division hearing arguments for one month.

Danville Arbitrators Selected

In connection with the arbitration proceedings which were agreed upon in the settlement of the strike of trainmen on the Danville Street Railway & Light Company, Danville, Ill., reviewed in the ELECTRIC RAILWAY JOURNAL for Oct. 13, Percy Mollineaux, Danville, a railway machinist, has been selected by the trainmen as their arbitrator. L. E. Fischer, consulting engineer, St. Louis, Mo., has been selected to represent the company. These two men are to select the third member of the board.

Operating Negotiations Halted

The negotiations between the city of Tacoma, Wash., and the Tacoma Railway & Power Company for the operation of the new municipal railway to the tideflats were recently brought to a halt by the question of liability in case of accident, after Louis H. Bean, general manager of the company, had submitted a written contract setting forth the terms under which the company would assume control of the road. The matter was finally referred to the city attorney to draw up a new contract, in which the city will specify under what conditions it will assume liability for accident. The contract submitted by Mr. Bean provides for the operation of the line at cost for a period of two years. The power supplied will be charged against the city at a rate of 0.75 cent per kilowatt-hour. An additional 15 per cent will be charged for labor and material, the city also to pay the cost of moving cars to and from the carhouses. The company will turn over to the city for its use during the two years all of its carhouses, shops and laborers. The contract further stipulates that if at any time during the life of the contract the city desires to take over the St. Paul Avenue line in conjunction with its municipal line, it will pay to the company a sum equal to 12 per cent on the company's investment of $10,087, to cover the interest, depreciation and taxes on the property. This will be in addition to the cost of operation.

Increase in Wages in Spartanburg.—The South Carolina Light, Power & Railways Company, Spartanburg, S. C., has increased the pay of its motormen and conductors 3 cents an hour. The increase was voluntary on the part of the company.

Loop Rental Opposed.—The City Council of Buffalo, N. Y., has practically agreed to charge the International Railway $16,875 a year rent for looping a single track around the Lafayette Square in Main Street, which was recommended by the Public Service Commission in its recent report on traffic conditions on the Buffalo lines of the company. The proposed rental charge is opposed by Thomas Penney, vice-president and general counsel for the railway company.

Power and Equipment Departments Separated.—At the request of George W. Dunlap, superintendent of power and equipment of the International Railway, Buffalo, N. Y., the power and equipment departments have been separated. The change was made on account of the very great increase in the business of the company, and, incidentally, because of the extensive additions to the steam plant and large increase in the number of substations, together with increased responsibility because of the new high-speed line to Niagara Falls. Mr. Dunlap has elected to assume charge of the power department.

Electricians and Other Mechanics Wanted for U. S. Service.—The Quartermasters' Enlisted Reserve Corps, with recruiting headquarters at 357 Broadway, New York, has received a new authorization to enlist men in their civilian trades in the army for duty in this country and abroad. Among the men needed at this time are electricians, iron workers, auto mechanics, general mechanics, chauffeurs and stenographers. Enlistment is open to citizens of the United States or to those who may have declared their intention to become citizens. Applicants must be between the ages of eighteen and forty-five years and have no one dependent upon them for support.

Franchise Acceptance Approved by Dallas.—The Commissioners of the City of Dallas, Tex., have approved the acceptance by the Northern Texas Traction Company, a Stone & Webster property, of the franchise granted by the city of Dallas reaffirming and re-enacting the rights and privileges granted to the Northern Texas Traction Company to build, construct and operate a double-track interurban railway and an overhead trolley along certain streets and alleys in the city of Dallas. The franchise was asked by the Strickland-Hobson interests and the Northern Texas Traction Company, and was made a part of the lease contract entered into between these two interests whereby the Strickland-Hobson interests take over the operation of the electric railways in Oak Cliff, a suburb of Dallas.

Appeal in Strike Damage Suit Case.—The International Railway, Buffalo, N. Y., has taken an appeal from the order denying it a new trial in its action against the county of Erie arising out of the strike on its lines in 1913. The company in its action demanded damages for injury to its physical property and for loss of revenue aggregating, with interest, more than $130,000. The company secured a judgment against the county for $2,862 for damages to its physical property and a "no-cause" verdict for its loss of business. The company contended that the county did not furnish adequate police and military protection. The county authorities have also filed an appeal, claiming no judgment should have been taken against the county. The progress of the suit has been referred to before in this paper.

M. O. Agitation in Tulsa.—Agitation has been started in Tulsa, Okla., with the aim of having the city government purchase the Tulsa Street Railway and the Oklahoma Union Railway, consolidate the two and operate a municipally-owned street railway system. The charter of the city of Tulsa contains a provision for municipally-owned utilities, and the franchises granted the two companies contain clauses providing that the city may take over the property at a reasonable valuation at any time after the population of the city shall have reached the 65,000 mark. This mark was passed last year, and these provisions in the charters are now in effect. It is believed that the question will be submitted to the people in a referendum election to be called in the near future.

Conference on Use of Bridge.—A conference will be held in the near future between city officials and officers of the Puget Sound Traction, Light & Power Company, Seattle, Wash., to consider plans for the use by the company of the new bridge across West Waterway, near Spokane Street, now nearing completion. Under the terms of the company's franchise, it is required to pay a portion of the cost of a permanent bridge at Spokane Street, and allowed the use of any temporary structure that may be maintained, prior to the building of a permanent bridge. It is now the plan for the city to condemn a railway right-of-way leading to the new bridge, the company to pay the cost of the property taken, and in return to receive a franchise and use of the right-of-way until a permanent bridge is built.

New Wage Scale in Duluth.—Herbert Warren, vice-president and general manager of the Duluth (Minn.) Street Railway, on Sept. 30 announced an increase in the wages of trainmen of about 10 per cent, dating from Oct. 1. The new scale is as follows: First year, 29 cents an hour; second year, 31 cents; third year, 32 cents; fourth year, 33 cents; fifth year, 34 cents; sixth year and thereafter, 35 cents. The minimum guarantee is $2.50 a day. New men formerly received 25 cents. The previous maximum wage was 32 cents an hour plus a 5 per cent war bonus. New men have been getting a 10 per cent war bonus plus their regular wage. The war bonus will now be discontinued for motormen and conductors. This is said to be the third time within a year that the wages have been advanced.

Advances in Wages in Fresno and Stockton.—The Fresno (Cal.) Traction Company has increased the wages of platform men who had been in the company's employ for five years and more. The maximum has been 32 cents an hour. The new scale makes an advance of 1 cent an hour for men who have been in the service five years and 2 cents an hour for men who have been with the company ten years or more. The wage schedule follows: First year, 29 cents; second year, 30 cents; third year, 31 cents; fourth year, 32 cents; fifth year, 33 cents; sixth year and over, 34 cents. The Stockton Electric Railroad, controlled by the same interests that own the Fresno property, has also increased the pay of its men. The old rate in Stockton has been from 29 cents for beginners to 32 cents an hour for the men longest in service. The men longest in the service will also benefit most by the advance at Stockton.

"Newt" Bolen Gets Another Gift. — The closing of the baseball season on the Public Service Railway, Newark, N. J., was celebrated with a testimonial reception to the championship baseball team from the South Orange Division in the new auditorium on Orange Street near Broad, Newark, on the evening of Oct. 24. There was a vaudeville program followed by dancing. Each carhouse sent a large delegation. The price of tickets was 25 cents each, just barely enough to cover expenses, so as to bring the entertainment within the reach of all. Each member of the winning team was presented with a gold watch. The South Orange men lost only one of nine games in a seven-team league. The competition among the seven teams called into play the best efforts of the schedule makers of the railway. Newton W. Bolen, general superintendent of the Public Service Railway and president of the Public Service Railway Athletic Association, was presented with a solid gold fob inscribed with the Public Service emblem, "Safety, Loyalty and Courtesy."

Obstacles to Seattle Elevated Line.—Another obstacle to the construction of the proposed elevated railway by the city of Seattle, Wash., on Railroad Avenue has developed in the refusal of the Chicago, Milwaukee & St. Paul Railway, the Great Northern Railway and the Oregon-Washington Railroad & Navigation Company to relinquish their franchise on Railroad Avenue. The track which it was proposed to vacate in favor of the elevated railway occupies the most westerly position on Railroad Avenue. Acting under the authority of a resolution adopted by the Council, A. L. Valentine, superintendent of utilities, took the matter of abandonment up with the companies. They replied that owing to the traffic congestion at this point and the inadequacy of the transfer arrangements if the tracks mentioned were given up, they could not be abandoned. The new railway will probably be forced to occupy the franchise space granted to the Port of Seattle from Washington Street to West Spokane Street.

Indiana Commission's Work for Year.—The Public Service Commission of Indiana closed its fiscal year on Sept. 30, with three separate lines of work accomplished, according to an announcement by E. I. Lewis, chairman of the commission. The first of these matters has been the payment of all outstanding bills against the commission and the return to the State of $50,000, which has been saved from the total appropriation of $115,000 for the fiscal year just ended. The next accomplishment was the final disposal of the last of the electric light surcharge cases which have been holding the attention of the commission since the Indiana Electric Light Association filed a blanket petition asking the commission to grant its members authority to add a 30 per cent surcharge to each bill for service to customers, because of the abnormal cost due to the war. The third conclusive action taken by the commission during the year was final disposition of the petitions under which steam and hot water heating companies asked for war-time relief. Twelve such companies were granted relief.

Hearing on Lease of Railroad for Rapid Transit Purposes.—The Public Service Commission for the First District of New York has set Oct. 31, at 10.30 a. m. as the date and hour for a public hearing on the form of agreement between the city of New York and the Long Island Railroad covering the proposed lease of trackage rights on the Whitestone and Port Washington branches of the railroad as an extension of the Corona rapid transit line to Whitestone Landing and to Little Neck. Points still at issue between the city and the company involve a question of whether the city shall have the right to permit the operating company to carry small freight and express packages, and over the question of rental. The railroad company demands a rental beginning at $125,000 for the first year and gradually increasing through a period of ten years, until the sum of $211,000 is reached. The Public Service Commission contends that this will be paid if earned, while the railroad contends that it must be paid whether earned or not. The commission hopes that by the date of the public hearing these differences will have been adjusted.

Trenton Opposed to Trolley Poles.—In replying to an ordinance adopted by the City Commission of Trenton, N. J., requesting the removal of trolley poles on several thoroughfares, the directors of the Trenton Street Railway, Mercer County Traction Company, Trenton, Hamilton & Ewing Traction Company and the Trenton & Mercer County Traction Corporation claim that the poles were erected more than twenty-five years ago under an ordinance authorizing the Trenton Horse Railroad to use electricity as motive power. This ordinance was set aside by the Supreme Court in the case of Green vs. Trenton, and subsequently the city of Trenton enacted another ordinance to obviate the defects of the prior ordinance validating the change to electricity, which was held valid by the Court of Errors and Appeals in the case of Roebling vs. Trenton Passenger Railway. The company claims that the erection and use of the poles were sanctioned by the second ordinance, and that without these it would be impossible to convey electricity from the power house to the streets on which the lines of railway have been constructed. The company claims the poles have been in use for twenty-five years and have been taxed by the city. The City Commission has notified the New Jersey & Pennsylvania Traction Company that unless its poles, wires and cables are removed from certain streets by Dec. 15 the city will take steps to have the officers and directors indicted by the Mercer County Grand Jury on the ground that they are maintaining a public nuisance. The poles, cables and wires in question are on Calhoun Street and are not used by the company.

Financial and Corporate

Annual Reports

Manila Electric Railroad & Lighting Corporation

The statement of income, profit and loss of the Manila Electric Railroad & Lighting Corporation, Manila, P. I., for the year ended Dec. 31, 1916, follows:

Gross earnings	$1,594,078
Operating expenses and taxes	835,424
Net earnings	$758,654
Interest on bonds	$262,616
Other interest	2,417
Total	$265,033
Net income	$493,621
Reserves:	
For sinking funds	$43,783
For replacements and renewals	80,000
Total	$123,783
Surplus	$369,838
Dividends	300,000
Balance for year	$69,838

The gross earnings for 1916 showed an increase of $99,291, or 6.64 per cent over those of 1915. The operating expenses and taxes rose $72,465, or 9.5 per cent, so that the net earnings from operation gained $26,825, or 3.67 per cent. The balance after interest charges and sinking fund requirements showed an increase of $24,483, or 5.76 per cent. The total surplus as of Dec. 31, 1916, was $1,680,740.

The gross receipts in the railway department for the first six months of the year were slightly less than for the corresponding period of 1915, but during the last six months the passenger revenues increased on an average $6,000 a month. The final total increase for the year was $31,450. The indications, it is said, are for continued improvement.

During 1915, on account of the very discouraging conditions in Manila, the maintenance work was restricted to a minimum, but in 1916 this deferred maintenance was partly compensated for. This resulted in increased operating expenses. The extra expenditures were principally on cars and tracks, and they were abnormally high on account of the constantly increasing cost of materials and the almost prohibitive ocean freight rates.

In the early part of 1916 the property was inspected and a comprehensive plan mapped out for replacements and renewals. Owing to the war conditions, however, less than half of the original amount estimated for 1916 was expended, the total amounting to only $106,778. The general plan, however, will be adhered to as closely as conditions will permit. The amount estimated for the complete program of rehabilitation from 1916 to 1919 is approximately $750,000. It is estimated that this can be furnished as required from the reserves and surplus of the company without changing the present dividend rate, provided business conditions continue prosperous. On Dec. 31, 1916, the balance of the replacement and renewal reserve was $650,000.

Christchurch Tramway

The expected diminution of travel on the lines of the Christchurch (New Zealand) Tramway, owing to the war, has not materialized. According to the report of this company for the year ended March 31, 1917, the growth of its business has been in no way checked. The increase in 1916-1917 was much greater than in the year immediately preceding. The revenue at £150,000 for 1916-1917 was an increase of 7.67 per cent over the returns in 1913-1914, before the war. Similarly, the number of passengers carried at 19,094,115 was a gain of 17.31 per cent, the car-miles at 2,521,978 an increase of 7.03 per cent and the operating expenses at £85,746 an increase of 11.47 per cent.

That the increase in revenue has not kept pace with the increase in passengers carried is due to the fact that more people are using the cheap concession tickets than formerly. The increase in operating expenses has been brought about by the increased cost of repair materials, the increasing age of the undertaking and increases in wages. For the last year the increase in capital expenditures on construction and equipment account amounted to £14,278.

The tramway board has continued its policy of subsidizing the military pay of tramway volunteers. It has also continued to grant free passes to returned soldiers and has rendered further assistance to Red Cross and similar efforts. The value of such contributions in the last year was £2,919.

New South Wales Government Railways and Tramways

The results of operation of the government railways and tramways of New South Wales, Australia, for the year ended June 30, 1917, was a deficit of £412,253, as compared to a deficit of £137,457 the year before. A large part of this deficit in the last fiscal year arose from the fact that tramway operation showed a loss of £18,189 instead of a gain of £86,292 as in 1916. The tramway earnings amounted to £2,008,539, with working expenses of £1,691,367 and interest of £335,361. The total expenditures charged to tramway capital account in 1917 were £143,206.

The tramway earnings in the last year increased £16,911, or 0.85 per cent, while the working expenses rose £88,717, or 5.5 per cent. Wage board awards and other conditions not controllable by the administration entailed the expenditure of £162,933 during the year. In view of the continuous upward tendency of wages, the increasing cost of materials and the higher interest rate which will have to be paid, the report states that a general increase in fares to balance the revenue and expenditure accounts is unavoidable. The tramways carried 295,303,714 passengers in 1917, as compared to 292,021,774 in 1916, and operated 25,361,992 tram-miles, as compared to 26,451,442.

The total operating staff on June 30, 1917, numbered 45,079, of whom 5890 were serving with the expeditionary forces. The tramway employees constitute about one-fifth of the staff. Payments amounting to £113,217 were made during the year to soldiers' dependents to cover the difference between their railway pay and their military pay.

Mortalities Increase

New Jersey, Kentucky, Tennessee, California, New York and Texas Roads Give Up the Fight

The Board of Public Utility Commissioners of New Jersey has dismissed the proceedings brought by the city of Cape May to compel the continued operation of the Cape May, Delaware Bay & Sewell's Point Railroad and the Ocean Street Passenger Railway between Sewell's Point and Cape May Point. The physical property of the railroad, though not the franchises, has been sold to junk dealers, and the sale has been confirmed by the Court of Chancery in receivership proceedings. The question as to the necessity of the approval of the sale by the utility commission, in view of the chancery decree, was not passed upon by the board. That body dismissed the petition upon other grounds.

COMPANY WENT BEHIND $20,000 ANNUALLY

The testimony showed that for many years the Cape May, Delaware Bay & Sewell's Point Railroad was operated at an annual average deficit of about $20,000. It was shown that the road was in need of immediate rehabilitation which would require the expenditure of large sums. The rolling stock was in disrepair and the power station was also in lack of repair. One of the arguments advanced against abandonment was that the road would be of value to the government because of the location of a naval and aviation station on the line.

The Cape May, Delaware Bay & Sewell's Point Railroad operated 20 miles of track. The road connected Cape May and Cape May Point and controlled and operated the Ocean Street Passenger Railway, a line 1.5 miles long in Cape May. A receiver was appointed for the company in September, 1916. Service was discontinued in October, 1916. The property was sold on April 2, 1917. Efforts to have the steam railroads in the same territory take over and operate the electric railway failed.

WHAT THE BRISTOL COMPANY SUFFERED

An account from one of the daily papers in regard to the trials of the Briston (Tenn.) Traction Company follows:

"The Bristol Traction Company, following the recent sale of its properties under foreclosure, has suspended service. Fred Dulaney, the manager, stated that this action was due to the fact that it had been impossible to make the lines pay expenses in recent years. The extensive development in automobile and motor truck service has had the effect of withdrawing patronage from the line until the management declared it would not be justified in undertaking further service to the public until reorganization is effected. It is the purpose of the present owners to yield to the temptation to take the present high prices of junk for the rails and equipment."

SUSPENSIONS, SALES AND SACRIFICES ELSEWHERE

The Sacramento Valley Electric Railway, Dixon, Cal., an 11-mile line operated under lease by the Oakland, Antioch & Eastern Railroad, is to be abandoned and junked. Stockholders met in Woodland recently and decided upon this procedure. Homer G. Brown, president of the company, proposed that an effort be made to raise the amount of the road's indebtedness among the stockholders. According to the Willow *Transcript* those who favored this plan were in the minority "and the plan of Attorney Walter Shelton, representing the creditors, of junking the road met with instant favor."

The Southern Traction Company, Inc., Bowling Green, Ky., contemplates advertising for sale "for a reasonable price" 5 miles of 60-lb. T standard rails and all equipment.

The property and franchises of the Catskill (N. Y.) Traction Company were sold under mortgage foreclosure at Catskill on Oct. 24 to Joseph Joseph & Brothers Company, New York, junk dealers, for $27,900. The company has been operating 5 miles of electric railway between Catskill and Leeds.

Operation of the Amarillo (Tex.) Street Railway has been suspended, following instructions from G. G. Brownell, who purchased the property at public auction six weeks ago. Eleven of the company's cars were ordered placed in the carhouse under guard, motormen were discharged and no cars have been operated since the order went into effect. The Amarillo Street Railway has been in the hands of Guy A. Faller, Amarillo, as federal receiver since 1916.

Electric Railway Statistics

Comparison of Returns for July, 1917, with Those for 1916 Shows that Additional Revenue Is Needed

A comparison of electric railway statistics for July, 1917, with figures for the corresponding month of 1916, made by the information bureau of the American Electric Railway Association, indicates a continued rise in operating expenses. This condition is noticeable throughout the country and particularly in the East.

Data for July, 1917, representing 8486 miles of line of electric railways scattered throughout the country, figured on the per mile of line basis, indicate an increase in operating revenues of 4.86 per cent and in operating expenses of 10.61 per cent, and a decrease in net earnings of 3.85 per cent. Data representing approximately 70 per cent of the above-stated mileage indicate an increase in the amount of taxes paid of 7.55 per cent and a decrease in operating income of 6.81 per cent.

The returns from the city and interurban electric railways, as shown in detail in the accompanying table, have been classified according to the following geographical grouping: Eastern District—East of the Mississippi River and north of the Ohio River. Southern District—South of the Ohio River and east of the Mississippi River. Western District—West of the Mississippi River.

Returns for the Southern group apparently show a slight degree of improvement over the corresponding period of the previous year, while returns for the Eastern and Western are unsatisfactory. Data for the former district, representing 5577 miles of line, indicate an increase in operating revenues of 5.25 per cent and in operating expenses of 12.22 per cent, and a decrease in net earnings of 5.81 per cent. Returns representing approximately 70 per cent of the mileage show an increase in the amount of taxes paid of 8.99 per cent and a decrease in operating income to the extent of 11.09 per cent.

Returns for the Western group, representing 1905 miles of line, show an increase in operating revenues of 5.40 per cent and in operating expenses of 9.34 per cent, and a decrease in net earnings of 0.81 per cent. Returns representing approximately 95 per cent of the mileage indicate an increase in the amount of taxes paid of 5.80 per cent and a decrease in net income of 2.56 per cent.

The operating ratio for the country as a whole increased from 60.93 in 1916 to 64.21 in 1917. The operating ratio of the Eastern District increased from 61.36 in 1916 to 65.42 in 1917.

COMPARISON OF REVENUES AND EXPENSES OF ELECTRIC RAILWAYS FOR JULY, 1917 AND 1916

Account	United States				Eastern District				Southern District				Western District			
		Per Mile of Line				Per Mile of Line				Per Mile of Line				Per Mile of Line		
	Amount, July, 1917	1917	1916	Increase Over 1916, per Cent	Amount, July, 1917	1917	1916	Increase Over 1916, per Cent	Amount, July, 1917	1917	1916	Increase Over 1916, per Cent	Amount, July, 1917	1917	1916	Increase Over 1916, per Cent
Operating revenues	$15,982,292	$1,883	$1,794	4.96	$10,722,993	$1,923	$1,827	5.25	$1,430,584	$1,424	$1,386	2.74	$3,828,715	$2,009	$1,906	5.40
Operating expenses	10,261,030	1,209	1,093	10.61	7,013,869	1,258	1,121	12.22	814,936	811	790	2.66	2,432,225	1,276	1,167	9.34
Net earnings	5,721,262	674	701	†3.85	3,709,124	665	706	†5.81	615,648	613	596	2.85	1,396,490	733	739	†0.81
Operating ratio, per cent	1917, 64.21; 1916, 60.93				1917, 65.42; 1916, 61.36				1917, 56.95; 1916, 57.00				1917, 63.51; 1916, 61.23			
Average number of miles of line represented	1917, 8,486; 1916, 8,374				1917, 5,577; 1916, 5,544				1917, 1,004; 1916, 956				1917, 1,905; 1916, 1,874			

COMPANIES REPORTING TAXES

Account	United States				Eastern District				Southern District				Western District			
Operating revenues	$10,476,642	$1,747	$1,676	4.24	$5,925,188	$1,616	$1,567	3.13	$773,114	$1,526	$1,441	5.90	$3,778,340	$2,069	$1,964	5.35
Operating expenses	6,759,361	1,127	1,027	9.74	3,921,896	1,070	973	9.97	439,373	867	804	7.84	2,398,092	1,313	1,200	9.42
Net earnings	3,717,281	620	649	†4.47	2,003,292	546	594	†8.08	333,741	659	637	3.45	1,380,248	756	764	†1.05
Taxes	681,264	114	106	7.55	354,065	97	89	8.99	60,904	120	111	8.11	266,295	146	138	5.80
Operating income	3,036,017	506	543	†6.81	1,649,227	449	505	†11.09	272,837	539	526	2.47	1,113,953	610	626	†2.56
Operating ratio, per cent	1917, 64.51; 1916, 61.28				1917, 66.21; 1916, 62.09				1917, 56.82; 1916, 55.79				1917, 63.46; 1916, 61.10			
Average number of miles of line represented	1917, 5,999; 1916, 5,936				1917, 3,666; 1916, 3,633				1917, 507; 1916, 507				1917, 1,826; 1916, 1,796			

†Decrease.

Louisville (Ky.) Railway.—Amended articles of incorporation have been filed at Louisville, Ky., by the Louisville Railway, increasing its preferred stock $1,000,000 and its common stock to $3,000,000, making the total issue $3,500,000 of 5 per cent cumulative preferred stock and $8,456,500 of common. This increase is for the purpose of carrying out the plan to dissolve the Louisville Traction Company and exchange its shares for shares of the Louisville Railway, as outlined previously in the Electric Railway Journal. The traction company has received assents of much more than two-thirds of the shareholders to the plan and it will be carried out at a stockholders' meeting to be held in Jersey City about Nov. 15. The plan provides for the exchange of the preferred on a basis of share for share and the common stock on a basis of 100 shares of the Louisville Traction Company for seventy shares of the Louisville Railway stock.

New England Investment & Security Company, Springfield, Mass.—The trustees of the New England Investment & Security Company having approved the plan to exchange first preferred stock of the Worcester Consolidated Street Railway for preferred shares of the New England Investment & Security Company share for share, the plan has been declared operative. The Merchants' National Bank of Boston has received from the trustees the amount of first preferred stock of the Worcester Consolidated Street Railway necessary to carry out the exchange. An item in regard to the proposed exchange of securities was published in the issue of the Electric Railway Journal of April 28, page 799.

New York, New Haven & Hartford Railroad, New Haven, Conn.—The stockholders of the New York, New Haven & Hartford Railroad at a special meeting in New Haven on Oct. 24 authorized the directors to issue 450,000 shares of 7 per cent preferred stock at par. The issue proposed would take up floating indebtedness now represented by notes to the amount of $45,000,000, for which collateral of $96,512,516 book value has been pledged.

San Francisco-Oakland Terminal Railways, Oakland, Cal.—Funds have been deposited by the San Francisco-Oakland Terminal Railways with the National Park Bank, New York, N. Y., and the Wells-Fargo Nevada National Bank, San Francisco, Cal., to meet the coupons due on Jan. 7, 1917, on the first consolidated 6 per cent bonds of the Oakland Transit Company.

Washington, Baltimore & Annapolis Electric Railroad, Baltimore, Md.—The Washington, Baltimore & Annapolis Electric Railroad has declared an initial dividend of 3 per cent on the common stock, payable on Oct. 31 to stock of record of Oct. 25.

Electric Railway Monthly Earnings

Period			Operating Revenue	Operating Expenses	Operating Income	Fixed Charges	Net Income
ATLANTIC SHORE RAILWAY, SANFORD, ME.							
1m.,	Sept.,	'17	$18,378	$12,044	$6,334	$431	$5,903
1 "	"	'16	36,528	24,800	11,728	664	11,064
CITIES SERVICE COMPANY, NEW YORK, N. Y.							
1m.,	Sept.,	'17	$1,594,961	$28,588	$1,566,373	$227	$1,566,146
1 "	"	'16	722,054	21,531	700,523	340	700 183
12 "	"	'17	18,169,849	327,646	17,842,203	3,151	17,839,052
12 "	"	'16	7,522,547	226,667	7,295,880	380,510	6,915,370
KANSAS CITY (MO.) RAILWAYS							
1m.,	Sept.,	'17	$684,799	•$513,268	$171,531	$130,105	‡$39,646
1 "	"	'16	667,388	•440,364	227,024	130,451	‡41,845
3 "	"	'17	1,895,368	•1,540,663	354,700	394,733	†‡45,357
3 "	"	'16	1,986,015	•1,365,744	620,271	396,570	‡110,215
LEHIGH VALLEY TRANSIT COMPANY, ALLENTOWN, PA.							
1m.,	Sept.,	'17	$269,787	•$176,138	$93,649	$50,943	‡$54,729
1 "	"	'16	234,154	6139,799	94,355	60,584	‡53,150
10 "	"	'17	2,369,920	•1,595,944	773,976	509,570	‡377,672
10 "	"	'16	2,046,128	•1,244,685	801,443	525,553	‡389,652
PHILADELPHIA (PA.) RAPID TRANSIT COMPANY							
1m.,	Sept.,	17	$2,419,584	$1,389,338	$1,030,246	$811,165	$219,081
1 "	"	'16	2,226,059	1,210,784	1,015,275	814,410	200,864
3 "	"	'17	7,293,659	4,223,780	3,069,879	2,434,936	634,943
3 "	"	'16	6,590,825	3,655,733	2,935,092	2,444,689	490,403
REPUBLIC RAILWAY & LIGHT COMPANY, YOUNGSTOWN, OHIO							
1m.,	Sept.,	'17	$426,250	•$280,674	$145,576	$87,100	‡$63,948
1 "	"	'16	334,443	•183,689	150,754	69,022	‡62,177
12 "	"	'17	4,536,528	•2,944,934	1,591,594	957,608	‡683,362
12 "	"	'16	3,817,024	•2,220,241	1,596,783	791,164	‡820,721

•Includes taxes. †Deficit. ‡Includes non-operating income.

Traffic and Transportation

War Fare Tax Explained

Detroit (Mich.) United Railway Outlines What the War Tax on Interurban Fares and on Freight Will Mean to Its Customers

The Detroit (Mich.) United Railway in *Electric Railway Service* for Oct. 19, published by it, made an announcement in regard to the war tax on interurban fares and freight which will go into effect on Nov. 1. The company said in part:

"It is our duty to announce to the customers of the Detroit United Lines that from and after Nov. 1 a war tax will be collected on certain interurban passenger fares and upon all freight shipments.

"These taxes are imposed under orders of the United States government by reason of certain provisions of the federal revenue law recently passed by Congress and signed by President Wilson.

"Under the act the taxes mentioned are to be paid by the person paying for the service rendered and remittance is made by the transportation company to the government.

War Taxes in Brief Form

"Putting them in brief form the war taxes concerning public utilities, and as affecting our customers, are as follows:

"1. Three per cent of the amount paid for the transportation of freight.

"2. Eight per cent of the amount paid for passenger fares in excess of 35 cents.

"We solicit your earnest co-operation by prompt payment on demand of these war taxes to the end that business, both freight and passenger, may be expedited. These are taxes that you must pay; we are only the collecting agency for the government. We ourselves have war taxes to pay.

"To the freight shippers we would say that the war tax on freight must be paid by whoever pays the shipping charges.

"In the matter of passenger fares nothing will be gained through storing up paid fares in advance of Nov. 1. The government has protected itself against this by ordering the collection of the tax on such tickets when presented.

"On all tickets sold at our several waiting rooms on and after Nov. 1 our agents will collect the proper tax at the time of the sale, where, of course, the fare is in excess of 35 cents. Similarly where cash fare is paid on the cars the conductor will at the same time collect the proper amount of war tax.

"This extra charge upon passengers will not be burdensome to customers of the Detroit United Lines owing to our exceedingly low rates of interurban fares. In no case for a one-way ride will the additional cost be 10 cents, as indicated by the following table of fares and taxes:

From Detroit To	Passenger Fare	War Tax
Toledo	$0.80	$0.06
Monroe	.50	.04
Jackson	1.00	.08
Ann Arbor	.45	.04
Port Huron	.90	.07
Marine City	.65	.05
Flint	1.00	.08
Oxford	.55	.04

"You will note from this that riders between Detroit and such points as Pontiac, Birmingham, Wayne, Ypsilanti, Northville and Mount Clemens do not come under the scope of the act.

"While the table indicates the tax rate from Detroit to other points it should be remembered that the rate applies from any point on the line to any other point where the fare paid is more than 35 cents.

"Do not argue with the conductor or the agent but pay promptly and keep out of serious trouble with the federal authorities."

Trenton Fare Case Appealed

Six-for-a-Quarter Decision Carried by the Trenton & Mercer County Traction Corporation to the Court of Errors and Appeals

The Trenton & Mercer County Traction Corporation, Trenton, N. J., appealed on Oct. 22 to the Court of Errors and Appeals from the order of the Board of Public Utility Commissioners, which denied permission to the company to abolish the six-for-a-quarter tickets. In its brief the company sets forth fifty-one contentions why the decision against it is not in accordance with the law, and why the general public should be compelled to pay a straight fare of 5 cents.

Among other things the company contends that the utility board in fixing the value of the property of the company at $3,212,000 placed the value at a sum "far below the reasonable and fair value of said property devoted to public service and actually employed in the transportation of passengers." This argument is in line with the contention offered at the time the matter was before the board and later before the Supreme Court in the appeal for a writ of certiorari to review the action of the utility commission.

The company contends that the Board of Public Utility Commissioners was without jurisdiction in the matter; that the change in fare would not actually amount to an increase, and that the commission did not allow for a fair return on the outstanding stock. It is further maintained that the inhabitants of Trenton had no authority to pass the ordinance of Oct. 22, 1909, providing for the sale of strip tickets, and that because the company did not enter into any agreement to that effect the city cannot compel the railway to be bound by the provisions of that law. On the other hand, it is contended that even if an agreement had been entered into, the company would not be required to adhere to the provisions of it.

The decision of the board was rendered on Dec. 13, 1915. A few months later an appeal for a writ of certiorari was made to the Supreme Court. The application was refused. The matter is now before the highest State tribunal.

Increased Rates for California Road

Railroad Commission Authorizes Well-Managed 43-Mile Road to Increase Passenger and Freight Charges

The Railroad Commission of California has authorized the Petaluma & Santa Rosa Railway, operating 43 miles of electric railway, to make certain increases in its passenger fares and freight rates.

Operating Expenses and Interest Barely Made

The testimony and exhibits introduced at the several hearings held before Commissioner Harvey D. Loveland show that in 1916 the company barely made operating expenses and interest on its bonds and floating debts. The bond issues as of Dec. 31, 1916, amounted to $832,000. Of this amount $250,000 represented second mortgage bonds, which became due on April 1, 1915, and although the company has been able to meet the interest on these bonds out of its earnings, it has not found it possible to reissue them. The trust deed covering the first mortgage bonds provides for a sinking fund to be set aside each year, but the railroad has found it impossible since 1914 to meet the obligations of this trust deed. It was also shown that at the time operations were commenced in 1904 it cost $18,864 for labor, commissary and fuel to operate one boat. while for the year 1914 the cost was $25,908 and for the year 1917 estimated at $30,489, or an increase of 61 per cent in the thirteen-year period. All other items of operating expense have increased in proportion.

Fare to Outlying Points Made Ten Cents

Authority to change passenger fare was granted so that the minimum charge between any two points outside the limits of Petaluma, Sebastopol and Santa Rosa will be 10 cents instead of 5 cents; that the sale of $5 worth of transportation for $4.25 will be entirely discontinued and that the scrip book representing $10 worth of transportation heretofore sold for $7.50 will be increased to $9.

The proposed increases in freight rates are nominal except between Petaluma and San Francisco, where the company sought authority to bring about changes which would increase its revenue by some $20,000. The commission decided that the total increase asked between Petaluma and San Francisco has not been justified and authorized a class scale making material reductions over those proposed.

The income of the road, from both freight and passengers, has steadily declined. In 1914 the gross passenger revenue was $99,349; in 1916, $78,614, and for 1917 it is estimated at $74,710. The gross freight revenue in 1914 was $196,302; in 1916, $180,899, and for 1917 it is estimated at $189,298. The net income of the road in 1913 was $53,167, while in 1916 it was $10,916.

The commission says that the company appears to have been carefully and efficiently managed. The postponement of repairs to roadbed, steamers and car equipment are cited as the reasons for the prevention of an actual operating deficit during the last two years.

I. T. S. Applies for Mileage Basis Fares

The Illinois Traction System, Peoria, Ill., has filed with the Interstate Commerce Commission and the Illinois Public Utilities Commission application for permission to submit proofs of tariffs for the purpose of substituting for its present system of zone fares a system of passenger fares based on mileage. Two cents per mile will be the basis for the proposed new ticket fares, with 3 cents per mile where the passenger boarding the train at an open agency station pays cash fare on the train. Passengers boarding the train at a non-agency station or stop will receive the benefit of the 2-cents-per-mile ticket fare.

In its application the company points to the fact that the change in method of fare collection will remove many discriminations which the zone system set up. For example, under the 5-cent zone system passengers riding between points located in two-fare zones are charged a 10-cent fare regardless of distance traveled, while passengers riding through one full zone are charged only 5 cents and thus receive the benefit of a longer ride for less money. It is also pointed out that while in some isolated cases the new method of collection will increase fares, in most instances it will mean a decrease of fare for the passengers.

In asking permission to charge a 3-cent cash train fare the company states that in addition to encouraging the purchase of tickets at open ticket offices this method will greatly relieve conductors of the detail of collecting the government war tax on all fares above 35 cents which are collected on trains.

Another Pennsylvania Fare Increase

The Pittsburgh & Beaver Street Railway, operating between Conway and Leetsdale, Pa., put 6-cent fares into effect on Oct. 12, after advertising the change for more than three months. The company is, however, selling tickets at the rate of seventeen for $1 at two of the banks in its territory. It previously had in effect a ticket that sold at the rate of twenty-one for $1, and as long as these tickets are presented by the original purchasers the conductors will accept them, provided the payment of 1 cent in cash is also made.

There are three zones. No through fares are collected. Each collection is made and accounted for the same as a 5-cent fare collection would be handled. Spaces on the trip sheet provide for accounting for fares collected in the three 6-cent zones separate from the one 5-cent zone which the cars of the company traverse while on the tracks of the Beaver Valley Traction Company.

While the change was the subject of considerable discussion in the territory through which the company operates, no formal complaint was filed until Oct. 11, the day before the 6-cent fare went into effect. The solicitor of the borough of Baden explained that this was done, not because the need of a 6-cent fare was not recognized, but because of the proposed change of schedule. In Ambridge, Leetsdale and Baden opposition to proposed scheduled changes, reducing the service from twenty to thirty minutes, has developed.

Skip Stop Explained

Toledo Railways & Light Company Tells What It Is Trying to Accomplish Under the New System

A resolution has been introduced in the City Council of Toledo, Ohio, asking that the Toledo Railways & Light Company be restrained from making further reduction in the service. This refers to the lines on which the skip-stop plan has been adopted and others where the company intends to introduce it at an early date. The resolution, which refers more to the service than to the skip-stop plan, declares that several cars have been taken off the lines where the plan is now in operation and that the patrons are complaining of the service. It was referred to the committee on railways and telegraphs. In regard to the matter F. R. Coates, president of the company, issued the following statement:

"The skip-stop policy was adopted to better the service on our railway system. This same policy has been in force in Cleveland for a number of years with excellent results. Detroit for the last year has been gradually adopting the skip-stop system and we are informed that the same is satisfactory to the patrons of the company.

"The Toledo Railways & Light Company started this system in order to get the car riders to their destination more rapidly. On Cherry Street, where the skip stop was first put into effect, those using the cars are now familiar with the system and are satisfied with the results obtained, as we understand it.

"Summit and Broadway was the second line to adopt the skip stop. We have found since the use of the system there that it could be improved. These improvements will be made at once. Time has been saved on this line. A slight reduction in the number of cars was made, principally owing to the fact that the length of the line has been reduced by cutting out the run between the LaSalle Street switch and the Casino, all Summit and Broadway cars now turning at the LaSalle Street 'Y.'

"On the Belt lines we find that, owing to weather conditions, service is not being rendered as it should be. This service we are going to improve immediately.

"I have made the statement that cars will stop at all streets, in one direction at least. We are endeavoring to carry out this idea to the letter as nearly as we can, but in a number of instances streets are not continuous and equally spaced. In such cases we will observe this principle as nearly as possible.

"We sincerely trust that the public will afford us an opportunity to demonstrate that we want to give them the best service. We should like to have from our patrons any suggestions that will tend toward the improvement of the system. These we prefer to have sent to us in the form of a letter. We will be only too glad to consider such communications and will, if possible, try to meet the wishes so expressed."

Cantonment Lines Congested

Relief in Sight for Electric Railways Serving Camps Under the New Dismissal Regulations

Greatly increased demand on the facilities of the Louisville (Ky.) Railway to Camp Zachary Taylor, the National Army cantonment at Louisville, has been created by a new system of furloughs for the men in training. Until the new order went into effect furloughs were restricted to Wednesdays, Saturdays and Sundays, and at no time were more than half of the men permitted to leave the camp confines. On such days the additional fares of the line to the camp were increased by about 12,000 and there was difficulty in handling the rush. Under the new rules about three-fourths of the entire command will be permitted to leave at once and the hours are extended.

The problem of congestion in handling the traffic from Des Moines to Camp Dodge has reached a partial solution. Since the camp was opened six weeks ago all soldiers have received city leave at one time, three days a week. As a result on the three days the Inter Urban Railway was overwhelmed with traffic, whereas on the remaining days the cars were running half filled. The various divisions of the conscript army will now be granted city leave on different days in the week so that the bulk of the traffic will be distributed more evenly over the full seven days of the week.

I. C. C. Rate Hearing Nov. 5

The Interstate Commerce Commission notified the Eastern railroads on Oct. 22 that the reopening of the 15 per cent rate advance case should not be deferred and on its own initiative set the first hearing for Nov. 5. The counsel for the Eastern roads had suggested to the commission that hearings be held sixty days hence, to give the railroads an opportunity to present statements of their earnings for September and October, the returns of which had fallen off greatly from those of preceding months. The position of the commission is shown in a letter sent to George Stuart Patterson, of counsel for the carriers, by George B. McGinty, secretary of the commission. In this letter Mr. McGinty said in part:

"The gist of your suggestion of Oct. 17 is that the situation above referred to has now arisen; it is suggested that operating revenues do not now adequately overcome mounting costs. If this be so, the commission's stated purpose of meeting that situation will not have been attained by adopting your suggestion of a hearing sixty or ninety days hence. The commission is emphatically of the opinion that the evidence necessary to establish the full truth should be presented, without delay, in order that the carriers may be maintained in a position to do their full war duty."

One-Man Cars in Rome.—The Rome Railway & Light Company, Rome, Ga., is putting on one-man cars. H. J. Arnold, superintendent of the company, has explained to the public that the change is dictated by the need for economy.

Mayor Signs Fare Protest Resolution.—Mayor Frank A. Hagarty of Hartford, Conn., on Oct. 22 signed the resolution adopted at the meeting of the Common Council on Oct. 15, calling upon Corporation Counsel Francis W. Cole to arrange with the Public Utilities Commission for a hearing on the 6-cent fare of the Connecticut Company.

Jitneys on Sufferance.—The Public Service Commission of Pennsylvania has granted certificates to fourteen jitney operators to operate between Sharon and Farrell for three years, with leave to apply then for a longer period unless the Mahoning & Shenango Railway & Light Company shall by that time construct a double track railway between the two towns. This is the first time such provision has been inserted in a certificate granted by the commission.

Worcester Awaits Further One-Man Car Experience.—Henry C. Page, general manager of the Worcester (Mass.) Consolidated Street Railway, is reported to have stated that the officials of that company have discussed the matter of the use of one-man cars on some of the Worcester lines, but that the company is waiting to learn the results obtained by the Bay State Street Railway with the one-man cars which it has been authorized by the Public Service Commission to install on certain lines of that system.

Skip Stop Extended to All Buffalo Lines.—Officials of the International Railway, Buffalo, N. Y., are enthusiastic over the successful operation of the skip stop, which has now been extended to every line in the city of Buffalo and on the Kenmore-Tonawanda interurban line through the village of Kenmore. The company is now considering several rerouting plans recently recommended by Charles R. Barnes, electric railway inspector of the Public Service Commission for the Second District, in his report on local traffic conditions.

Matrons Installed by Government in Railway Stations.—As an accommodation to the friends and relatives who visit soldiers quartered at Camp Zachary Taylor, Louisville, Ky., the government has installed matrons in the interurban stations of the Louisville Railway and the Louisville & Southern Indiana Traction Company. Signs have been erected in the stations telling where the matrons may be found, and conductors have been instructed to refer passengers to these matrons for information as to how to get to the camp, where to lodge, etc.

Improvements in Service Ordered.—The Public Service Commission of West Virginia has ordered the Wheeling Traction Company to improve its service by adding more equipment or by improving that now in use. The complaint in which the decision was rendered set forth that particularly during the rush hours the service was inadequate on the north and south routes. The commission held that it was possible for the company to provide adequate service by adding small cars or supplementing the small cars now in use with large cars on these routes.

Appearances Noted at Seattle Fare Review Hearing.—Walter F. Meier, assistant corporation counsel of Seattle, Wash., will represent the city at the hearing on the writ of review granted by the Thurston County Superior Court at Olympia with respect to the order of the State Public Service Commission eliminating 4-cent tickets on the railway lines of the Puget Sound Traction, Light & Power Company in Seattle. W. V. Tanner, attorney general, will appear for the commission at the hearing. The original ruling of the commission was reviewed in the ELECTRIC RAILWAY JOURNAL for Sept. 22, page 552.

Labor Shortage at Buffalo.—Considerable difficulty is being encountered by the International Railway, Buffalo, N. Y., in securing sufficient platform employees to keep all of its runs in operation on its Buffalo, Niagara Falls and Lockport lines. A large number of employees have been called for service in the new National Army and others have enlisted voluntarily in various branches of the government military service. E. J. Dickson, vice-president of the company, in a recent interview, said that despite the shortage of help no efforts have been made to secure women trainmen. Women are being employed, however, in the company's shops as car cleaners, etc.

Car-Heating Regulation Modified to Save Coal.—An order in the interests of conserving the coal supply as it is affected by car-heating has been issued by the Public Service Commission of Massachusetts, under the signature of Chairman Macleod. In 1907 the Railroad Commission, predecessors of the present board, issued an order to the effect that between Oct. 15 and April 15, yearly, when the outside temperature is less than 40 deg. Fahr., the temperature of box cars on street railways must be maintained at not less than 40 nor more than 60 deg. Fahr., except during emergencies. The new order suspends all car-heating, unless necessary in the judgment of operating company, from Oct. 15 to Nov. 30, inclusive, during the current year.

Fare Increase Refused.—The Mayor and Commissioners of Laurel, Miss., have rejected the petition of the Laurel Light & Railway Company to increase its city fare to 6 cents. The request to the city grew out of the strike of trainmen of the company, reviewed briefly in the ELECTRIC RAILWAY JOURNAL of Sept. 15, page 456. The men received a small increase under the settlement terms and were to get a further advance if the appeal of the company for an increase in fares was allowed. A local Laurel paper says: "The action of the commissioners was taken on the strength of public opinion, which seems strongly opposed to an advance in transportation rates, and no attempt was made to pass on the merits, financial or otherwise, of the proposition embodied in the petition."

Jitney Bond Arranged.—The City Council of Portland, Ore., has advised the Portland Trackless Car Company, Stephen J. Carver, principal owner, that the company will be allowed to operate in that city under its franchise, providing a cash bond of $10,000 and a personal bond of $25,000 are filed in lieu of the $35,000 in surety bonds required. Mr. Carver recently notified the city that he was unable to obtain a surety bond, but offered personal bonds with himself and wife and J. L. Sprinkle as bondsmen. Investigation showed that the parties had resources many times in excess of the amount of the bonds, but that Mr. Sprinkle resided in Montana, and in case suit was brought against the concern it might be difficult to secure service. The company has accepted the offer of the city, and cars will begin operation as soon as bonds have been formally approved by the Mayor.

Personal Mention

F. A. Gallagher, superintendent of the Springfield (Mo.) Traction Company, has resigned.

James E. Quan, formerly chairman of the Public Utilities Commission of Illinois, has been elected president of the Greenwich (Conn.) National Bank.

L. A. Ramsey, secretary of the City Light & Water Company, Amarillo, Tex., has been made secretary of the Bartlesville (Okla.) Inter-Urban Railway.

S. R. Dunbar, purchasing agent of the Union Traction Company of Indiana, Anderson, has been appointed editor of *Safety*, a monthly publication issued by that company.

Edwin Wagner, secretary of the Bartlesville (Okla.) Inter-Urban Railway, has been made assistant secretary and treasurer of the Dominion Gas Company in the Buffalo office.

Arthur H. Sooy has resigned as superintendent of the Bridgeton & Millville Traction Company, Bridgeton, N. J., to enter the motor car field, becoming interested in the Ford and Buick agencies at Bridgeton.

E. D. Chassell, a member of the Iowa Railroad Commission, has resigned to accept the position of secretary-treasurer of the Farm Mortgage Bankers' Association of America with headquarters in Chicago.

O. M. Hartshorn, heretofore secretary of the Pueblo Gas & Fuel Company, Pueblo, Col., has been appointed successor to L. A. Ramsey as secretary of the City Light & Water Company, Amarillo, Tex.

Charles A. Baldwin has retired as superintendent of transportation of the Union Traction Company of Indiana, Anderson, Ind., and will do special work for the company. He has been in the service of the Union Traction Company for fifteen years.

William J. Faulkner, superintendent of the Arkansas Valley Interurban Railway, Wichita, Kan., has resigned to take a position with the O. A. Boyle Commission Company. Mr. Faulkner has been superintendent of the railway company since its organization about ten years ago.

J. H. McClure, general manager of the Citizens' Traction Company, Oil City, Pa., has been elected a director and vice-president in charge of operation of the Youngstown & Suburban Railway, Youngstown, Ohio. These new duties will not conflict with his management of the Oil City property.

Edward J. Cooney, executive assistant of the Rhode Island Company, Providence, R. I., in charge of publicity, and editor of that company's weekly publication, *The Trollier*, has been enlisted in the food administration movement to spread the doctrine of conservation among the public service employees.

Crad Brazl, who has been associated for five years with the auditing department of the Arkansas Valley Railway, Light & Power Company, Pueblo, Col., has been appointed auditor of the Ottumwa Railway & Light Company, Ottumwa, Iowa, succeeding George F. Storms, resigned. Both companies are operated by H. M. Byllesby & Company.

Walter N. Kernan, vice-president and general counsel of the New York State Railways, New York, N. Y., has resigned to take up the work of the Knights of Columbus committee on war activities in Europe. Mr. Kernan will be in complete charge of the foreign work of that order and will have a large staff of assistants and field secretaries who will have charge of the recreation work in camps at the front.

E. D. Smith, chief engineer of the United Railways, St. Louis, Mo., has been appointed a member of the City Plan Commission by the Police Service Commission of the State. The former commission is composed of engineers and architects who are responsible for the planning of the city improvements. It has before it now the work of widening a portion of Washington Avenue which is to cost more than $500,000.

R. Harold Smith, formerly engineer of the Ogden, Logan & Idaho Railway, Ogden, Utah, and more recently general manager of the Goldsboro Electric Railway, Goldsboro, N. C., has been made superintendent of the Bridgeton & Millville Traction Company, Bridgeton, N. J. This road is a subsidiary of the American Railways. It includes the city lines in Bridgeton and the two suburban lines to Millville and Port Norris, N. J.

Maurice E. McCormick, assistant general manager of the Bangor Railway & Electric Company, Bangor, Me., has resigned to accept a similar position with the New Brunswick Power Company at St. John, N. B. The latter company controls the railway, lighting, power and gas system in the city of St. John, which has a population of approximately 60,000, and surrounding villages. Mr. McCormick has been employed by the Bangor Railway & Electric Company for the last twenty years. He worked up from service in the carhouses through various positions to that of assistant general manager.

Joseph W. Alsop has been appointed to fill the vacancy on the Public Utilities Commission of Connecticut made by the death of John H. Hale. Mr. Alsop is at present a member of the Connecticut State Council of Defense and of the State Committee on Food Supply. Mr. Alsop was born in Middletown, Conn., in 1876. He received his education in the University of Berlin, Germany, and in the Sheffield Scientific School of Yale University. He has served two consecutive terms in the State Senate and was chairman of the Senate committee on roads, bridges and rivers and a member of the committee on claims.

E. E. Armstrong has succeeded D. G. Brandt as general superintendent of the Bartlesville (Okla.) Inter-Urban Railway and the Bartlesville Gas & Oil Company. Mr. Armstrong's past connections have been entirely with H. L. Doherty & Company, which operates those properties. After he was graduated from the electrical engineering department of the University of Missouri in 1913 he entered the Doherty organization through a connection with the Denver Gas & Electric Light Company, Denver, Col. He remained in Denver until the spring of 1915, when he was transferred to the Toledo Railways & Light Company, Toledo, Ohio. The following year he was sent to the New York office and remained there until his recent appointment.

Obituary

S. J. Rosamond, formerly superintendent of the Water, Light & Transit Company, Carrollton, Mo., died recently of heart failure.

Robert D. Miller, assistant treasurer of the Public Service Corporation of New Jersey, Newark, died on Oct. 23 at his home in Elizabeth, N. J. Mr. Miller was in his seventieth year.

R. K. Warren, who was for several years secretary and treasurer of the Mobile (Ala.) Street Railroad and president of the Spring Hill Railroad, died recently at the home of his mother in Independence, Mo.

Percy L. Cobb, an electrical engineer associated for the last year with the Interstate Commerce Commission, Division of Valuation of Railroads, died at Portland, Me., on Oct. 11, of typhoid fever. Mr. Cobb was a graduate of Stevens Institute of Technology. He was at one time connected both with the New York, New Haven & Hartford and Pennsylvania Railroads as instructing electrical engineer.

John Howard Hale, a member of the Connecticut Public Utilities Commission, died at his home at Glastonbury, Conn., on Oct. 12. Mr. Hale was one of the foremost horticulturists and peach growers in the United States and was a former president of the American Pomological Society. He was a member of the Connecticut General Assembly in 1893 and 1894.

Guy E. Mitchell, general manager of the municipal gas and electric lighting department of Westfield, Mass., died in that city on Oct. 18. Mr. Mitchell was formerly engaged in consulting work in New York City and in electric railway development in the Berkshire district, associated with the late R. D. Gillett of Westfield. He was a native of Lowell, Mass., and a graduate of the Massachusetts Institute of Technology.

Construction News

Construction News Notes are classified under each heading alphabetically by States.

An asterisk (*) indicates a project not previously reported.

RECENT INCORPORATIONS

Frankfort & Shelbyville Electric Traction Company, Shelbyville, Ky.—Incorporated to operate electric railways in the State of Kentucky. Capital stock, $750,000. Incorporators: F. D. Buck, M. L. Horty and K. E. Longfield, Wilmington, Del. [Oct. 13, '17.]

***Manitoba & Ontario Railway, Brereton Station, Man.**—Application will be made to the Parliament of Canada at its present session for an act to incorporate the Manitoba & Ontario Railway to construct and operate a line from Brereton Station, Man., to a point on the English River, Ontario. H. A. Stewart, Brockville, solicitor for the applicants.

***Cascade Scenic Railway, Winnipeg, Man.**—Incorporated to construct a scenic railway in Banff. Headquarters, Winnipeg. The provisional directors are as follows: T. R. Decan, ex-Mayor of Winnipeg; H. B. Lyall, E. J. Burleigh, J. A. McCullough and Edward Anderson.

FRANCHISES

Dayton, Ohio.—The City Railway has received a franchise from the County Commissioners to construct an extension of its Kammer Avenue division from the present terminus to Hoover Avenue in the West End.

St. Catharines, Ont.—A by-law has been passed by the City Council authorizing the Niagara, St. Catharines & Toronto Railway to construct an extension of its local line in St. Catharines.

Chester, Pa.—The Southern Pennsylvania Traction Company has received permission from the City Council to relocate its track on Edgmont Avenue.

Philadelphia, Pa.—The committee on street railways of the City Councils of Philadelphia voted on Oct. 18 that numerous errors in the wording and arrangement of the bill providing for the construction of a new crosstown line on Fifty-sixth Street by the Philadelphia Rapid Transit Company would have to be removed before it could safely be sent to the Councils for passage. A sub-committee was named to confer with City Solicitor Connelly and Director Twining in order to put the measure in proper shape.

Seattle, Wash.—Mayor H. C. Gill has approved the bill recently passed by the City Council adopting a plan for an extension of the city car line by the building of an elevated railway on Washington Street, Railroad Avenue, Whatcom Avenue and Spokane Street, from First Avenue South to the West Waterway.

TRACK AND ROADWAY

Clear Lake Suspended Monorail Railroad, Hopland, Cal.—The directors of the Clear Lake Suspended Monorail Railroad, which proposes to build a railroad from Hopland to Lakeport, have filed an amended application for permission to build before the Railroad Commission of California. Permission is asked to issue $500,000 in bonds and $150,000 in stock to cover the contract price to build the road, and for an additional sum to ratify a previous issue of stock, and $25,000 stock for purchase of a terminal site in Lakeport. The commission is also asked to approve the new survey of the route, made in July, which traverses the mountain range between Hopland and Lakeport, 22½ miles, at a maximum grade of 3.3 per cent on the Lake County side, where the heavier haul will come, and 4½ per cent on the Mendocino County side. [June 24, '16.]

Rockford City Traction Company, Rockford, Ill.—The Rockford City Traction Company has announced the opening of a 2½-mile extension to Camp Grant. The fare from Rockford to Camp Grant will be 10 cents and no transfers will be honored or issued.

Inter Urban Railway, Des Moines, Ia.—The Inter Urban Railway will double-track its line from Des Moines to Camp Dodge, 11 miles. The company has reached an agreement with army officials by which soldiers in uniform will pay a 15-cent rate to Des Moines instead of 10 cents and expects to begin work on the construction at once. It is hoped to complete about 4 miles of the double track this fall and to finish the work next spring. The problem of securing rails is causing the company considerable concern.

Wichita Railroad & Light Company, Wichita, Kan.—In accordance with an agreement reached between the city of Wichita and the Wichita Railroad & Light Company, the railway will construct an extension of its lines south from Douglas Avenue to the Orient shops before Jan. 1, and an extension to Harry Street, probably by Oct. 1, 1918.

West Jersey & Seashore Railroad, Camden, N. J.—Plans are being made by the West Jersey & Seashore Railroad for the immediate installation of an electric signaling system at its Bellevue Avenue station, Hammonton.

Public Service Corporation, Newark, N. J.—The Board of Works Commission has granted the Public Service Corporation permission to install its wires underground in Schiller Street, east of the Jersey Central tracks, to Port Avenue, and in Port Avenue from Schiller Street to Third Street, Elizabeth.

Buffalo (N. Y.) Southern Railway.—Formal notice has been served on Nathan A. Bundy, receiver for the Buffalo Southern Railway, by the Public Service Commission for the Second District of New York, that the company must immediately provide additional cars, improve its tracks between the Buffalo city line and Hamburg, Orchard Park, Ebenezer and Gardenville and secure a reserve supply of electric power. The order specifies that two cars must be bought immediately. The improvements would mean an expenditure of almost $20,000. Bondholders say the line does not earn sufficient money to warrant the additional expenditure, and John W. Ryan, attorney for the receiver, says he will bring mortgage foreclosure proceedings. Two offers to buy the line have been made to the receiver by individuals who plan to junk the properties.

International Railway, Buffalo, N. Y.—Construction work has been begun by the International Railway on its double-track extension of the Elmwood Avenue line from Hertel Avenue to the north city line, ½ mile. The line will serve the new $1,000,000 addition to the Curtiss aeroplane factory and other large war industries in this section. The company is also contemplating the construction of a modern passenger loading terminal in this vicinity.

Piedmont & Northern Railway, Charlotte, N. C.—The construction of an extension from Greenville to Camp Sevier is being considered by the Piedmont & Northern Railway.

Southern Public Utilities Company, Charlotte, N. C.—Two lines of double track are now being completed by the Southern Public Utilities Company between Camp Greene and Charlotte. Z. V. Taylor, president of the company, has stated that the camp lines are a part of the city system of Charlotte and the same fare and regulations will prevail on these tracks as on the other divisions of the company in Charlotte.

Brandon (Ont.) Municipal Railway.—It is reported that the Brandon Municipal Railway will construct an extension to Lake Piercy at an estimated cost of $55,000.

Niagara, St. Catharines & Toronto Railway, St. Catharines, Ont.—The Niagara, St. Catharines & Toronto Railway, a subsidiary of the Canadian Northern Railway, will be bought by the Canadian government if the bill recently passed by the House of Commons is approved by the Senate. The electric line connects St. Catharines and Niagara Falls, Ont., and Niagara-on-the-Lake and Welland, Ont. The electric line will be a nucleus of Sir Adam Beck's hydro-radial lines in the Canadian-Niagara frontier district. For several years the Dominion government has been making vigorous efforts to acquire electric lines in the Niagara district so as to connect Toronto, Ont., with the Niagara frontier at Niagara Falls, Ont., and Buffalo via the new International Railway line now under construction.

Dallas (Tex.) Southwestern Traction Company.—The Creek Construction Company, F. R. Perkins, 303 Gaston Building, Dallas, is in the market for 70-lb. relaying rails and new rails of the same weight, to be used in the construction of the line of the Dallas Southwestern Traction Company. [Oct. 22, '17.]

***Eastern Traction Company, Houston, Tex.**—A company is being organized to construct an interurban electric line from Houston to Orange via Beaumont, thence south to Lake Charles, La. Ed Kennedy, Houston, and associates are the promoters of the line. Financial support in the way of bonuses, also rights-of-way and sites for terminals are being given by the towns along the route.

Bamberger Electric Railway, Salt Lake City, Utah.—Automatic electric block safety signals will be installed by the Bamberger Electric Railway on its line between Salt Lake City and Ogden.

Salt Lake & Utah Railroad, Salt Lake City, Utah.—Operation has been begun on this company's new extension to Magna.

Lynchburg Traction & Light Company, Lynchburg, Va.—Work has been begun by this company double-tracking the upper end of Main Street from the carhouse to Fourth Street and on Fifth Street from Main to Church Street.

Seattle (Wash.) Municipal Railway.—The Board of Public Works of Seattle recently awarded a contract to the Seattle Frog & Switch Company for $6,518, for supplies for Division A of the Municipal Railway.

Tacoma (Wash.) Municipal Railway.—L. H. Bean, manager of the Tacoma Railway & Power Company, has agreed to operate the city's new tideflats car line on conditions named by the City Council.

Milwaukee Electric Railway & Light Company, Milwaukee, Wis.—The Commissioner of Public Works of Milwaukee has ordered the discontinuance of the use of the Sixteenth Avenue viaduct by the Milwaukee Electric Railway & Light Company as the viaduct is considered unsafe for interurban service. New switches and curves will be put in at National and Twenty-second Avenues and Twenty-seventh and Clybourne Streets and the cars diverted to the Twenty-seventh Street viaduct.

SHOPS AND BUILDINGS

New York, New Haven & Hartford Railroad, New Haven, Conn.—The Thompson-Starrett Company, New York, has received a contract from the New York, New Haven & Hartford Railroad for the construction of a new station at New Haven. The work will be carried out on a cost plus percentage basis.

Lexington, Ky.—Mayor Rogers and the City Commission of Lexington are considering plans for an interurban railway station on East Main Street. A three-story building is proposed, with tracks entering from Main Street and extending to a lot at the rear, where space would be provided for a loop on which to make turns.

Public Service Railway, Newark, N. J.—This company will construct a one-story frame storage building 48 ft. x 72 ft. at Passaic Wharf and Avenue R to cost $2,500.

New York Municipal Railway Corporation, Brooklyn, N. Y.—Bids will be received by the New York Municipal Railway Corporation until Nov. 1 for the installation of lighting, heating and train-announcing systems for stations on its Culver line in Brooklyn. Plans and further information may be obtained on application to the office of the chief engineer, room 602, 85 Clinton Street.

Eastern Texas Electric Company, Beaumont, Tex.—The new interurban terminal at Port Arthur has been completed by Stone & Webster, and the offices of the Port Arthur Light & Power Company and the ticket office of the Jefferson County Traction Company have been moved to the new structure.

POWER HOUSES AND SUBSTATIONS

Omaha & Council Bluffs Street Railway, Omaha, Neb.—A permit has been granted the Omaha & Council Bluffs Street Railway for the construction of a one-story power house on Randolph Street, between Drake Street and the river, to cost $15,000. William Baumeister has the contract for the building.

Manufactures and Markets

Discussions of Market and Trade Conditions for the Manufacturer, Salesman and Purchasing Agent

Rolling Stock Purchases   Market Quotations   Business Announcements

Supply and Demand on Pacific Coast

Extensive Interest in One-Man Cars, Rolling Stock for Sale—Normal Demand for Equipment and Supplies

Unlike Eastern conditions, in the territory west of the Rocky Mountains provision is not being made at this time of year for snow and sleet-fighting apparatus and car-heating equipment. Only very modest electric heating outfits are used even in the coldest sections of the Northwest, and companies in Central and Southern parts of the coast provide no artificial heating the year round. The approach of the rainy season, however, has led to the strengthening of overhead construction and the usual inspection of structures and bridges with the incidental fall maintenance. Temporary window sash are being installed in the open section of the so-called "California type" cars, and the recently adopted cloth curtains are already in evidence on several systems.

The most notable recent development in matters affecting equipment is the general tendency toward one-man cars. One manufacturer alone is now building for five Pacific Coast companies seventy-seven one-man cars, all of the same standard design. Sixty-seven of these are for use on the Stone & Webster properties in the Puget Sound district. Railway companies from San Diego to Vancouver are or have been studying the possibility of more successful competition with the automobile by the use of one-man cars.

One result of the widespread adoption of the one-man car idea has been an attempt made by many companies to rebuild obsolete rolling stock so that it can be handled by a single operator. This has been rather unsatisfactory, however, because the old equipment is invariably heavy, and even when rebuilt, under expensive labor conditions, so that one-man operation is feasible, the weight of the cars has prevented the desired power economies. This general experience is now reflected in the amount of second-hand equipment for sale by Pacific Coast electric railways.

Very little construction is under way, which reduces the demand for track and overhead materials to that quantity normally required in maintenance work. The demand on such materials for maintenance purposes is normal, or perhaps slightly more than normal at the present time, because work which could be deferred has for some time been postponed in the hope that prices would moderate. Several dealers, noting an increase of purchases in the last thirty to sixty days, have pointed out that this probably is caused by work delayed on account of prices up to the time when construction was imperative.

The same problem of meeting automobile competition, which has been paramount on the Pacific Coast for some time, continues to be the greatest difficulty confronting the electric railways. In California, for example, there is one automobile for every twelve persons.

The jitney situation, however, has been very materially improved through favorable legislation, and in many cities the jitney has been eliminated entirely. On the private automobile problem, much more difficult of solution, the greatest progress has been made by increasing the street car service. Where service has been improved the tendency to use private automobiles has decreased, and this has afforded much encouragement to railway operators.

New cars and railway motors are now quoted for six to eight months' delivery, and the manufacturers' agents are asking the companies to co-operate with them by anticipating their needs and stating them fairly. With the order a few months in advance, the factory can work it in when it can be handled most effectively. On the other hand, orders too far in advance are not solicited because of the likelihood of price changes. The distance from material markets and excessive delays likely in transit are such that Pacific Coast railway operators are becoming accustomed to anticipating their requirements six to twelve months in advance.

On tie plates, while the larger companies are quoting five to eight months' deliveries, a few smaller companies are quoting shipment in three to four months. The price is strong and movement fair. Rail benders have advanced 25 per cent in the last two months, rail braces 15 per cent, and light steel handcar wheels 20 per cent. Deliveries on the latter are two to three months. Trolley poles cannot be promised for delivery in less than fifteen months, but the price remains the same as last February.

Trolley wheels are not active, although deliveries are good. This is probably accounted for by the fact that many Pacific Coast companies are now making their own trolley wheels. Trolley rope has advanced 10 per cent in the last three months, probably because of the government's demands on the cotton market. Thus the present price is about 63 cents for rope that sold before the war for 36 cents. One result of this is that several companies are using window sash cord, whose cost is about half the better grade. With favorable weather, however, its life is estimated to be half as long. Pole line material is quoted for thirty to sixty-day delivery, but orders are light.

The upward trend in prices, as indicated by the foregoing, is general throughout all lines and over the entire coast. The feeling seems to be that prices have not yet reached the top. Price increases have come so steadily that it is not unusual to correct estimates every few weeks on work that has not been definitely ordered immediately after first estimate.

Market for Pneumatic Tampers Growing Rapidly

Railways Are Generally Interested Owing Primarily to the Condition That Prevails in the Labor Market

The demand for air tampers in the steam railroad and electric railway work is rapidly increasing. The Eastern steam railroads were the first to appreciate the advantages of this means of tamping track and they are now using these machines in large numbers. The New York Central, for instance, has already equipped or ordered equipment for the greater portion of its lines. The Pennsylvania Railroad is also using the tamping tools extensively. It is said that every steam and electric railway entering New York City is using pneumatic tampers.

The Western roads are more recently showing considerable interest in this method of maintaining their roadbeds and of bringing new construction to grade. The majority of them either have outfits on trial or have passed the experimental stage and purchased one or more of the outfits. The electric railways, urban and interurban, are rapidly substituting pneumatic tamping for hand work, principally for the reasons that the labor saving is apparent and that labor is very hard to obtain. On interurban lines the tamping operation is of primary importance, while on city work, the ability of the tamping machines when fitted with special picks, to break up asphalt or concrete paving, is of great importance in inducing the railways to make use of the device.

The Twin City Rapid Transit Company, the Milwaukee Electric Railway & Light Company, the Tri-City Railway & Light Company of Davenport, the Grand Rapids (Mich.) Railway, the Omaha & Council Bluffs Street Railway and other Western electric railways are making use of the pneumatic tamping outfits and report savings in maintenance and tamping costs. The Chicago Surface Lines is trying out four tools in connection with extensive reconstruction work on Twelfth Street, where the tools are being used both for cutting concrete and for tamping ballast.

During the past summer there has been a demand for these tools which has kept the factories running to their capacity all the time. This resulted in a delivery period as long as four months during the early part of the summer, with a shortening of this period as the close of the construction season approached. The principal demand, of course, comes in the late winter and early spring, and those companies which are anxious to have outfits delivered to them for the early spring must place their orders early in the winter to assure timely delivery.

Manufacturers Justified in Forcing Standardization

Railway Men Can Also Hasten Benefits by Not Buying New Devices Only Slightly Different from Old Standards

By S. R. Dunbar
Purchasing Agent Union Traction Company of Indiana, Anderson, Ind.

Standardization is an important question—one that does not require any discussion beyond the ways and means of accomplishment. Progress must necessarily be slow if the matter is left to the railway men to solve. But because of the unusual times we are living in, and the consequently strong advantages to be gained from an immediate furthering of standardization, it would seem that the manufacturers should themselves undertake to promote the cause by endeavoring to convince buyers and engineers that there are too many articles now on the market which serve either identically or practically the same object. The large manufacturers have continually brought out articles which have been only slight improvements or simple alterations of previous designs to meet special conditions, real or imaginary, on different properties. Thus a demand has been created and maintained for many designs of the same device.

Our government at this time asks us not to put money into new enterprises which will not further the prosecution of the war. Large manufacturers cannot altogether control the production of new devices, but before they themselves start making a new device they should be sure that it furnishes a material and important improvement and economy over previous designs. There always will be and should be smaller manufacturers of new devices. Here is the opportunity for the railway engineers and buyers to discourage multiplicity of articles serving practically the same purpose, by doing as the manufacturers should do, particularly at this time; that is, they should refuse to consider a new device unless it unquestionably shows a marked improvement in economy over the old standard.

Possibly the main reason for the slow progress of standardization in the past has been the fact that there is a great deal of old equipment in use by railway companies which they cannot afford to discard and for which the manufacturers must therefore continue to make the parts. Only in comparatively few instances is it possible to throw away old equipment and save enough money through reduced maintenance expense to pay the interest on the additional investment. However, much can be accomplished if the manufacturers would persistently endeavor to convince buyers and engineers of the advantages of reducing the number of articles which are now being offered to take care of the same conditions. Under present conditions in the manufacturing world, it would seem to be entirely justifiable for the manufacturers even to refuse to furnish such articles as they can, after thorough investigation, convince themselves are not needed because of the existence of superior articles which serve the same purposes. Many manufacturers have sold out their old stocks of practically obsolete materials and now it would seem entirely practicable for them to discontinue the manufacture of those articles which can be done without at very little inconvenience to the user, and thus utilize this effort in concentrating upon the badly needed standard supplies.

Wood Timbers May Come in for More Extensive Use

Cost of Steel Shapes and Long-Delayed Deliveries Make Wood Construction Tempting

The very high prices and uncertain delivery of steel shapes and reinforcing materials have acted to remind the designer and engineer that wood structures have distinct advantages in standard construction under present market conditions. Recent reports show instances in which substantial heavy timber highway bridges could be built at a cost less than the difference between the cost of a steel bridge at present prices and at normal-time prices. The same comparison would very likely hold true, referred to a railway bridge.

Mill construction buildings may be built at a saving of 20 to 25 per cent as compared with the cost of the same building in reinforced concrete, with an additional saving of about 25 per cent in time required for erection, according to the National Lumber Manufacturers' Association.

Japanese Mission Here

A special mission representing the Imperial Japanese Railways has arrived on the Pacific Coast and will undertake at once a study of American transportation and industrial conditions. Secretary Redfield has arranged for the entertainment of the mission until it reaches Washington and has designated a Japanese-speaking representative of the Bureau of Foreign and Domestic Commerce to conduct the members personally on their trip across the country. The object of the visit is to investigate the present transportation conditions in the United States, to inspect the principal industrial plants and mines, to study the loading and unloading of cotton, and to observe the methods employed in the large railroad sorting yards.

The Imperial Japanese Railways are represented on the mission by Jiro Nakamura, assistant traffic manager; Akio Kasama, secretary and purchasing agent; Dr. Yasujiro Shima, director of machinery and rolling stock; and S. Kobayashi, resident engineer at New York.

NEW YORK METAL MARKET PRICES

	Oct. 17	Oct. 24
Prime Lake, cents per lb	23½	23½
Electrolytic, cents per lb	23½	23½
Copper wire base, cents per lb	35	32
Lead, cents per lb	7	6¼
Nickel, cents per lb	50	52
Spelter, cents per lb	8¼	8¼
Tin, Straits, cents per lb	61	62½
Aluminum, 98 to 99 per cent, cents per lb	37	37

OLD METAL PRICES—NEW YORK

	Oct. 17	Oct. 24
Heavy copper, cents per lb	23½	23½
Light copper, cents per lb	23¼	20½
Red brass, cents per lb	19	19
Yellow brass, cents per lb	16¼	16¼
Lead, heavy, cents per lb	7	5¾
Zinc, cents per lb	6	5¾
Steel car axles, Chicago, per net ton	$41.00	$41.00
Old car wheels, Chicago, per gross ton	$27.00	$27.00
Steel rails (scrap), Chicago, per gross ton	$34.00	$33.00
Steel rails (relaying), Chicago, per gross ton	$55.00	$55.00
Machine shop turnings, Chicago, per net ton	$15.50	$15.50

RAILWAY MATERIALS

	Oct. 17	Oct. 24
Rubber-covered wire base, New York, cents per lb.	35	34–35
Rails, heavy, Bessemer, Pittsburgh	$38.00	$38.00
Rails, heavy, O. H. Pittsburgh, per gross ton	$40.00	$40.00
Wire nails, Pittsburgh, per 100 lb	$4.00	$4.00
Railroad spikes, 9/16 in., Pittsburgh, per 100 lb.	$5.50	$5.50
Steel bars, Pittsburgh, per 100 lb	$4.50	$5.00
Sheet iron, black (24 gage), Pittsburgh, per 100 lb.	$9.55	$9.55
Sheet iron, galvanized (24 gage), Pittsburgh, per 100 lb.	$8.85	$8.85
Galvanized barbed wire, Pittsburgh, cents per lb.	4.85	4.85
Galvanized wire, ordinary, Pittsburgh, cents per lb.	4.65	4.65
Cement (carload lots), New York, per bbl	$2.22	$2.22
Cement (carload lots), Chicago, per bbl	$2.31	$2.31
Cement (carload lots), Seattle, per bbl	$2.65	$2.65
Linseed oil (raw, 5 bbl. lots), New York, per gal.	$1.17	$1.17
Linseed oil (boiled, 5 bbl. lots), New York, per gal.	$1.19	$1.18
White lead (100 lb. keg), New York, cents per gal.	12	12
Turpentine (bbl. lots), New York, cents per gal.	51	51

Rail Bond Prices Reduced

Instead of an advance on rail bonds being announced on Oct. 1, as mentioned in the ELECTRIC RAILWAY JOURNAL of Oct. 13, the discount was changed from 10 to 17½ per cent on that date. This means a decrease in bond prices rather than an increase.

ROLLING STOCK

Edmonton (Alta.) Municipal Railway has accepted the Smiley Company's tender of $4,060 for eighty new car wheels, as recommended by the City Commissioners.

Calgary (Alta.) Municipal Railway, through the City Commissioners, has placed an order for fifty new car wheels of manganese steel, to cost $2,537.50, with the United States Steel Corporation.

Brooklyn (N. Y.) Rapid Transit Company, which is in the market for 250 pressed-steel center-entrance cars, as noted in the ELECTRIC RAILWAY JOURNAL of Sept. 8, instead of opening the bids submitted on Oct. 15, as was expected, postponed the entire matter without date. This action was taken by the company pending the litigation being carried on with the Public Service Commission for the First District, and on which argument was heard last week in the Supreme Court of the State of New York, Appellate Division, First Department. Decision was reserved.

International Railway Company, Buffalo, N. Y., has placed the first of the order for 100 front-entrance center-exit Peter Witt cars with the Kuhlmann Car Company, Cleveland, Ohio. All of the cars will be sent to Buffalo under their own power over electric lines between Cleveland and Buffalo. The new type of car will be exhibited on a dead track in Niagara Street, near Shelton Square, in the heart of the business section of Buffalo so that it can be inspected by the public before it is placed in service. The company expects to have most of the new cars in operation before Dec. 1.

TRADE NOTES

C. H. Koehler has resigned as engineer of the Economy Electric Devices Company, Chicago, Ill.

Garfield (N. J.) Manufacturing Company is the new company name of the Hemming Manufacturing Company.

Ward Electric Company, Mount Vernon, N. Y., is now represented in St. Louis, Mo., by the Morse Engineering Company.

Laclede-Christy Clay Products Company, St. Louis, Mo., has its general offices in suite 1673 Railway Exchange Building, which will hereafter be headquarters.

Holden & White, Inc., has been appointed sales agent for the air rectifier manufactured by the National Safety Device & Manufacturing Company, for the states of Indiana, Ohio, Illinois, Wisconsin, Iowa and Nebraska.

General Electric Company, Schenectady, N. Y., is having plans prepared for the construction of a new two-story drop forge shop, about 85 ft. x 400 ft. The company will also build a new one-story and basement substation, 48 ft. x 100 ft.

Condensite Company of America, Bloomfield, N. J., has formulated certain provisions regarding shipments in order to facilitate work being done for the government. The company is assured by the Council of National Defense that merchandise so identified will be given preference by transportation companies.

Consolidated Car Heating Company, Albany, N. Y., writes that it can deliver car heaters more quickly than was stated in a review in this department, published Oct. 13, in referring to car heaters. In fact, owing to a careful gaging of orders and deliveries of the raw materials used in the manufacture of its electric heaters, it is prepared to make prompt delivery.

Atlantic Welding Company, New York, and Lincoln Bonding Company, Cleveland, have made a joint sales agreement whereby each company and its agents will act as sales agent for the other in addition to exploiting its own products. The specialty of the Atlantic Company covers Universal welding equipments for many classes of rail welding, including the Gailor joint; that of the Lincoln company bonding machine of dynamometer type and Lincoln type bonds therefor.

Westinghouse Air Brake Company, Wilmerding, Pa., at its annual meeting Oct. 18, had under review the business of the company, which closely reflects the general conditions of affairs. While the volume of business has been large, the difficulty of securing adequate labor and sufficient material has been and remains acute. Prices paid for supplies of all kinds have advanced so far beyond previous quotations that experience in forecasting the future has been of little avail; and taxation is unprecedented. The net profit for the year is $6,388,426.88, as compared with $9,396,103.48 in 1916, and $1,575,838.50 in 1915. The brake business of this year exceeded that of the last year by 20 per cent. The Union Switch & Signal Company, a subsidiary, has made rapid progress in the rehabilitation of its Swissvale plant, partially destroyed by fire Feb. 10. It is expected the new shops will be in full operation by the close of the year. The temporary buildings have, however, been utilized to the fullest extent. The current demand for brake equipment exceeds the company's immediate productive capacity. Including business booked for export, the value and volume of unfilled orders on hand surpasses the normal figure at this season of the year.

NEW ADVERTISING LITERATURE

General Electric Company, Schenectady, N. Y.: Bulletin No. 45,505 describes in detail and illustrates interestingly the company's induction voltage regulators.

Worthington Pump & Machinery Corporation, New York, N. Y.: Bulletin No. W-308 has been prepared descriptive of the company's Worthington duplex piston pattern pumps for general service.

Armstrong Cork & Insulating Company, Pittsburgh, Pa.: A folder, "Nonpareil Insulating Brick for Boiler Settings," is now ready for distribution, and copies will be forwarded to applicants free of charge.

E. I. du Pont de Nemours Company, Wilmington Del.: A booklet, from this and associated companies, contains a list of all their manufactured products, but does not indicate who uses them nor how they are used. It will be sent upon application.

Department of Commerce, Washington, D. C.: Under the supervision of W. M. Steuart, chief statistician for manufactures, a special pamphlet "On Electrical Machinery, Apparatus and Supplies" has been prepared and is now ready for distribution. The statistics presented with the accompanying comments are interesting.

John A. Roebling's Sons Company, Trenton, N. J.: Revised edition of its well-known pocket book, "Wire in Electric Construction," containing data of value to the electrical engineer. The data are of a general nature and are in no way selected to advertise Roebling products. The book comprises about 150 pages and is bound in cloth.

Franklin (Pa.) Manufacturing Company: What is considered to be the "first word" on "Journal Box Packings," prepared by this company for free distribution and designated as catalog FC 6-17, gives the history and describes in detail the proper treatment and handling of this important subject. The pamphlet, which is artistically illustrated, is mentioned as surely the first endeavor to submit any scientific discussion of a matter of interest to railway mechanical men on equipment and operation. Some of the points brought out are rather unexpected.

Lewis & Roth Company, Philadelphia, Pa.: Bulletin No. 21, descriptive of its electric switches. The bulletin is said to be the most complete ever issued for this line of apparatus, 1013 combinations of disconnecting switches being listed. The book shows care in preparation and contains sixty pages of useful information. The arrangement is orderly, eliminating need for hunting for wanted items. This company has also prepared bulletin No. 20, descriptive of its switchboard and structural devices and fittings. The list contains a complete outline of drawings, weights, catalog numbers, etc., which are necessary in the proper selection of materials.

Electric Railway Journal

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Consolidation of STREET RAILWAY JOURNAL and ELECTRIC RAILWAY REVIEW

Volume 50 NEW YORK, SATURDAY, NOVEMBER 3, 1917 Number 18

Trolley Express Service in Connecticut and Elsewhere

IN many sections of the country electric railways having interurban lines are in a position to add to their income, without increasing their expenses proportionately, by doing a high-grade trolley express business. This is a strongly competitive field because the steam railroads and the commercial express companies, as well as the government post-office department, are all engaged in the transportation of merchandise. If the electric railways are to get the business which is legitimately theirs it must be on a basis of superior service and not through rate cutting, which makes the service really unprofitable when all elements of cost are considered. The growth of the business indicates that the circumstances are appreciated, and this growth should be stimulated by the military transportation which is bound to be an important factor of the military operations generally. The work of a number of typical express and freight departments has been described in the columns of the ELECTRIC RAILWAY JOURNAL from time to time, and in the present issue is some information regarding this department of the Connecticut Company. On this property the work is in charge of a man who has been trained in the commercial express business and has but recently come into the electric railway field. He is trying to apply the principles of the express business to the operation of his department, and a recent inspection of all of the important traffic centers on the property by a representative of this paper indicates that his methods are effective. To be sure, the Connecticut Company is very fortunately located for the building up of express service as it ties together with comparatively short lines some of the most prosperous manufacturing communities of the country. Many roads could not support so elaborate an organization. However, the experience of this company should prove in some way suggestive to managers of other properties where express traffic already exists or can be developed.

Another Supporter Gained for Policy of Educating the Public

THE New Jersey Utilities Association has just taken a praiseworthy step in indorsing the policy of educating the public as to the real situation confronting public utilities. The stirring call for action in Professor Conway's address, abstracted on another page, met with instant response at the Atlantic City convention last week. The association unanimously voted to have the address printed in pamphlet form and to urge each member company to include a copy with every gas and electric light bill sent out next month. In addition, it was agreed by all that utilities must cease being secretive. They must seek publicity, furnishing facts freely and openly and endeavor in every way and at all times to keep their situation and problems constantly before the public. This is in line with one of the stated objects of the new American Electric Railway Association committee of which Mr. Choate is chairman, and shows that the publicity movement is finding converts. Others, we hope and believe, will follow quickly. Indeed, it is not over-sanguine to predict that before a year rolls around, utilities the country over will be actually fighting to get the facts of higher operating costs before the people. A movement of this character, however, as Professor Conway well says, can succeed only in case the companies are entirely frank and truthful. They must convince the public that they are "on the level." At times this may involve unpleasant admissions. We all know that operation cannot be faultless or mistakes unknown. Yet the only policy which will win is a full and frank statement of the unfavorable as well as the favorable facts. The bad features in your case will eventually be probed. Meet them in advance and gain the great advantage of having the public learn the facts rather than a garbled version put out by some ill-informed or insincere and unfair critic.

Pointing Out to the Public the Responsibility of the Commissions

ANOTHER feature of Professor Conway's address which evoked general indorsement from the New Jersey convention was the suggestion that the utilities must see to it that the responsibility for unfair, capricious or short-sighted action on the part of the commissions must be clearly pointed out to the public. The utilities must see that the public understands what unwise decisions will accomplish and must unceasingly point to the evil results after they have accrued. There is nothing sacrosanct about commissions. Perfection of judgment is impossible even with the most learned courts, possessing the advantage of centuries of experience, as codified in the rules of law and the precedents of earlier decisions. The public service commissions are blazing a trail through an uncharted land. They have few precedents and little experience. The construction now placed upon their powers by the higher state courts leaves them practically the sole arbiter as to the facts and the interpretation to be placed thereon. Their power is infinitely greater than that of any minor court. A commission can so phrase its opinion as to leave a company little chance of a successful appeal. Under these circumstances, the only method of securing any adequate check upon an inefficient commission is through intelligent, fair-minded, constructive criticism of its decisions. Such criticism must largely emanate from the utilities themselves, for they alone are in constant touch with the situation and intimately acquainted with the facts. Criticism of a particular court or commission decision by the unsuccessful litigant is of limited value, but criticism of a policy, as disclosed by a decision or a line of decisions, by all of the utilities after mature deliberation and careful investigation would be of tremendous value. No commission could afford to ignore a well-deserved indictment of this character. A successful democracy is dependent upon the existence of intelligent and fair-minded criticism of the work of the several instrumentalities of government. Even the United States Supreme Court cannot escape this corrective—indeed, it is very unlikely that it would desire so to escape even were it possible. The public service commissions must expect and receive similar treatment. Upon such criticism depends the eventual success of the experiment of regulation of public utilities.

Cut Rate Tickets Are Unjust to Public and Road

IN the discussion which is going on throughout the country concerning the necessity for revising the basis of fares for electric railways, little attention has thus far been given to the cut-rate ticket. It is true that electric railway companies in many instances have endeavored to abolish the sale of strip tickets, such as six for a quarter, as a part of their campaign for higher revenues. The tendency manifested in certain quarters to grant to a company a higher rate for a cash fare, and at the same time largely neutralize the resultant financial advantage by making provision for tickets to be sold at a rate of approximately 5 cents a ride, is most discouraging. Such a practice places a premium upon dishonesty of conductors and largely prevents the company from securing what it is striving for. A relatively small reduction in the average rate of fare for those purchasing tickets—such as the sale of seventeen tickets for $1, together with a 6-cent cash fare, as in the case of the Connecticut Company—is justifiable. The premium upon dishonesty of conductors is so small that no serious abuse will probably develop, while at the same time no undue burden is placed upon those who, for any reason, do not see fit to invest a dollar in car tickets.

Some companies are compelled by municipal ordinances to sell workmen's tickets, good either on certain cars or on all cars during certain hours of the day, at rates much below the standard fare. This practice was largely copied from Europe, where it originated at a time when the average workman's earnings were very small as compared with present-day American standards. The workman of to-day is well paid. His earnings are frequently in excess of those of clerks and other office employees. Under such circumstances a special rate for workmen is indefensible as an economic policy, and it is grossly unfair to the company because the cut-rate service must be provided at a time when operation is more expensive than at any other period of the day.

An illustration in point is furnished by the situation of a certain electric railway operating in a mining district. This company has been selling miner's tickets under certain restrictions at the rate of 3 cents per ride. The practice has been one of long standing. The average miner in this district who works steadily is earning about $35 a week. The mere comparison of the wages earned by these men with those of other workers in the same community exposes the fallacy of a cut rate to this class of rider.

Special rates of fare, such as workmen's tickets, are undemocratic. They are in direct contravention of the spirit of the public service law in every state and constitute a relic of the days in which the average worker's earnings were but a small fraction of what he is making to-day. They are also contrary to the spirit of this country in which nearly every citizen is a workman, and to be capable of useful work and not to perform it is not a badge of honor but of dishonor. If there was ever a necessity for such rates it has long since passed. They should have disappeared with the passes which railways used to issue to politicians and others supposed to be influential in the community. In the general revision of the electric railway charges which is about to occur the companies should make determined efforts to effect the elimination of this most unfair provision.

Help the Country by Hauling Freight

NO doubt, one of the most pressing military and industrial needs of the present day is more transportation, particularly of freight. It is well known that the steam railroads are congested, but we have not yet reached the maximum demand on our transportation systems. When the munitions and other supplies now being manufactured for the use of our troops abroad come to be shipped in increasing volume, as they will be as more troops cross the Atlantic, our internal system of transportation will have an even greater burden than at present to bear. This is where the electric railway companies can and should give practical help. To assist in this work is the purpose of the American Association committee on military transportation, whose meeting in Washington last week was mentioned in our issue of Oct. 27.

To get the maximum of results, every agency capable of efficient service in interior transportation will have to be utilized in the kind of freight transportation for which it is best fitted. Necessarily a great deal of the haulage required by the military authorities will be through traffic to the seaboard, but this can be undertaken by the steam railroads to better advantage if the electric railway lines will take over some of the short-haulage business, especially that which otherwise would have to pass through large city freight terminals.

Much has already been done in the way of cataloging and charting the facilities for electric railway freight transport by the American Electric Railway Association and the Central Electric Railway Association, so that the ground work has been laid. But the railways themselves must realize their responsibilities in the matter, both to advance the general plan and to develop the possibilities on their individual systems. The truth is that most companies have so long ignored these that it is not surprising that shippers and the public in general should also be largely unaware of the advantages of electric railway freight transportation and should think first of motor trucks as a supplement to the steam railroads.

Undoubtedly the motor truck has an important place in the field of freight haulage. There is a dividing point, however, as regards distance where haulage on highways by gasoline power is less economical than haulage on rails with coal as the primary power. This point varies with the number of transshipments necessary in the rail transportation, the condition of the highways, the cost of fuel, maintenance, etc., for each motive power, as well as other factors. But under average conditions we believe that electric railways should be seriously considered as against the motor truck for all distances exceeding about 10 miles, and often will be more economical than the motor truck for distances less than that. The possibilities of electric railway freight transportation are shown by some facts in this issue about what has been done in Connecticut, as well as by the package express business about Cleveland, Detroit and a number of other cities of the Central States.

A special opportunity for electric railway freight transportation is now being afforded by the cantonments located in different parts of the country. Many of them are in close proximity to cities from which they must obtain the greater part of their supplies. Most of them have temporary steam railroad sidings entering the cantonment, but the commissary requirements of an organization of 20,000 to 40,000 individuals are so great that some other system or several systems could well supplement any service which the steam railroads can put in temporarily. This is especially true with regard to the receipt of provisions, because, with its quicker service, an electric road could often carry meat, fruit, milk and other perishable goods from cities to cantonments without the necessity of refrigeration.

In our opinion two things are necessary for the further development of electric railway freight haulage under the present conditions. (1) Each electric railway company should study how best it can undertake this work and what changes in its equipment or extensions of its lines are necessary and should then make an effort to develop its own freight business. (2) The association should co-operate with this work, especially to bring the possibilities of electric railway freight transportation to the attention of the War Department and assist different companies to secure freight and extension rights where they are necessary.

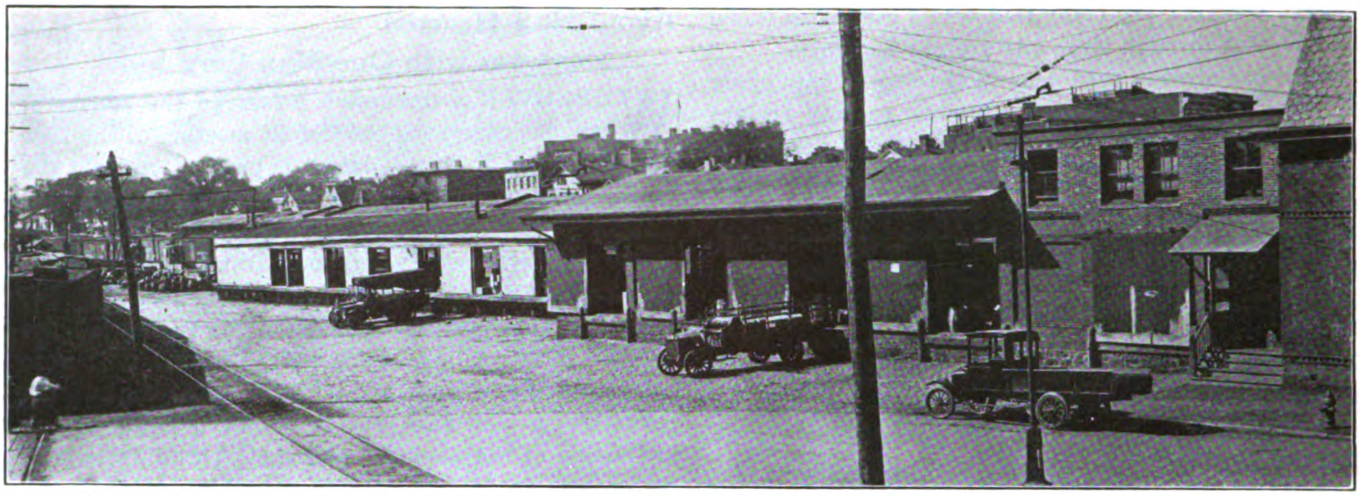
Avoid Half-Hearted Measures with One-Man Cars

WHEREVER a discussion arises on the merits of one-man cars, as at the Oct. 26 meeting of the New England Street Railway Club, it is brought out that the revolutionary difference between the automatic and manual types of one-man cars is not yet as clear to all railway operators as it should be. To talk about one-car stub or shuttle lines is one thing; to talk about services from ten minutes down to five minutes or less is quite another thing. One-man cars of automatic type were not invented to handle one-tenth of 1 per cent of the car-miles on a system, but to handle a large enough proportion of the car-miles to make a real difference in the company's finances. In fact, within certain limits the automatic type is capable of handling all the car-miles of most electric roads.

Therefore, it is a needlessly half-hearted policy to initiate one-man car operation on the routes that are of least importance and to use for them slightly rebuilt cars that have no attractions for either the car operator or the car user. The place to initiate one-man operation is on a line of real revenue value, and the cars to do it with should have all the accessories that are necessary to insure safety and to make the schedule speed appreciably excel the service superseded. To follow the policy of playing around the fringes is simply to waste precious time and to create a natural prejudice against the extension of poorly-camouflaged cars to the through routes. In the now classic Fort Worth case, the Northern Texas Traction Company boldly selected one of its hardest lines for the inauguration of safety car service, and car men and the public approved this choice so heartily that more equipment of the same type were recently demanded by long-distance telephone!

The greater equipment complexity of the automatic type one-man car is no more a valid objection than is the complexity of the air brake or of indirect control as compared to hand brakes and direct control. Every function transferred from the man to the device naturally increases the complexity of the device, but that greater complexity is justified if the functions so transferred—as braking, sanding, door opening and door closing—are carried out with greater speed and certainty than was possible by hand. It is immaterial whether it does or does not cost two or three times as much to maintain such automatic equipment because the increased revenue value of the car is far more important than a few dollars more for maintenance.

To conclude: This is no time for half-way measures or for half-way cars. Better do one line at a time and do it right than fuss with home-made hand-operated equipment that cannot meet such fundamental conditions of the new electric railway operation as high rate of acceleration, high rate of braking, pneumatic door and step control, normal and emergency safety interlocking, low steps, cross-seating, accurate time point running and headways which are short enough to eliminate competition and to create as well as hold the patronage of the public.



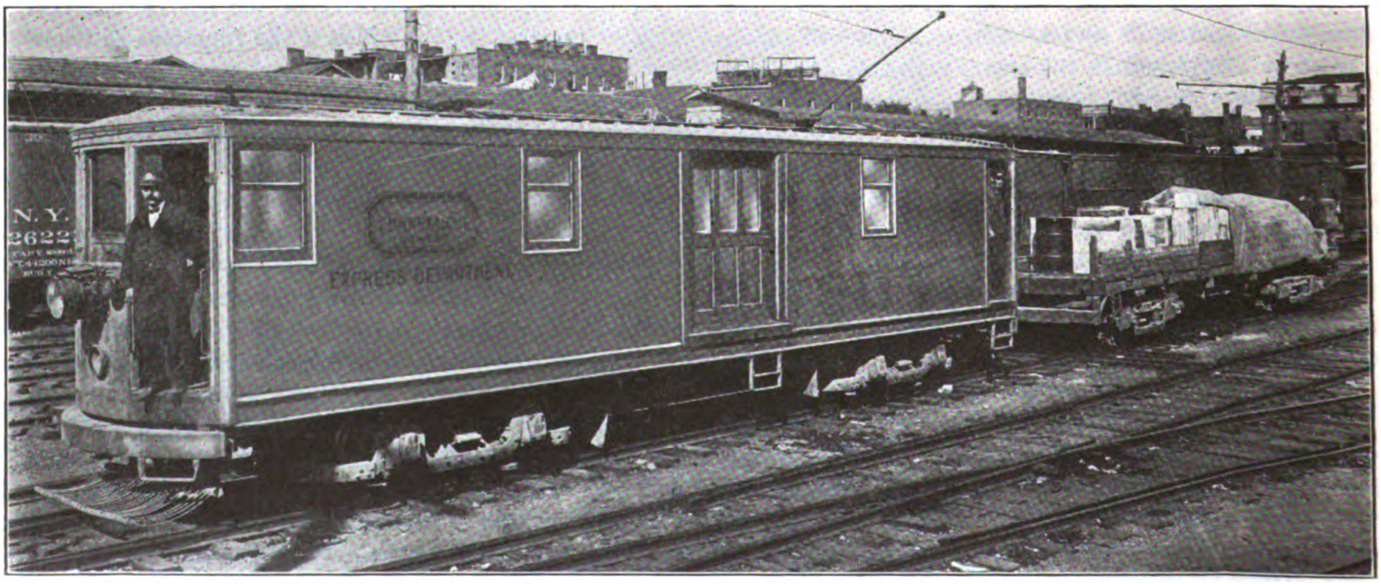
CONNECTICUT COMPANY EXPRESS TRAFFIC—TEAM SIDE OF NEW HAVEN TROLLEY EXPRESS STATION

Trolley Express Service in a Busy Industrial Community

The Connecticut Company Has Built Up an Express Business Along Modern Lines, Utilizing as Far as Possible the Experience of Express Companies in Making Its Service Attractive and Profitable

IN common with many other electric railway systems having interurban lines the Connecticut Company has for many years been developing its freight and express business with a view to making a reasonable profit and providing a proper share of the fixed charges on the company's investment. The company's property is favorably situated for express traffic, as it is in a section closely dotted with prosperous manufacturing communities. The activities of the section were greatly stimulated by the European war, and these activities have been increased by the participation of the United States in the conflict. With its nearly 700 miles of track the company covers and connects New Haven, Hartford, New Britain, Waterbury, Bridgeport, Ansonia, Norwalk, Stamford, Middletown and numerous less important cities and villages. A circle 50 miles in radius will cover practically all of the cities which require extensive express service, which indicates the compactness of the territory from the transportation standpoint.

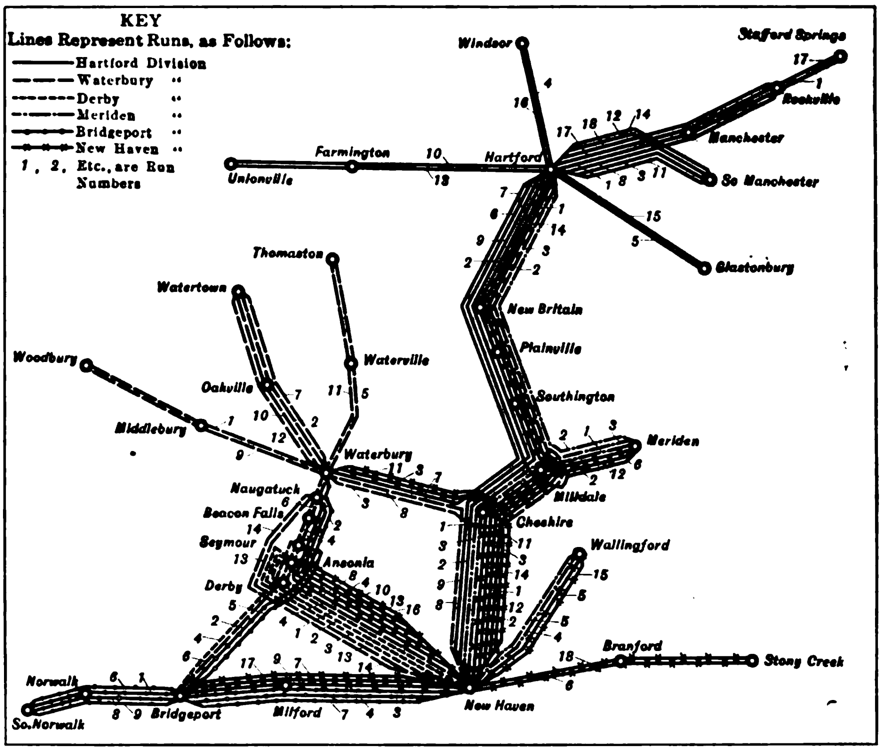
In its freight and express business the company is giving not only the regular service covered by timetables, but is also developing a number of special services for individual industries. In the regular express work twenty-eight double-truck box motor cars and nine double-truck flat motor cars are employed, and there are also twenty-four dump cars for carrying sand, gravel, broken stone, etc. An example of special service is in transporting concrete for use in a road-building



CONNECTICUT COMPANY EXPRESS TRAFFIC—TYPICAL EXPRESS CAR AND TRAILER operation carried out this fall. The contractor equipped with bins the concrete-carrying car shown in one of the illustrations on page 804, and the railway company undertook to haul it back and forth between the mixing plant and the job in the limited time permissible with mixed concrete. The company was put to no extra investment expense in this case. On this same job the sand and stone for the concrete were received at the railway company's wharf in New Haven, loaded by derrick from the barges to the dump cars, and transported to the mixer, the railway having a complete equipment for such service. The railway thus performed for the contractor several of the most important elements of his contract, leaving him to concentrate attention on the mixing and placing of the concrete.

Another example of such service is the furnishing of transportation between two parts of the plant of the Chase Rolling Mill Company in Waterbury. This company has two yards, separated about 2 miles, between which much material must be carried. With little new construction the Connecticut Company was able to furnish direct connection between the yards and has done a satisfactory business over the "Chase Rolling Mill Branch." On another part of the system is a large peach orchard. By furnishing special fast service to this industry it has been possible to deliver peaches in fine condition and a large seasonal traffic has been developed.

At present there are thirty-five stations to and from which regular service is given, located as shown in the accompanying diagram of runs. Merchandise is also, of course, picked up along the routes. At some points



CONNECTICUT COMPANY EXPRESS TRAFFIC—DIAGRAM OF EXPRESS CAR RUNS

HARTFORD DIVISION

Run No.	Leave	Arrive	Miles
1	Hartford.............7:25 A.M.	Stafford Springs.......11:00 A.M.	29.89
*2	Hartford.............8:00 A.M.	New Haven..........3:00 P.M.	42.97
3	Hartford.............8:00 A.M.	So. Manchester.......8:45 A.M.	8.57
4	Hartford.............9:30 A.M.	Windsor-Rainbow.....11:00 A.M.	6.68
5	Hartford.............9:55 A.M.	So. Glastonbury......11:30 A.M.	6.12
6	Hartford.............10:00 A.M.	Meriden.............2:00 P.M.	29.48
*7	Hartford.............12:00 M.	Waterbury...........5:00 P.M.	37.95
8	Hartford.............2:25 P.M.	Rockville............4:00 P.M.	17.18
*9	Hartford.............3:00 P.M.	New Haven...........9:00 P.M.	42.97
10	Hartford.............3:55 P.M.	Unionville...........5:00 P.M.	13.24
11	Hartford.............4:00 P.M.	So. Manchester.......4:45 P.M.	8.57
12	So. Manchester.......6:15 A.M.	Hartford.............7:00 A.M.	8.57
13	Unionville...........8:00 A.M.	Hartford.............9:00 A.M.	13.24
14	So. Manchester.......9:15 A.M.	Hartford.............10:00 A.M.	8.57
15	So. Glastonbury......12:00 M.	Hartford.............1:00 P.M.	6.12
16	Windsor-Rainbow.....1:00 P.M.	Hartford.............2:00 P.M.	6.68
17	Stafford Springs.......12:00 M.	Hartford.............2:30 P.M.	29.89
18	Rockville.............5:00 P.M.	Hartford.............6:30 P.M.	17.18

WATERBURY DIVISION

1	Waterbury...........7:30 A.M.	Woodbury............8:30 A.M.	12.38
2	Waterbury...........8:45 A.M.	Watertown...........9:30 A.M.	5.13
*3	Waterbury via Cheshire10:30 A.M.	Hartford.............3:00 P.M.	37.95
4	Waterbury via Derby..10:45 A.M.	New Haven..........4:00 P.M.	29.82
5	Waterbury...........12:00 M.	Thomaston...........1:15 P.M.	10.10
6	Waterbury...........3:30 P.M.	Bridgeport...........9:00 P.M.	34.02
7	Waterbury...........4:00 P.M.	Watertown...........4:45 P.M.	5.13
8	Waterbury via Cheshire 6:30 P.M.	New Haven...........8:30 P.M.	24.59
9	Woodbury...........9:30 A.M.	Waterbury...........11:30 A.M.	12.38
10	Watertown...........9:45 A.M.	Waterbury...........10:30 A.M.	5.13
11	Thomaston...........3:00 P.M.	Waterbury...........4:00 P.M.	10.10
12	Watertown...........5:00 P.M.	Waterbury...........5:30 P.M.	5.13
13	Naugatuck...........9:00 A.M.	New Haven...........11:00 A.M.	22.27
14	Naugatuck...........4:00 P.M.	New Haven...........6:30 P.M.	22.27

DERBY DIVISION

1	Ansonia.............11:00 A.M.	New Haven..........2:30 P.M.	11.15
2	Ansonia.............5:30 P.M.	New Haven..........6:30 P.M.	11.15
3	Ansonia.............6:30 P.M.	New Haven..........7:30 P.M.	11.15
4	Seymour.............3:30 P.M.	Bridgeport...........7:00 P.M.	20.03

*Crews change at New Britain.

MERIDEN DIVISION

Run No.	Leave	Arrive	Miles
1	Meriden.............8:15 A.M.	New Haven..........10:00 A.M.	24.45
2	Meriden.............3:00 P.M.	Hartford.............7:00 P.M.	29.48
3	Meriden.............6:15 P.M.	New Haven..........8:30 P.M.	24.45
4	Wallingford..........9:15 A.M.	New Haven..........10:30 A.M.	14.08
5	Wallingford..........5:00 P.M.	New Haven..........6:15 P.M.	14.08

BRIDGEPORT DIVISION

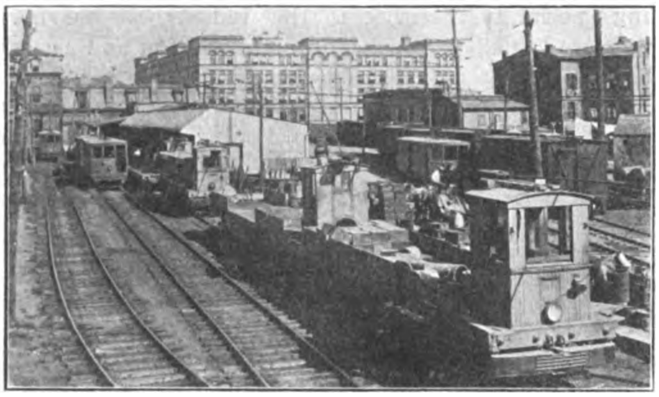
1	Bridgeport...........5:00 A.M.	So. Norwalk..........9:00 A.M.	16.34
2	Bridgeport...........6:00 A.M.	Waterbury...........10:30 A.M.	34.02
3	Bridgeport...........8:00 A.M.	New Haven...........11:00 A.M.	22.25
4	Bridgeport...........11:30 A.M.	New Haven...........2:00 P.M.	22.25
5	Bridgeport...........11:30 A.M.	Seymour.............3:00 P.M.	20.03
6	Bridgeport...........2:30 P.M.	So. Norwalk..........6:00 P.M.	16.34
7	Bridgeport...........6:30 P.M.	New Haven...........9:00 P.M.	22.25
8	So. Norwalk..........6:00 A.M.	Bridgeport...........10:00 A.M.	16.34
9	So. Norwalk..........2:30 P.M.	Bridgeport...........7:30 P.M.	16.34

NEW HAVEN DIVISION

*1	New Haven..........4:00 A.M.	Hartford.............10:00 A.M.	42.97
2	New Haven..........4:00 A.M.	Meriden.............6:15 A.M.	24.45
3	New Haven via Cheshire 5:00 A.M.	Waterbury...........7:30 A.M.	24.59
4	New Haven..........5:00 A.M.	Naugatuck...........7:30 A.M.	22.27
5	New Haven..........6:50 A.M.	Wallingford..........8:00 A.M.	14.08
6	New Haven..........8:00 A.M.	Stony Creek..........11:00 A.M.	14.97
7	New Haven..........8:00 A.M.	Bridgeport...........11:00 A.M.	22.25
8	New Haven..........9:00 A.M.	Ansonia.............10:30 A.M.	11.15
9	New Haven..........11:00 A.M.	Bridgeport...........2:00 P.M.	22.25
10	New Haven..........12:30 P.M.	Naugatuck...........3:30 P.M.	22.27
11	New Haven via Cheshire 1:00 P.M.	Waterbury...........3:00 P.M.	24.59
12	New Haven..........1:00 P.M.	Meriden.............3:45 P.M.	24.45
13	New Haven..........1:00 P.M.	Ansonia.............3:00 P.M.	11.15
*14	New Haven..........1:30 P.M.	Hartford.............6:30 P.M.	42.97
15	New Haven..........1:30 P.M.	Wallingford..........3:00 P.M.	14.08
16	New Haven..........4:00 P.M.	Ansonia.............5:30 P.M.	11.15
17	New Haven..........9:00 P.M.	Bridgeport...........11:00 P.M.	22.25
18	Stony Creek..........11:30 A.M.	New Haven..........3:00 P.M.	14.97

*Crews change at New Britain.

CONNECTICUT COMPANY EXPRESS TRAFFIC—TIME-TABLE OF EXPRESS CAR RUNS



CONNECTICUT COMPANY EXPRESS TRAFFIC—TRACK SIDE OF NEW HAVEN TROLLEY EXPRESS STATION

commodious but inexpensive buildings are provided, the newest one being at Waterbury. Plans have also been completed for an up-to-date station at Bridgeport. The traffic centers in New Haven, Waterbury, Bridgeport and Hartford. These serve as checking points, a function which will be explained later.

To simplify the upkeep of the rolling stock of the express department a separate repair shop has been assigned to it in New Haven and here all ordinary overhauling is done. This arrangement will also aid in the segregation of maintenance costs.

ADMINISTRATION OF THE EXPRESS DEPARTMENT

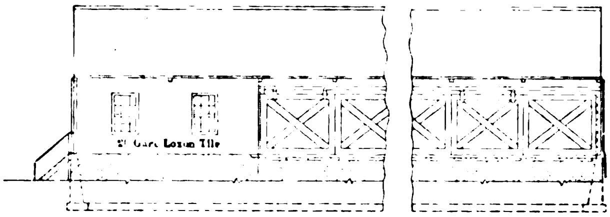
All freight and express business comes under the direct supervision of V. S. Curtis, general traffic agent and secretary of the company. At each station is a local superintendent, who hires the necessary help locally. The agents are men of high grade, capable of meeting the local business men on a plane of reasonable equality and of studying the local opportunities for business.

The cars are operated by the six divisions shown in the time-table on page 803, the runs and divisions but not the times of arrival and departure being represented diagrammatically also. Blueprint copies of the time-table and the diagram, with the division lines on the latter indicated by different colors, are posted at a number of points.

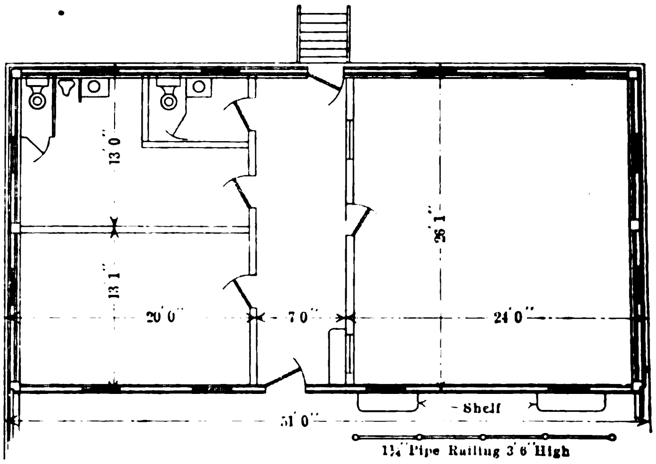
At the checking points, already referred to, the times of arrival and departure of cars are entered on forms like the one reproduced. These serve together as a complete record of the operation of the express system from day to day. For use in determining mileage on which charges are to be based large mileage charts have been prepared, showing the distance between any two points on the system. For special cases blueprint diagrams, prepared by the engineering department, have been provided to show graphically the distance from some point which is the origin of a great deal of traffic. An example is reproduced opposite, namely a mileage chart showing the distance from the Connecticut Quarries Company quarry at Mount Carmel to any point on the system.

TARIFFS AND VOLUME OF BUSINESS

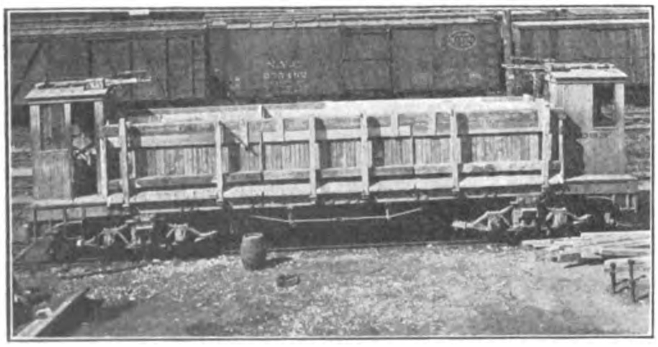
The company believes that the high-class express service furnished by the electric railway should bring a reasonable return. A new set of rates were put into effect last May. As these have not yet been confirmed by the Public Utilities Commission they will not be discussed at this time. That the service is appreciated by the community is evidenced by the volume of business which now brings in as much as $65,000 a month. One of the most troublesome features of the work at the stations was the accumulation of goods due to slowness of owners in removing them. A considerable storage charge, with daily increase in rate, was therefore assessed when goods were left more than twenty-four



CONNECTICUT COMPANY EXPRESS TRAFFIC—SIDE ELEVATION OF NEW WATERBURY STATION

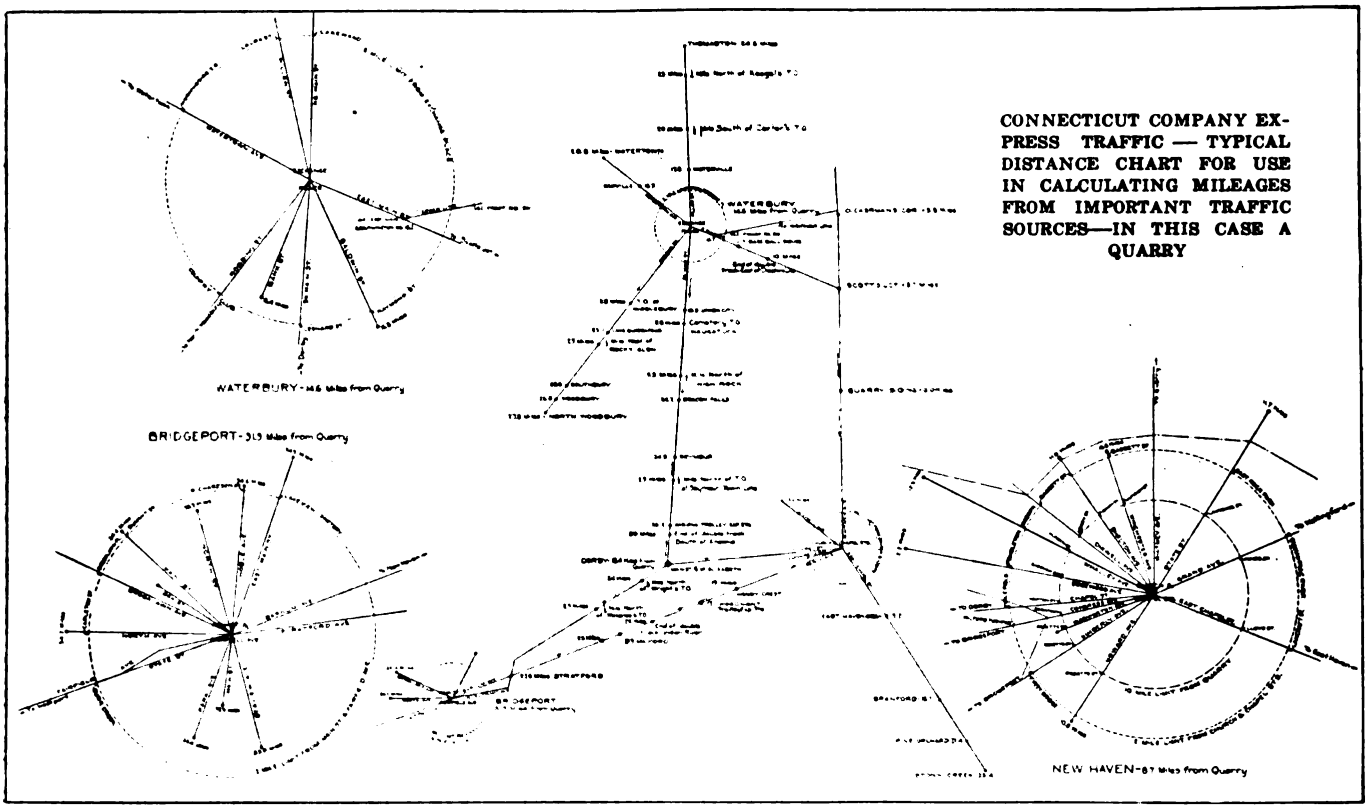


CONNECTICUT COMPANY EXPRESS TRAFFIC—PLAN OF OFFICE END OF NEW WATERBURY STATION



CONNECTICUT COMPANY EXPRESS TRAFFIC—MOTOR FLAT CAR WITH TEMPORARY BINS FOR CONCRETE

CONNECTICUT COMPANY EXPRESS TRAFFIC—TEAM SIDE OF OLD WATERBURY TROLLEY EXPRESS STATION


WATERBURY-14.6 Miles from Quarry
BRIDGEPORT-31.9 Miles from Quarry
NEW HAVEN-8.7 Miles from Quarry

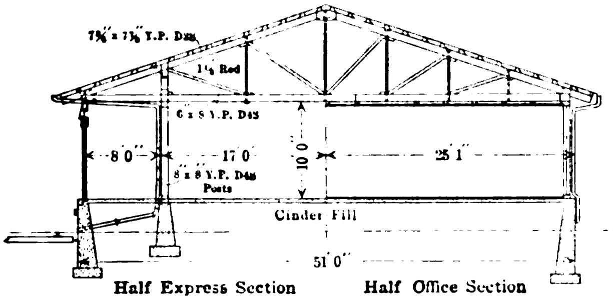
CONNECTICUT COMPANY EXPRESS TRAFFIC — TYPICAL DISTANCE CHART FOR USE IN CALCULATING MILEAGES FROM IMPORTANT TRAFFIC SOURCES—IN THIS CASE A QUARRY

hours. This matter, however, together with the general subject of charges, will be taken up in a later article.

SOME TYPICAL FREIGHT STATIONS

For the purpose of illustrating the methods of handling express matter more definitely two present stations and a proposed one have been selected for brief description.

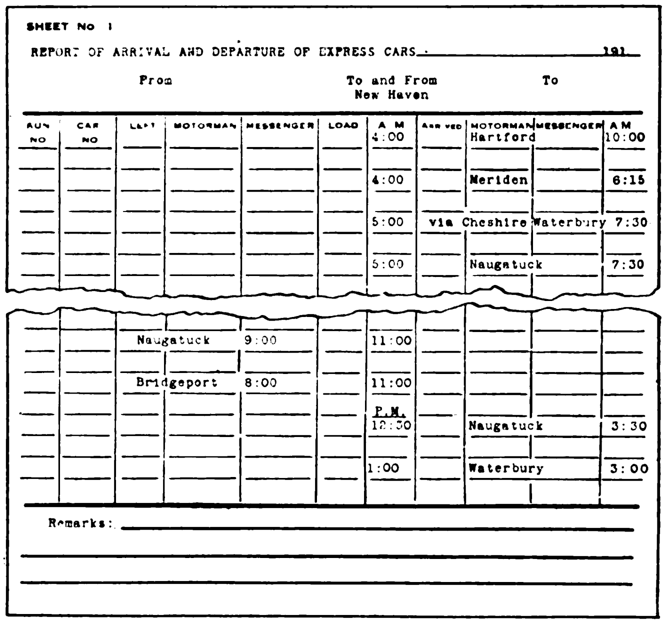
The station at New Haven, the appearance of which is shown in the photographs, pages 802 and 804, is located close to the New Haven Railroad. It is an old structure but serves reasonably well on account of its excellent location. It comprises two sheds, one for incoming and one for outgoing freight, and a wide paved roadway is available for the accommodation of trucks. At one end of the sheds is a two-story brick building containing the offices. In the second floor a large window provides a view of the interior of the next shed.



CONNECTICUT COMPANY EXPRESS TRAFFIC—CROSS-SECTION OF NEW WATERBURY TROLLEY EXPRESS STATION

The station at Waterbury which was completed last year illustrates in a general way what is considered by the company to be an ideal layout from the standpoint of economy and convenience in handling, combined with low cost. Experience with the building has proved that the shed is wider than necessary and that there should be provision for supporting a trolley from the roof trusses. As the trusses were not designed for this purpose it will not be possible to add the trolley. At the time the building was designed it was considered feasible to heat the offices electrically from the adjoining Housatonic Power Company's power plant. This did not prove to be economical and it has been necessary to install stoves for the coming winter. In the proposed Bridgeport plant the shed platform will be narrower, the roof trusses will be stronger and a trolley will hang therefrom, and a steam-heating plant will be provided.

The Waterbury building is approximately 228 ft. long and 51 ft. wide over foundation piers. The floor is laid



SHEET NO 1

REPORT OF ARRIVAL AND DEPARTURE OF EXPRESS CARS ________ 191

From — To and From New Haven — To

RUN NO	CAR NO	LEFT	MOTORMAN	MESSENGER	LOAD	A M	ARRIVED	MOTORMAN	MESSENGER	A M
						4:00		Hartford		10:00
						4:00		Meriden		6:15
						5:00	via	Cheshire	Waterbury	7:30
						5:00		Naugatuck		7:30
		Naugatuck		9:00		11:00				
		Bridgeport		8:00		11:00				
						P.M. 12:30		Naugatuck		3:30
						1:00		Waterbury		3:00

Remarks: ________

CONNECTICUT COMPANY EXPRESS TRAFFIC—FORM FOR USE IN CHECKING MOVEMENT OF EXPRESS CARS about 4 ft. above the surrounding ground surface, exactly 3 ft. 9 in. above the top of the track which stretches along one side. The floor is of concrete 4 in. in thickness. In the express section the uppermost inch is finished with hardener and lampblack. In the office section, which occupies 75 ft. at one end, a wooden floor is laid on top of the concrete. The concrete floor is on a filling of cinders from the adjacent power house, well compacted. Fire got into this filling after the completion of the building and consumed a considerable proportion. A fire wall has now been provided to prevent a recurrence of this accident.

The building is framed of wood in a simple manner, as shown in the line cuts on page 805. The shed sides are closed with a continuous row of sliding doors 10 ft. 3 in. wide by 8 ft. 4¾ in. high, and a brick fire wall divides the shed into two practically equal parts. The roof and sides where not occupied by doors are covered with No. 26 gage "Loxon" tile of galvanized iron. This comes in strips about 3 in. wide provided with interlocking joints.

The office section contains a large office for the handling of waybills, etc., a private office for the agent, and toilet rooms for men and women. A hallway leads from the entrance at the end of the building through the office section to the freight shed, with entrances to all rooms looking out from it.

The proposed station at Bridgeport is essentially like that at Waterbury except that the building is but 40 ft. wide. The roof trusses are to be stronger so they can carry a suspended load on the trolley of 1½ tons. A double-bead steel track will extend lengthwise of the shed in the center with four cross tracks placed so that they can be used in loading four express cars at once. A cross-track switch is provided at each junction point, which permits the turning of a short section of rail with its load into line with the longitudinal track or the cross track. Differential hoists will be used in lifting pieces of merchandise to be carried by the trolley. The length of the Bridgeport station will be the same as that of the Waterbury station.

Publicity Plan for Increased Fares

BY T. W. MOFFAT
Treasurer The J. G. White Management Corporation, New York, N. Y.

A DISCUSSION regarding the increasing of rates of fare prompts the following suggestion in regard to spreading the doctrine of the inadequacy of the nickel as a standard unit of compensation for carrying passengers on electric railways.

The chairman of the board of directors or president of every company in the country should call a "get-together meeting" of the executive officers of his company and carefully explain to them the difficulties and hardships the companies are facing on account of their increasing expenditures and restricted revenues. They may have been told of this before and may know it from their own observation, but it will do no harm to tell it to them again.

Let this meeting be the basis of conducting a personal campaign of publicity to show the people the pressing needs of the electric railways and public utility corporations generally for adequate rates that they may be able properly to serve the communities in which they are situated and not be forced out of business by increasing operating costs and taxes without increased revenues.

This campaign or "drive" should be delegated to each employee of the company according to his standing and ability. To the chairman of the board or chief executive of the company should be allotted the task of spreading the doctrine to banking interests, the mayor and chief officers of municipalities, the senators and congressional representatives of the districts in which his company is situated.

The general manager should preach the same gospel through his heads of departments to the rank and file of the employees. It should be carefully explained to conductors and trainmen that the companies cannot afford to pay the increased wages they demand and need with which to buy the necessities of life, unless the company in its turn shall receive adequate compensation for the service it renders. This should also be told to the shop and track men and all other forms of skilled and unskilled labor, and they should be asked to repeat it as far as possible to their friends and others with whom they come in contact.

The secretary of the company should send a letter signed by the president to each stockholder of record enumerating the same conditions and saying that under existing conditions companies cannot hope to pay dividends, and unless adequate relief is speedily obtained it is not improbable that they will be forced into receiverships and bankruptcy.

The treasurer should send a printed statement on similar lines inclosed with every check sent out by the company in payment of its bills. This statement may also well be inclosed with every letter written by any official of the company to reach the general public.

The auditor of the company should follow the same lines with his clerks, the day and night receivers and other employees.

The purchasing agent should preach the same doctrine to his friends, the manufacturers from whom the company buys its products and supplies and whose interests are so vitally allied with the success of utility companies, so that they in their turn may carry the publicity campaign among their friends and associates, who might not be reached directly by the utility companies themselves.

A concerted, combined, advertising newspaper campaign might also be successfully inaugurated. As Mr. Brush has said, "the American public is fair, the American public is just, and the American public is generous," and if the controlling facts and conditions are properly placed before the public by the companies, speedy relief from the present ruinous state of affairs will no doubt be obtained.

The companies should ask, not so much for the remission of a few paltry paving and franchise taxes, nor even for a 6-cent fare, but for just and adequate pay for services rendered. Not until this has been made plain to the public in general and to interstate, state, municipal and other regulatory bodies in particular will the companies obtain the relief necessary to enable them to render efficient service, properly maintain their ways, equipment and rolling stock, provide for proper and adequate depreciation and pay such dividends as will invite the investment of capital in the public utility business.

One-Man Car Operation Discussed

Stone & Webster Experience, as Described Before New England Street Railway Club, Most Favorable—Complete Automatic Equipment Recommended—Pay-as-You-Leave Plan Followed on Brockton & Plymouth Cars

AT a largely attended meeting of the New England Street Railway Club at Boston, Mass., on Oct. 25 the advantages of the one-man car were discussed at length by representatives of manufacturing and operating organizations familiar with this latest development in the industry. The meeting was held at Young's Hotel and was the first of the season. President A. H. Ford occupied the chair, and the business session was preceded by a buffet supper. Before the topic of the evening was taken up the resignation of H. A. Faulkner as secretary of the club was accepted and Charles H. Hile of Boston was unanimously elected to fill the office. Upon being escorted to the officers' table Mr. Hile received a most enthusiastic welcome, and in a brief speech of acceptance pledged his best efforts to the welfare of the club and the industry in New England, thanked the membership for their confidence and asked for the co-operation of every man in the organization in the important work ahead of the club. It is expected that with the inauguration of the new secretary's administration, the club will become a greater factor in public affairs than in the past.

The principal speakers of the evening were C. H. Beck of the Westinghouse Electric & Manufacturing Company and J. C. Thirlwall of the General Electric Company. Mr. Beck emphasized the service and economic situation that led to the development of the one-man car, pointing out the influence of high average speed as a factor in determining patronage. With former standard electric cars, he stated, an average speed of 8½ m.p.h. was difficult to exceed in city schedules, compared with 14½ m.p.h. in jitney service and about 15 m.p.h. with private automobiles. By utilizing the one-man car and operating at an average speed of about 12 m.p.h. the traffic flows back to the electric car in many instances. The author touched upon the vital importance of utilizing the now well-developed safety features of the one-man car and said that by the use of these more economical operation and faster service are simultaneously attained. The one-man car can hold its place in the procession of traffic through the street. By its use there is no intention to force employees out of present jobs, but the one-man car offers an opportunity to earn higher wages, save money and increase net earnings for the company and thus benefit employees and the public, as well as the stockholder. If the labor shortage becomes sufficiently acute women should be useful in the operation of the safety car, on account of the light physical requirements of the work with the present automatic features.

Mr. Thirlwall gave a number of reminiscences of the genesis of the one-man car, outlining his observations of jitney traffic in the Southwest in company with C. O. Birney of the Stone & Webster Management Association, the originator of the present one-man car standard type. It was noted that on short-haul traffic the public patronized the vehicle first appearing, regardless of its character. On long-haul traffic it appeared that the higher speed of the jitney was the controlling element in its selection. Speed and frequency of service thus were seen to be most important points. The light construction of the one-man car permits accelerations exceeding 2½ to 3 m.p.h.p.s., compared with a maximum practical rate of 1¾ m.p.h.p.s. for double-truck cars. The absence of a pendulum effect in the one-man car is an important feature of its successful high acceleration. The speaker reviewed various aspects of the speed-time functions of the one-man car and outlined savings effected on a typical line along the general course of his article in the ELECTRIC RAILWAY JOURNAL of Sept. 22. He held that even in very large cities a field for the one-man car exists on many lines.

OPERATING EXPERIENCES RECOUNTED

In the discussion following the papers it was pointed out by Mr. Thirlwall that the collection of fares offers no hindrance to speed in safety car operation. With smaller rolling stock units on more frequent headway, the number of passengers boarding or leaving per stop decreases, even though the average time elapsed at stops per person increases slightly. In Fort Worth, Seattle and Bellingham 80 per cent of the passengers had the exact fare ready on entering the one-man cars. Present practice is to start the car as soon as the last passenger boards it. The fare box is in line of the operator's vision, and, when necessary, the operator can make change from a belt without removing his hand from the controller or looking away from the track. In congested districts, of course, this practice is not followed. Transfers are issued from a pad hanging on a post directly in front of the fare box. The operator reaches up and pulls one off as required. He punches the transfers at the end of the run and when he is changing ends during layovers.

Mr. Beck conceded that the maintenance of equipment on a one-man car with automatic features would be somewhat greater than without such parts but held that even if the total maintenance expense came to three or four times that of air brake equipment on ordinary cars, it would not make any material difference in the economic value of the one-man car as a revenue producer and money saver. Transfer issuing devices, mechanically or otherwise operated, are being worked out, and automatic features predominate. Any railway having the opportunity to put a considerable number of these cars into service must be prepared to speed up its organization as a whole. Quick replacement of cars when temporarily thrown out of service on the line is very important. The Birney car is so light that in some cases a Buick automobile has been used to haul a derailed one-man car back to the track.

President Ford suggested that time would be saved in the operation of one-man cars if passengers paid as they left. Such a plan has been tried in car operation in Cleveland and Detroit, he stated, and the Brockton & Plymouth Street Railway, in Massachusetts, is using this method. Edward Graham of Bangor, Me., said that the merits of the one-man car appealed to him so much on a recent trip to St. Louis that he has ordered three units from the American Car Company. He inquired whether trouble from freeze-ups can be prevented in winter, the temperatures at Bangor running as low as 30 to 35 deg. below zero. Mr. Beck said that by the use of two main air reservoirs per car and carefully designed piping it is hoped to avoid difficulties resulting from condensation.

R. B. Stearns, vice-president Bay State Street Railway, said that credit should be given to the Massachusetts Public Service Commission for its early and wise determination that the one-man car has come to stay, or at least should be introduced into New England. The one-man car is probably a life-saver to many companies. The Bay State company hopes soon to be able to operate about fifty one-man cars. Mr. Stearns commented upon the present cost of complete units, saying that fifty represent an investment of about $300,000, or $6,000 apiece, compared with an estimated cost on former price levels of about $3,800. To convert single-truck cars with substantially all the advantages of new cars into one-man units would cost about $1,250. The weight would be somewhat greater, however. The speaker queried the need of power-operated equipment for door and step operation, intimating that this might be performed manually at lower cost.

C. D. Emmons, general manager Boston & Worcester Street Railway, said that entirely new cars produce a far better effect on the public and may make all the difference between success and failure from the standpoint of public opinion. Mr. Beck explained that the air-operated equipment for door and step service is not complex and is an important factor of success.

ADDITIONAL STONE & WEBSTER EXPERIENCE

L. R. Nash of Stone & Webster, Boston, stated that more than 300 safety cars are either on order or in operation on the properties of this organization. Over 75 per cent of these units are of the Birney type, the remainder being thoroughly rebuilt cars. Full automatic equipment is always provided, no makeshift alterations being approved. The remodeled cars have a seating capacity slightly greater than the Birney cars, about thirty-six passengers being accommodated. These cars weigh from 20,000 to 24,000 lb. compared with 13,000 lb. in the Birney car. For all-day operation the power saving of the Birney car justifies its use. For rush-hour service the reconstructed single-truck car would show some economy.

The average increase in service by one-man cars on Stone & Webster roads is about 50 per cent. In studies that have been made of fairly large properties, after complete change-over to Birney cars has been made, the total figures show that it is unnecessary to increase the service to the extent of 50 per cent. In one case entirely satisfactory service was given by an increase in car-hours of less than 32 per cent and an increase in car-miles of over 40 per cent. It is not always possible to obtain from the use of such cars a large margin over fixed charges on the additional investment. Regarding labor, the policy has been either to shorten the working day and continue the same pay per day or else to raise wages in one-man car operation. The necessary differential has not been established as yet on all the Stone & Webster properties, but it is never less than 10 per cent. In nearly all cases the men are anxious to operate the safety cars, and there is usually a considerable waiting list. The varied duties and increased alertness required attract the men.

Mr. Nash said that there need be no serious difficulty from the public standpoint in introducing safety cars, if the public is clearly given to understand that it is to receive an improved service, with more frequent car movements and safer operation. No trouble is to be apprehended from the public utility commissions if safety appliances are fully applied. So far no trouble has been experienced with trainmen. The organization's confidence in introducing the Birney car is so great that large numbers have been ordered for the various properties without undertaking to secure the formal approval of the public authorities, except in cases where franchises or ordinances prohibit the operation of cars by less than two men. Sometimes politicians attempt to make capital out of the introduction of one-man units, claiming that the rights of the "poor workingman" are jeopardized, but the experience of one city where a number of municipally owned cars were operated as well as private company cars is illuminating. The operation of safety cars showed such advantages that the community saw that it was to its benefit to adopt the one-man type of car itself, and there was no logical reason thereafter for refusing the private company permission to equip its lines in this way.

The increase of earnings from the use of safety cars varies widely from a maximum of 35 per cent on a 15 per cent service increase to a minimum of 10 per cent on a 35 per cent service increase. Eight cents per car-mile is a practicable operating figure for the safety car, compared with 15 cents under the two-operator plan. Part of this gain comes from the increase in car-miles secured. If the total expense of one-man operation is applied to the car-mileage previously operated on the 15-cent basis, the operating expense comes to about 12 cents.

Stone & Webster expect to introduce the Birney car and to reconstruct single-truck cars for one-man service on a very much larger scale on their properties than has so far been realized. This will take time, because under present conditions it is difficult to raise money in large amounts and also to insure that no competent man will lose his job on account of the change in equipment. On some properties a foot valve is used in order that the operator need not be subjected to the fatigue of holding his hand on the controller button throughout the entire day's run.

G. H. Tontrup, American Car Company, St. Louis, said that the manufacturer has been trying for fifteen years to produce a standard car. This desirable status has now been reached in the one-man unit. The speaker said that his company at present has on hand a number of stock cars of the one-man type for reasonable delivery, say about Feb. 1, 1918. About two weeks ago an order of twenty cars was shipped to Fort Worth and soon after a long-distance telephone call was received asking how soon the company could deliver fifteen more units. The above delivery date includes the completely equipped car with all electrical and safety devices.

Mr. Beck said that a few one-man cars are operated without air brakes or safety features on fifteen or thirty minutes headway, but not on city lines. He strongly urged the use of the full automatic equipment.

The discussion closed with the statement that on the Brockton & Plymouth Street Railway the pay-as-you-leave plan is working well. When pasteboard tickets were used, women passengers sometimes caused inconvenience by wrapping six cents in the ticket and dropping it into the fare box. This disadvantage was done away with by the use of metal tickets.

Task of Utilities Is Public Education

Before Convention of New Jersey Utilities Association, Dr. Conway Emphasized Importance of Publicity and Outlined Desired Results of Educational Campaign—Financial and Operating Problems Under War Conditions Discussed by Other Speakers

AT the convention of the New Jersey Utilities Association, held in Atlantic City on Oct. 26-27, the discussion centered on the need of wider publicity for utilities and on various financing and operating problems that are of serious moment in these war days. Abstracts of the addresses most directly connected with electric railway operation are published below.

ELECTRIC RAILWAY RATE BASIS UNSCIENTIFIC

The problem of higher operating costs and commission control over rates was covered in a paper by Thomas Conway, Jr., Ph.D., professor of finance, University of Pennsylvania, Philadelphia, Pa. The fundamental difficulty with the electric railway industry, he believes, is that its rates are fixed upon an unsound and unscientific basis, and relief can only be had through courageous action by the public service commissions.

With a few commissions, said Dr. Conway, the disposition seems to be to treat the advance in operating costs as a purely temporary matter which may be allowed to continue without any remedial steps being taken to offset its influence. There are two periods in recent history, however, which furnish situations similar to that now prevailing. The first is covered by the French Revolution, the Napoleonic struggle and the years of reconstruction following it. The second is the period of almost universal war from 1851 to 1871. If the history of these periods is any guide, it would appear that there is a strong probability of abnormally high prices prevailing over a period of years.

The public service commissions, Dr. Conway asserted, must make a choice between gambling upon the speedy passing of high prices and the adoption of a conservative policy which assumes that high prices will prevail for some years. The latter alternative would allow the utilities to advance rates until the recession actually occurred. There can be no question that the spirit of the public utility law in every state is that these corporations shall be permitted to earn a reasonable return under all conditions. Theirs is not a speculative business in which they must take long chances and in which success is to be rewarded by very large profits. Public utility profits are closely limited in good years, and because of this limitation they must be sustained in years of adversity.

According to Dr. Conway, public utilities are face to face with the question of a choice between (a) failing to earn a reasonable return upon the investment with the existing standard of service; (b) decreasing the standard of service, in the hope that it will show larger profits, or (c) asking for a higher rate, in order that the standard of service may be preserved and a fair return earned. To the credit of the utilities, practically every company has not faltered in maintaining its standard of service. This is the proper course, for the utilities accurately appreciate the psychology of the American people when they conclude that this country will not tolerate poor service. The public is willing to see useless passenger service curtailed when track capacity is necessary for the movement of food, fuel and materials of war, but it is not willing to see public utilities retrograde in the absence of some imperative national necessity. It is characteristic of Americans to expect and demand good service, and at heart they are not niggardly. They willingly pay for what they get.

This conclusion, Dr. Conway stated, seems so obvious that it is hard to understand the fogginess which apparently exists in the minds of members of many public service commissions. Some commissions have shown courage and vision, but others have demonstrated a desire to shirk responsibility and to "play to the galleries" with a so-called popular decision rather than to face squarely facts and conditions. Moreover, the situation is complicated by the interminable delays in securing action of any sort from practically all the commissions. A recent study made in Massachusetts shows that the average time elapsing between the filing of a petition for higher rates and the decision of the commission is approximately one year. Delays of this length are frequently fatal to a sorely-pressed utility. The real facts are that the provision of law requiring action by the commission on every proposed rate places such a burden on the commission that expedition is impossible. The public utility law should allow a utility to institute higher rates on its own motion, giving to the commission the power to reduce the rates, after investigation, in case the necessity for larger revenues cannot be established by the carrier.

PUBLIC EDUCATION IS NEEDED

Looking at the question from a selfish standpoint, Dr. Conway said, one can readily understand why commissioners, with a comparatively insecure tenure of office, have an intense desire to cultivate public approval. After all, the utilities cannot expect the public utility commissioners to commit political suicide. They cannot expect a large measure of courage from a commission until public opinion will support it in advancing rates where necessary. The task of the public utility, therefore, is essentially that of public education.

There are no longer any secrets in the public utility business, but the difficulty is that the public does not understand the facts. It is too often misled by those who have a selfish interest to advance or who are ignorant of real conditions. It is the duty of the utility to see that through educational publicity the facts concerning its business, its finances, its problems and its needs are forced upon the attention of every person in its community. If this is accomplished, the difficulties of securing courageous and far-sighted action by the commission will automatically disappear.

The educational campaign, in Dr. Conway's opinion, should endeavor to accomplish the following results:

1. The public must be convinced of the sincerity of the utility and of its desire and its intention to be fair. No campaign can succeed unless the public believes that the utility is telling the exact truth in presenting its plea for relief.
2. It is the task of the utility to convince the public that investors in public utility enterprises must be protected because this course of action is to the selfish interest of the community. Ample protection to capital and the insurance of a reasonable return invite new capital into public utility enterprises, and new capital is essential to healthy growth and progress of utilities.
3. The public must be convinced that it is the chief loser through a financially crippled utility because an impoverished company cannot continue to furnish good service, provide additional facilities necessary to meet the growth in population, and keep abreast of the progress of the art through the introduction of new methods and facilities.
4. The people must be shown that the essential question is the cost of good service, which they demand and to which they are entitled. They must see that the problem is essentially whether they desire an inferior service at the present rate or the highest standard of service, paying therefor whatever rate is necessary to cover operating expenses, depreciation and a fair return upon an honest investment.
5. Finally, the responsibility for the future of privately-owned utilities rests with the commissions. If utility plants stop growing, if capital forsakes the industry and if service deteriorates because of unwise commission action, the companies must make it very clear where the responsibility rests and what is necessary to restore health and vigor to the industry.

UTILITIES DOING THEIR BIT

The part public utilities are playing in the present war period was described in detail by J. L. O'Toole, assistant to the president Public Service Corporation of New Jersey, Newark, N. J. After pointing, in a spirit of patriotic pride, to the calling of utility leaders to carry on administrative work for the government and to the growing roster of utility men in active service, Mr. O'Toole discussed the special war work that is being carried on by each class of utility.

From the nature of their business, he said, electric railways do not come in direct contact with the government war boards to the same extent as other utilities. In many sections, however, electric railways have been pressed into service for the transportation of troops over short distances, and their facilities have been drawn upon to no small extent for the movement of materials. Another task that has tested their mettle has been that of providing transportation for the immense industrial plants that have sprung up to meet the essential war needs of the government. As many of these are of a temporary character, in that they are likely to cease or greatly curtail their output at the close of hostilities, electric railway operators indeed have a war problem on their hands.

MAINTAINING ADEQUATE FACILITIES UNDER WAR CONDITIONS

Service under war conditions was discussed by George W. Fuller, consulting engineer, New York, N. Y. All utilities, whether publicly or privately owned, are now experiencing real difficulty in maintaining adequacy of service. In Mr. Fuller's opinion government ownership is not a cure-all for existing conditions. In fact, there is probably less reason at present for this than during times of peace. There is no mystic wand by which the government, especially municipalities, can cause the real difficulties encountered by privately owned utilities to vanish.

No utility, Mr. Fuller averred, can long exist without a reasonable margin of profit. Regulatory commissions can increase the earning capacity of utilities to the extent necessary through exercising a greater liberality in arriving at the rating base, or by allowing a higher rate of return, or by authorizing contingent reserves for unusual operating expenses. Corrective measures are needed so as to attract capital to the privately owned utilities. This is largely a problem of proper rate-making—the providing of earning capacity which will guard against disasters. Belief is needed in a practical way, Mr. Fuller said, and it is the results as to earning capacity which count in the rate problem, rather than a perfunctory adoption of any favorite policy or procedure without regard for its remedial effect.

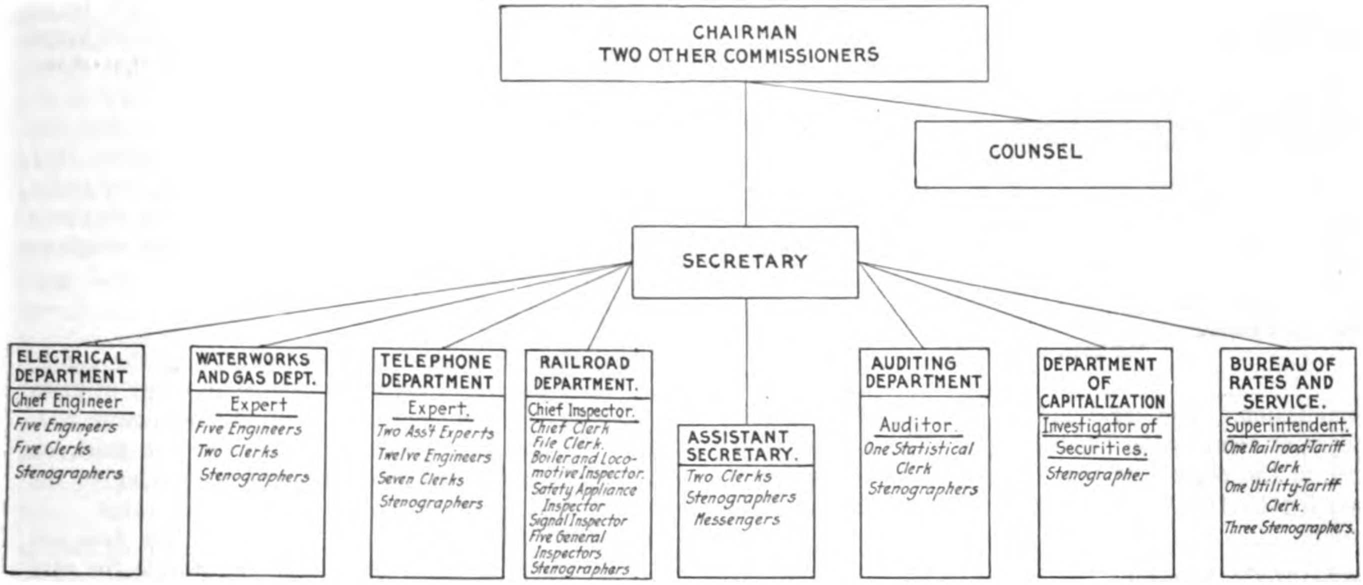
FINANCING OF UTILITIES

In discussing the financing of public utilities, T. H. Dudley Perkins, of Bioren & Company, Philadelphia, Pa., mentioned briefly the fundamental requirements in regard to franchise life, territory, record of earnings and character of management which govern the financing of public utilities in normal times. In regard to franchise life, Mr. Perkins said that owing to legislation, judicial decisions and the growth of commission regulation, the absence of a perpetual franchise is no longer a bar to successful financing.

With reference to financing under present conditions, Mr. Perkins said that it is practically impossible to put out new issues. The periods of quiet between the placing of Liberty Loans are fully covered by such necessary financing as renewals of maturing obligations. In his opinion, such renewals in themselves offer a most serious problem. With each new piece of financing being done on a higher interest basis, it becomes a serious question whether the government should not consider the advisability of extending maturing obligations (which had been made for a period of more than one year and the maturity of which was not provided by such installment payments as car trust rentals, etc.) so that at least during the period of the war public service corporations would not be embarrassed by this expensive and difficult operation.

Regulating Utilities in Ohio

This Article Deals Briefly with the Organization of the Ohio Public Utilities Commission and Shows the Varied Kinds of Work Being Carried On


CHAIRMAN
TWO OTHER COMMISSIONERS
COUNSEL
SECRETARY
ELECTRICAL DEPARTMENT
Chief Engineer
Five Engineers
Five Clerks
Stenographers
WATERWORKS AND GAS DEPT.
Expert
Five Engineers
Two Clerks
Stenographers
TELEPHONE DEPARTMENT
Expert.
Two Ass't Experts
Twelve Engineers
Seven Clerks
Stenographers
RAILROAD DEPARTMENT.
Chief Inspector.
Chief Clerk
File Clerk.
Boiler and Locomotive Inspector.
Safety Appliance Inspector
Signal Inspector
Five General Inspectors
Stenographers
ASSISTANT SECRETARY.
Two Clerks
Stenographers
Messengers
AUDITING DEPARTMENT
Auditor.
One Statistical Clerk
Stenographers
DEPARTMENT OF CAPITALIZATION
Investigator of Securities.
Stenographer
BUREAU OF RATES AND SERVICE.
Superintendent.
One Railroad-Tariff Clerk
One Utility-Tariff Clerk.
Three Stenographers.

OHIO COMMISSION—CHART SHOWING ORGANIZATION OF REGULATORY FORCE

THE Ohio Public Utilities Commission has almost absolute control over utilities as far as service, rates and other matters of public interest are concerned. The commission's task may be judged from the fact that in the State there are 1165 utilities representing an investment of more than $2,000,000,000 and having an annual gross income in excess of $300,000,000. This total includes seventy-eight interurban railways and eighteen city and suburban railways.

The hearing of rate cases and the appraisal of property in connection therewith have thus far constituted the main tasks of the commission. Cases involving the valuation of the utilities in nearly all of the large cities of the State have come before it. Matters relating to car shortage, traffic congestion and grade-crossing accidents, however, are now occupying no inconsiderable portion of its time.

SIZE AND COST OF THE COMMISSION

The commission has a staff of about eighty persons. The actual number fluctuates considerably from time to time, according to the amount of work on hand. Last year the operation of this regulative force cost the State $178,350, of which $101,715 was for general office work and $76,635 for appraisal work. The law provides that for the maintenance of the commission a sum not exceeding $75,000 shall be levied against utilities in proportion to their intra-state gross earnings.

The commission itself consists of three members who serve for six years and end their terms in rotation at two-year intervals. The salary is now $4,500 per annum. Only two members may be of the same political party. Every two years the incoming Governor appoints one commissioner as chairman. All expenditures must be approved by this member, and questions of new policy may be decided by him. Anything of importance, however, may be decided only with the concurrence of at least one other commissioner. The present commissioners are Oliver H. Hughes, chairman; Beecher W. Waltermire and Charles C. Marshall.

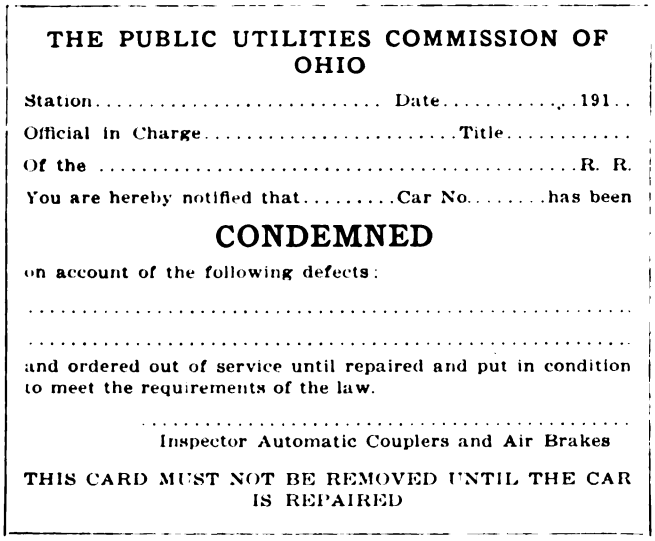
HOW THE STAFF IS ORGANIZED

With the exception of the secretary, all employees of the commission are under the State civil service system. They are organized into nine different departments. Aside from the legal staff and the secretary's office, the departments may be grouped into two classes, technical and general. The technical departments, which deal with special utility groups, are railroad, electrical, water works and gas, and telephone. The general departments—the bureau of rates and service, the auditing department and the bureau of capitalization—are more or less concerned with all kinds of utilities.

All department heads are responsible directly to the commission. All correspondence, complaints, etc., however, pass through the secretary's office, and the accompanying diagram of the organization was drawn with such a point in mind. This diagram shows the personnel of the staff.

While not so designated officially, the secretary's office is the administrative department of the commission. The secretary is appointed by the commission and holds office during its pleasure. He is required to record all proceedings, issue all necessary papers, keep the files and superintendent the clerical business. He acts as the go-between for the commission and the various departments, and also meets the public, answers general inquiries for information and is often able to satisfy informal complaints.

The attorney-general of the State is the legal adviser of the commission, but he also designates one or more of his special counsel to act as attorneys for the



THE PUBLIC UTILITIES COMMISSION OF OHIO

Station............................ Date.............191..

Official in Charge.......................Title............

Of the ....R. R.

You are hereby notified that.........Car No.........has been

CONDEMNED

on account of the following defects:

....

....

and ordered out of service until repaired and put in condition to meet the requirements of the law.

....

Inspector Automatic Couplers and Air Brakes

THIS CARD MUST NOT BE REMOVED UNTIL THE CAR IS REPAIRED

OHIO COMMISSION—FORM 1—"BAD-ORDER" CARD USED BY A GENERAL INSPECTOR

commission. The legal aids so appointed have their offices at commission headquarters. The attorney-general, at the request of the commission, takes the necessary legal action to secure enforcement of the law or its orders.

Railroad Department

The work of this department has to do with the operation of railways, both steam and electric interurban. The chief inspector has general supervision and is responsible for the technical policy of the department. The boiler-and-locomotive inspector inspects all railway boilers and locomotives, and investigates locomotive failures, causes of wrecks and the damages caused by accidents to engines and boilers. The safety-appliance inspector inspects couplers, brakes, fire extinguishers and all other safety devices used in connection with rolling stock. Similarly interlockers and signals must be inspected by the interlocker-and-signal inspector. A "bad order" card is shown in Form 1. All safety devices both for rolling stock and roadway must have the approval of the commission before being placed in service.

The general inspectors go out on service complaints of all kinds and to the scenes of all railway accidents. The accompanying sheet (Form 2), which with a duplicate is bound up in pocketbook style, is used in notifying railroads of points where the lateral clearance is insufficient for safety. Another sheet (Form 3), similarly bound, is carried by all inspectors. They are required to fill out one for each railway trip taken while on duty. A good check is thus obtained on every-day operation over the State.

The commission receives many complaints as to grade crossings, and in each case an inspector is sent to make an investigation. One commissioner recently said: "If all the flagmen-at-crossing requests were granted, there would be a standing army along each railroad."

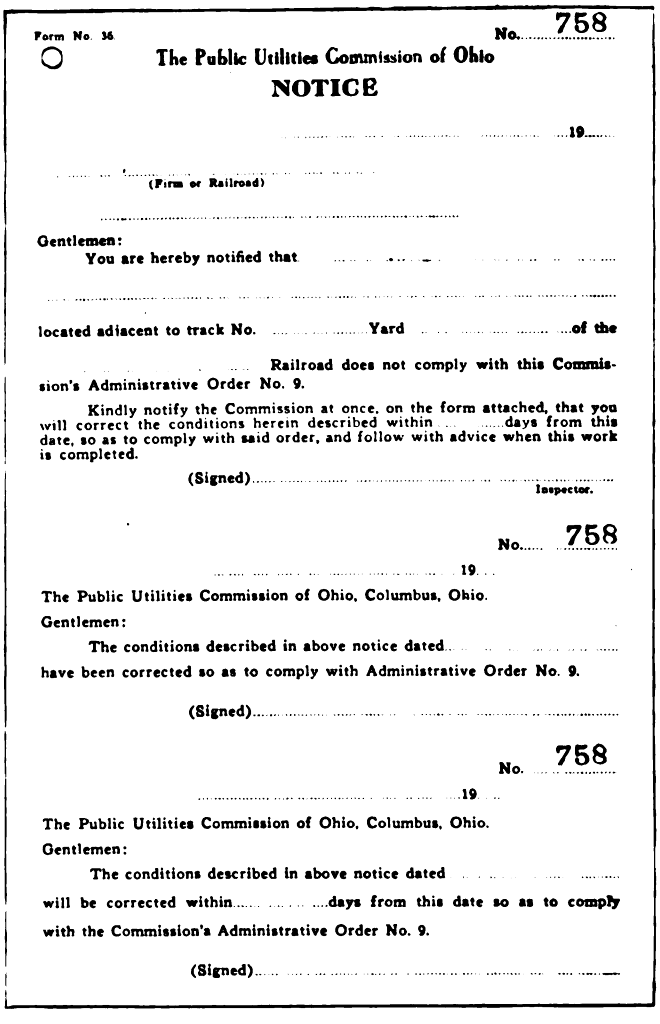
Records are kept of all dangerous grade crossings, wrecks, fatal accidents, clearances of overhead structures and wires, lateral clearances and interlocker plants. The railways are required to file monthly reports of all engine inspections. In case of locomotive failures, they are required to isolate and guard the machines until commission inspectors arrive. In case of fatal accidents or serious injuries all steam and electric railways are required to send immediate telegraphic notice and also within ten days to report on the sheet shown in Form 4.

In connection with adequacy of service the railroads are required to report daily all train movements and indicate the disposition of freight cars on their lines. During the present heavy traffic inspectors are being sent to all points of congestion. The department keeps track of all empty cars, and all loaded cars that stand still for any length of time. The commission has almost unlimited powers in connection with railway operation, and at present it is exercising these very widely in an effort to keep trains moving. Indirectly the commission is also exerting pressure on shippers and consignees in an effort to relieve the car shortage and keep the freight houses clear.

Electrical Department

Primarily this department has charge of the supervisory and the appraisal work related to those utilities furnishing electrical energy for light and power purposes. It also has charge, however, of the work on steam and electric railroads in matters relating to the authorization of securities or the fixing of rates.

The handling of complaints against service does not take up nearly so much time as do appraisals for rate and security cases. This department appraised $46,-



Form No. 36 No. 758

○ The Public Utilities Commission of Ohio

NOTICE

....19.......

....
(Firm or Railroad)

....

Gentlemen:

You are hereby notified that ....

....

located adiacent to track No. ....Yard ....of the ....Railroad does not comply with this Commission's Administrative Order No. 9.

Kindly notify the Commission at once, on the form attached, that you will correct the conditions herein described within ....days from this date, so as to comply with said order, and follow with advice when this work is completed.

(Signed)..
Inspector.

No. 758

....19...

The Public Utilities Commission of Ohio, Columbus, Ohio.

Gentlemen:

The conditions described in above notice dated..........................
have been corrected so as to comply with Administrative Order No. 9.

(Signed)..

No. 758

....19...

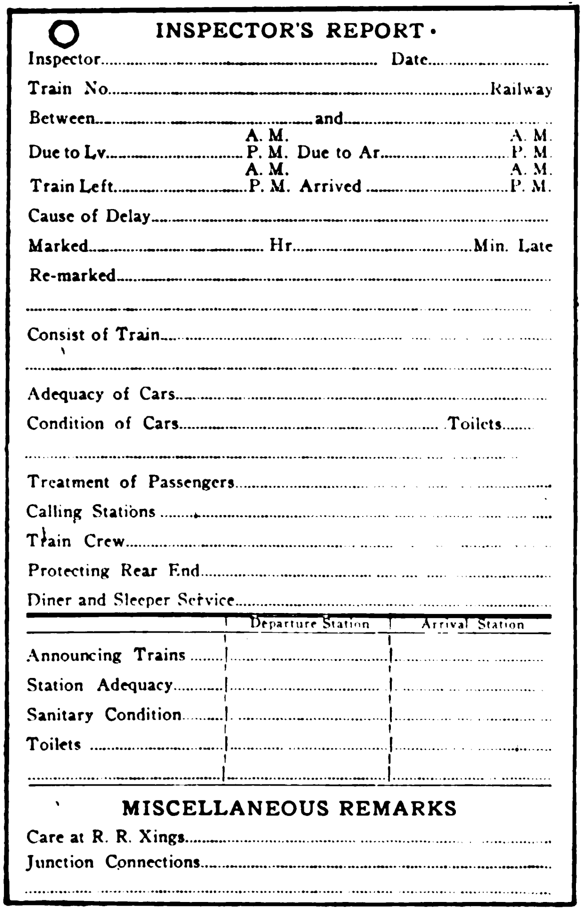
The Public Utilities Commission of Ohio, Columbus, Ohio.

Gentlemen:

The conditions described in above notice dated ....
will be corrected within..........days from this date so as to comply with the Commission's Administrative Order No. 9.

(Signed)..

OHIO COMMISSION—FORM 2—LATERAL-CLEARANCE NOTICE TO BE FILLED OUT BY A GENERAL INSPECTOR



○ INSPECTOR'S REPORT •

Inspector .... Date ....

Train No .... Railway

Between .... and ....

Due to Lv .... A. M. / P. M. Due to Ar .... A. M. / P. M.

Train Left .... A. M. / P. M. Arrived .... A. M. / P. M.

Cause of Delay ....

Marked .... Hr. .... Min. Late

Re-marked ....

Consist of Train ....

Adequacy of Cars ....

Condition of Cars .... Toilets ....

Treatment of Passengers ....

Calling Stations ....

Train Crew ....

Protecting Rear End ....

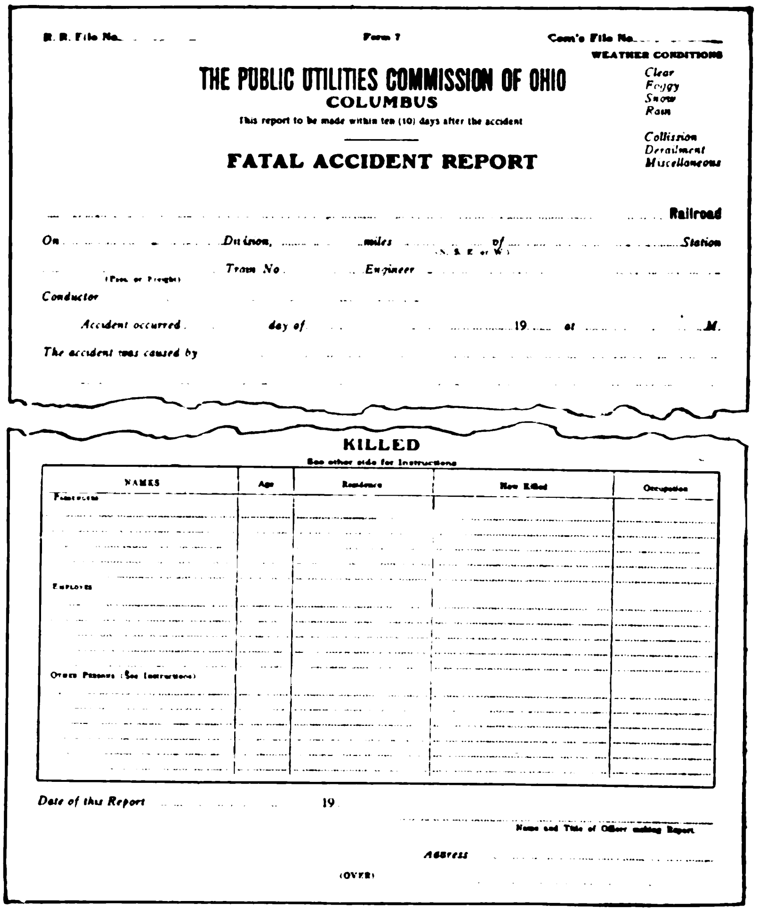
Diner and Sleeper Service ....

	Departure Station	Arrival Station
Announcing Trains		
Station Adequacy		
Sanitary Condition		
Toilets		

MISCELLANEOUS REMARKS

Care at R. R. Xings ....

Junction Connections ....



R. R. File No. .... Form 7 Com's File No. ....

WEATHER CONDITIONS
Clear
Foggy
Snow
Rain

Collision
Derailment
Miscellaneous

THE PUBLIC UTILITIES COMMISSION OF OHIO
COLUMBUS
This report to be made within ten (10) days after the accident

FATAL ACCIDENT REPORT

.... Railroad

On .... Division, ... miles .... (N. S. E. or W.) of .... Station

.... (Pass. or Freight) Train No. .... Engineer ....

Conductor ....

Accident occurred .... day of .... 19.... at .... M.

The accident was caused by ....

KILLED
See other side for Instructions

NAMES	Age	Residence	How Killed	Occupation
Passengers				
Employes				
Other Persons (See Instructions)				

Date of this Report .... 19....

....
Name and Title of Officer making Report.

Address ....

(OVER)

OHIO COMMISSION—FORM 3—NOTE BOOK FORM CARRIED BY ALL GENERAL INSPECTORS WHEN TRAVELING. FORM 4—FATAL ACCIDENT REPORT REQUIRED FROM RAILWAYS

964,155 of property for twenty-five different companies during the last fiscal year. The expenditures were $22,620 for investigating service and $67,120 for appraisal work.

On complaint the department makes field tests to check the calibration of meters or to determine whether the commission's standards of service are being followed. Indicating and graphic recording meters for making field tests are a part of the departmental equipment. All standardization work is done in the engineering laboratories of Ohio State University, which are conveniently located at Columbus.

Waterworks and Gas Department

In this department are handled all technical matters relating to waterworks, natural gas, artificial gas, pipe line and heating and cooling utilities. If any such utility is operated in conjunction with an electric power utility, this department still has charge of all valuation work connected therewith. As in the electrical department, much time is spent in valuation work. Moreover, in cold weather from twelve to eighteen inspectors are kept in the field to watch natural gas shortages. Where necessary these inspectors cut off industrial establishments using natural gas in order that a sufficient supply for domestic use may be available.

Telephone Department

The telephone expert in charge of this department assigns work and checks the final physical valuations, adding on the necessary overhead items. His assistants investigate complaints and security applications and inspect service. The engineers are divided into three special groups—central office, overhead construction and underground construction. In making appraisals each group handles its specialty.

The law forbids telephone companies to merge without a valuation of property being made and rates fixed. This requirement has thrown a heavy burden upon the telephone department. During the last fiscal year it appraised property of $3,500,000 in connection with capitalization petitions and $14,000,000 in connection with rate cases. About eighty investigations of service were made to adjust complaints. The field men are constantly making secret service tests to check up the general efficiency of service.

Just now the department is something like a year behind with its valuation work, there being seven merger and three rate cases upon which no work of this character has been done. Several engineers are engaged in observing the costs of new work now in process of construction in order to secure more accurate data for unit costs.

Bureau of Rates and Service

From the standpoint of frequent contact with all utilities the bureau of rates and service is one of the most important departments. All new schedules must be passed upon by this bureau. At the head is a traffic expert. Under him are a railroad-traffic clerk, a public-utility tariff clerk and a stenographer.

The railroad-traffic clerk checks all new railroad tariffs, schedule changes and orders of suspension, and he handles informal complaints. The utility-tariff clerk checks rate schedules, operating rules and regulations, and he conducts the correspondence in regard to standards of service and informal complaints. He also keeps on file municipal ordinances and franchises relative to public utilities.

Auditing Department

The accounting and statistical end of the commission's work is handled by the auditing department. It devises all classifications of accounts not taken care of by the Interstate Commerce Commission's classifications. It has already prescribed systems for the electric light and power utilities and is at present preparing a suitable classification for the gas utilities. It checks the annual reports of the utilities and compiles the annual statistical report of the commission. It assesses the annual $75,000 levy against the intrastate gross earnings of the utilities and provides the budget for the commission's maintenance. It also audits commission expenditures and makes up the payroll.

When securities are issued, a utility is required to furnish to the auditing department a detailed statement showing the nature of the securities sold, the selling price and the amount sold. This statement is checked up to see whether it corresponds with the commission's authorization.

Department of Capitalization

The department of capitalization is comparatively new. The duties of the investigator of securities are very similar to those of a security examiner for a financial institution. In an application for securities, the original application, together with any technical department reports regarding cost of improvements, is referred to this department for report. The investigator goes over the matter, studies the past financial history of the utility and looks up its present commercial standing. His report to the commission states whether in his judgment the price at which the utility proposes to sell the securities is fair.

HOW THE COMMISSION WORKS

While the commission has the right to challenge rates and of its own initiative to require the utilities to adhere to certain prescribed standards both of construction and of service, by far the greater part of its work originates from complaints. It recognizes two kinds of complaints, formal and informal.

Informal complaints may be made by letter, telegram, telephone message or personal visit. Sometimes the complaint is of such nature that it can be adjusted by the secretary. Otherwise, if the complaint refers to rates or service, it is sent to the bureau of rates and service. There an attempt is made to adjust the matter by correspondence. Many informal complaints are so settled.

In case the bureau decides that it is necessary to use an inspector to investigate the complaint, it is sent back to the secretary, who in turn sends it to the technical department concerned. If this department through its field engineers or by correspondence is not able to adjust matters, the complaint is referred to the commission itself. In such event the complainant is usually requested to file a formal complaint.

Informal complaints pertaining to matters other than rates or service are, upon their receipt, sent by the secretary to the technical department to which they belong. From then on the procedure is as before described.

Of formal complaints, which must be in writing, there are two kinds, adversary and application. The first is a complaint against a utility. The second is an application by a utility for permission to do something—as, for instance, to issue securities.

Ordinarily the utility must file an answer to an adversary complaint within ten days. If it satisfies the complaint before making answer, the complainant is required to file a written acknowledgement. If the complaint is not satisfied, it is docketed for public hearing.

If the complaint is with reference to rates, the commission after hearing the case may decide that a valuation is necessary. At the discretion of the commission this may be made entirely by its staff or a "barebone" inventory may be required from the utility. This inventory is simply a list of the physical property. The technical experts of the commission fix the unit prices of the various items and determine the value. The inventory is also checked by the field men connected with the technical department concerned.

Applications for securities must set forth the amount, nature, rate of interest, price and purpose of sale. All such applications except by unanimous vote of the commission must lay over ten days. No notice of the application is given to the public except through the daily press. The matter is then heard. If the securities are for extensions or betterments, the record is submitted to the proper technical department for a report as to whether the estimates are fair and reasonable as to cost and the amount of material necessary. If the improvements have been paid for out of earnings, a field force is sent out to see whether they have been made as represented. If the securities are desired for refunding purposes, the matter is referred to the investigator of securities. If all the reports are favorable, the commission issues a formal order authorizing the sale of the securities.

Hearings on formal complaints are usually held in Columbus, although at the discretion of the commission they may be held elsewhere. For all hearings of importance at least two of the commissioners are present, although one commissioner may be designated to act, and his finding if confirmed by the commission is deemed its decision. In the hearings the commission exercises good business judgment and disregards many of the little technicalities which so often delay the case and confuse the real issue in court proceedings.

Just as commissions need to know more about electric railways, so the carriers need to know more about the regulatory bodies. The foregoing Ohio article and those on the New York Second District Commission in the issues of Dec. 30, 1916, and Feb. 3, 1917, have described the plans of organization which these commissions have found most effective in the administration of their duties. To these in the future will be added articles describing special work carried on by various commissions—all designed to foster a better understanding of the precepts and practices of public utility regulation.—EDS.

Rhode Island Company in Unsound State

Preliminary Survey of Engineers for Investigating Commission Shows Upward Trend of Costs—Credit Not Good and Operating Expenses Must Be Reduced or Revenues Increased—President Potter Predicts $600,000 Deficit for Year Ending June 30, 1918, Unless Relief Is Granted

THE special legislative commission investigating the finances of the Rhode Island Company held a hearing on Oct. 24 in Providence at which detailed discussion was carried on in regard to the preliminary report of its consulting engineers. This report, as shown in the following abstract, deals with the operations of the company for the last decade and its present financial difficulties.

On Oct. 25 additional statements relative to the company's need of immediate relief were made to the commission by Rathbone Gardner, chairman of the federal trustees of the property, and A. E. Potter, president of the company. These are also published in part herewith.

Operating Expenses Must Be Reduced or Revenues Increased

The detailed examination carried on by the commission's engineers, Sloan, Huddle, Feustel & Freeman, enabled them to make various observations that indicate the need of financial relief for the company. For example, it is explicitly stated in their report that the credit of the company is not good. There is not sufficient revenue after operating expenses and taxes to make a safe margin for rentals and bond interest, and either operating expenses must be reduced or revenues increased.

In order properly to maintain the property, however, larger yearly amounts are needed than those expended during the last ten years, and the present advance in both material and labor costs makes it unlikely that any saving can be made by improved methods of handling the work. Moreover, the expenditures for new pavements to replace pavements previously provided by the company, together with the labor cost on track replacements in those cases where the tracks had some years of useful life remaining, totaled $520,439 for the last six years, or an average of $86,740 a year. This amount, the engineers say, is an indirect tax on car riders, for the benefit of property owners and vehicular traffic, that the public will do well to consider.

The transportation and power costs will be further increased, it is stated. The average speed, while it appears somewhat slow, is the result of numerous stops, narrow streets and traffic congestion. The observed speed in outlying districts appears high. The taxes in recent years have been unduly high, and careful consideration should be given to the possibilities of reducing this burden.

In regard to revenues, the engineers say that these would be materially increased by the complete abolition of jitney operation. The increase in gross for the last two years has been much greater than the average for the last ten years, largely owing to industrial activity, but it is doubtful that the increase should be expected to continue at the present rate. A charge of 1 cent for transfers would mean $150,000 more revenue a year, if the same number were issued. It is certain, however, that they would be considerably reduced and patrons would call for through lines. A transfer charge, the engineers believe, is only satisfactory as an arbitrary method of increasing revenues regardless of discrimination between patrons. No calculations have been made regarding a flat increase in fare, but the results are said to be easy to compute, allowances being made for a decrease in business. The possibilities of a zone system will require considerable study, which has not been given at present.

General Showing of the Company

The general financial results of operation for the ten fiscal years ended June 30, 1917, are given in Table I. The Narragansett Pier Railroad, a small steam line operated by the company, is not covered by this and the following tables. Since 1902 the company has paid dividends in only five years, the rate ranging from 3 to 6 per cent. Since 1913 no dividends have been declared. In the last fiscal year the net earnings applicable to dividends were only 0.39 per cent. The company has outstanding $5,120,887 of notes and $9,685,500 of stock —total, $14,806,387.

On the property owned plus improvements to leased lines (Table II), the average amount available for surplus or dividends, after deducting total charges (including rentals and interest) from the total income obtained from all sources, was 3.32 per cent on the cost

TABLE I—GENERAL FINANCIAL SHOWING OF RHODE ISLAND COMPANY FOR LAST DECADE
(Narragansett Pier Railroad Excluded)

Year Ended June 30	Total Operating Revenue	Total Operating Expenses	Taxes	Rentals	Interest Charges	Other Miscellaneous Charges	Total Charges	Available for Surplus or Dividends	Non-Operating Income	Available Plus Non-Operating	Dividends	Surplus for Year
1908	$4,194,503	$2,573,674	$282,847	$1,065,792	$116,288	....	$4,038,601	$155,902	$22,520	$178,422	....	$178,422
1909	4,160,785	2,313,954	289,294	1,065,792	54,711	....	3,723,751	437,034	32,173	469,207	$425,520	43,687
1910	4,440,809	2,537,686	300,683	1,065,792	25,196	....	3,929,357	511,452	62,114	573,566	510,624	62,942
1911	4,675,943	2,779,990	309,984	1,065,792	18,902	....	4,174,668	501,275	100,282	601,557	581,130	20,427
1912	4,989,610	3,147,733	370,758	1,142,792	28,209	....	4,689,492	300,118	94,934	395,052	290,565	104,487
1913	5,264,025	3,085,180	417,602	1,142,792	73,721	....	4,719,295	544,730	129,532	674,262	581,130	93,132
1914	5,323,934	3,387,228	449,997	1,149,792	125,572	....	5,112,589	211,345	144,658	356,003	....	356,003
1915	5,031,333	3,386,084	465,075	1,149,792	255,083	$1,460	5,257,494	*226,161	121,756	*104,405	....	*104,405
1916	5,432,273	3,525,618	483,614	1,149,792	243,797	4,476	5,407,297	24,976	119,783	144,759	....	144,759
1917	5,853,730	3,968,250	530,943	1,156,792	267,291	11,056	5,934,332	*80,602	117,926	37,324	....	37,324

*Deficit.

TABLE II.—TOTAL INCOME OF RHODE ISLAND COMPANY EXPRESSED AS RETURN ON COST OF REPRODUCTION OF PROPERTY OWNED, PLUS IMPROVEMENTS ON LEASED PROPERTY, AND ON CAPITAL STOCK
(Narragansett Pier Railroad Excluded)

Year Ended June 30	Reproduction Value of Property Owned Plus Improvements on Leased†	Capital Stock	Total Income—Operating Plus Non-Operating	Total Charges—Operating Plus Taxes, Rentals and Interest	Available for Surplus or Dividends					
					With no Additional Allowance for Depreciation			After Deducting Additional Depreciation‡		
					Amount	Per Cent on Reproduction Value	Per Cent on Capital Stock	Amount	Per Cent on Reproduction Value	Per Cent on Capital Stock
1908.........	$7,736,626	$7,780,400	$4,217,023	$4,038,601	$178,422	2.31	2.29	*$36,038	*0.47	*0.46
1909.........	7,865,309	8,510,400	4,192,958	3,723,751	469,207	6.11	5.51	253,688	3.23	2.98
1910.........	7,989,504	9,685,500	4,502,923	3,929,357	573,566	7.18	5.92	357,025	4.47	3.69
1911.........	8,556,437	9,685,500	4,776,225	4,174,668	601,557	7.03	6.21	380,350	4.44	3.93
1912.........	9,044,021	9,685,500	5,084,544	4,689,492	395,052	4.37	4.08	155,517	1.72	1.60
1913.........	10,039,207	9,685,500	5,393,557	4,719,295	674,262	6.72	6.96	426,536	4.25	4.40
1914.........	11,606,532	9,685,500	5,468,592	5,112,589	356,003	3.07	3.68	95,378	0.82	0.98
1915.........	12,247,845	9,685,500	5,153,089	5,257,494	*104,405	*0.85	*1.08	*370,308	*3.02	*3.82
1916.........	12,461,061	9,685,500	5,552,056	5,407,297	144,759	1.16	1.49	*122,899	*0.99	*1.27
1917.........	12,678,125	9,685,500	5,971,656	5,934,332	37,324	0.30	0.39	*232,120	*1.83	*2.40
Total.......	$100,224,667	$93,774,800	....	....	$3,325,747	3.32	3.55	$907,129	0.91	0.97

*Deficit.

†Ford, Bacon & Davis cost of reproduction for property owned as of date Nov. 1, 1916, taken as applicable to June 30, 1917, and adjusted to earlier years by deducting improvements on property owned as reported by the company for each year. To the adjusted reproduction value of property owned as thus found for any year was added the improvements on leased property to the end of that year as reported by the company.

‡Ford, Bacon & Davis estimated an additional allowance for annual depreciation of $273,880 to be necessary for all property either owned or leased, which is equal to 0.823 per cent on the total cost of reproduction. The additional depreciation for each year was computed by taking this percentage of the adjusted total cost of reproduction of all property either owned or leased for that year.

of reproduction and 3.55 per cent on the capital stock. With the Narragansett Pier Railroad included, the percentages are 3.26 and 3.49. After deducting additional depreciation charges deemed necessary, the average return on the reproduction cost becomes 0.91 per cent and on the capital stock 0.97 per cent. With the steam line included, the percentages are 0.82 and 0.88. The reproduction cost and depreciation estimates are based on the figures in the report of Ford, Bacon & Davis filed by the company. These were accepted for the purpose of the commission engineers' preliminary report, since a thorough check was not possible in the time available.

On the basis of the reproduction cost of property owned and leased, the average annual amount available for rentals and interest and for surplus or dividends, after providing for only operating expenses and taxes, was 5.05 per cent; and after deducting the additional depreciation necessary, 4.23 per cent. With the Narragansett Pier Railroad included, the percentages are 5 and 4.18.

FACTORS AFFECTING THE REVENUE

From 1909 to 1913 the annual increases in total revenues were fairly regular, but in 1914 there was a marked falling off in the increase over the preceding year. In 1915 there was an actual decrease of almost 5.5 per cent from the operating revenue of the previous year. Since then there have been exceptional gains, doubtless to be attributed to the growth of industrial activity. The average annual increase for ten years was 3.99 per cent.

According to the engineers, approximately 14,840 automobiles are operated in territory served by the Rhode Island Company. By considering the automobile as used every day in the year the losses in revenue were calculated as follows: 5 cents for each automobile, $270,830; 10 cents, $541,660; 15 cents, $812,490, and 20 cents, $1,083,320. It is difficult to say which figure represents the actual conditions, but it would seem as though 10 cents a day were not an unreasonable amount to assume. Nothing can be done to change these conditions, it is said, and the figures are given only to indicate one of the economic problems which the company has to meet.

The number of jitneys operated at any one time has varied from sixty to 550. At the present time about 100 are in regular operation. An all-day count of the passengers carried on the three principal jitney routes on Aug. 8, 1917, indicated that $637 a day was collected on these routes. For all the operation, $300,000 a year is a reasonable estimate of the loss in revenue to the company through the jitneys. This factor, it is said, is within the hands of the public as far as control is

TABLE III.—OPERATING EXPENSES OF RHODE ISLAND COMPANY EXPRESSED IN PER CENT OF TOTAL OPERATING REVENUE AND IN CENTS PER PASSENGER CAR MILE
(Narragansett Pier Railroad Excluded)

Year Ended June 30	Total Operating Revenue		Way and Structures		Maintenance of Equipment		Power		Conducting Transportation		Traffic		General and Miscellaneous		Express Department		Total¶ Operating Expenses	
	Per Cent	Per Car Mile	Per Cent	Per Car Mile	Per Cent	Per Car Mile	Per Cent	Per Car Mile	Per Cent	Per Car Mile	Per Cent	Per Car Mile	Per Cent	Per Car Mile	Per Cent	Per Car Mile	Per Cent	Per Car Mile
1908	100	32.13	7.62	2.45	8.29	2.66	9.48	3.05	25.25	8.11	....	....	9.08	2.92	1.64	0.53	61.36	19.72
1909	100	33.01	4.76	1.57	6.37	2.11	8.85	2.92	24.24	8.00	....		9.72	3.21	1.67	0.55	55.61	18.36
1910	100	34.34	8.36	2.87	5.54	1.90	9.14	3.13	22.36	7.69	0.01	0.00	10.03	3.45	1.70	0.58	57.14	19.62
1911	100	35.08	9.42	3.30	5.62	1.97	9.76	3.42	22.91	8.04	0.02	0.01	10.05	3.53	1.67	0.59	59.45	20.86
1912	100	34.53	8.01	2.76	5.79	1.99	13.47	4.64	23.40	8.06	0.03	0.01	10.26	3.53	2.10	0.72	63.09	21.71
1913	100	34.40	8.01	2.75	5.48	1.88	10.24	3.53	23.29	8.01	0.05	0.02	9.32	3.21	2.22	0.76	58.61	20.16
1914	100	33.68	9.02	3.04	5.65	1.90	11.30	3.81	26.47	8.91	0.03	0.02	8.66	2.91	2.49	0.84	63.62	21.43
1915	100	31.71	10.84	3.44	6.64	2.11	10.25	3.25	27.89	8.84	0.04	0.01	8.95	2.84	2.69	0.85	67.30	21.34
1916	100	33.97	9.89	3.36	6.30	2.14	9.34	3.17	27.57	9.37	0.02	0.00	8.97	3.05	2.81	0.96	64.90	22.05
1917	100	35.69	8.66	3.09	6.26	2.23	12.49	4.46	27.03	9.65	0.01	0.00	10.11	3.61	3.23	1.15	67.79	24.19

concerned. The convenience of jitney service for certain distances is without question, but that it cannot take the place of electric railway service completely under present conditions is equally without question.

TREND IN MAINTENANCE AND POWER EXPENSES

The operating expenses, expressed in percentages of operating revenues and cents per passenger car-mile, are shown in Table III. The average yearly amount expended for maintenance and depreciation for the last decade was 4.95 cents per car-mile, or 14.65 per cent of the gross revenue. This amount, the engineers state, is less than what is deemed necessary by other first-class systems.

In 1912 the total cost of power reached the maximum, being 4.64 cents per car-mile. The high cost for that year was due to heavy renewal charges which were carried into the operating accounts. Moreover, the changes being made in generating equipment very likely reduced the operating efficiency of the station for that year. In the years following the costs were materially reduced and remained normal until the high price of coal became effective. Fig. 1 shows the average cost of power per kilowatt-hour.

The average rate paid for coal during 1917 was $6.07, being almost double the rate for the years previous. This increased the cost of operation 1.29 cents per car-mile or about $211,600. During the late winter, when a coal shortage seemed imminent, the company bought large amounts of coal in the open market at prices between $8 and $11 per ton. As a result it had on hand 23,920 tons of coal on July 1, 1917, which had cost an average of $8.26 per ton. The new contract for coal provides for purchase at the mine at whatever price is established by the federal government; to this price must be added rail freight to tidewater and finally water transportation to Providence, which is at a higher rate than the barge contract which just expired. The net result will be that contract coal will be at least $1 higher than it was the last year; and with the high priced coal now in storage, it is certain that the coal cost for 1918 will be even greater than for 1917.

HOW LABOR AND MATERIAL COSTS HAVE JUMPED

Of the total revenue obtained from all sources nearly 39 per cent was expended in 1917 for labor necessary for operation. The total expenditure for labor in eight of the last ten years was materially greater than for the preceding year. Fig. 2 shows the rates paid per hour over the same period. This chart shows an increase for every year in the average rate paid to all employees. For the whole period the increase totaled 6 cents or 27 per cent more than the average rate in 1908. An increase was awarded on June 1, 1917, the effects of which are not reflected in either of the charts. The total amounts for the year, therefore, will be increased slightly, and there will also be an increase in the average rate. It is evident, the engineers assert, that the expenditure for labor will continue to increase year by year.

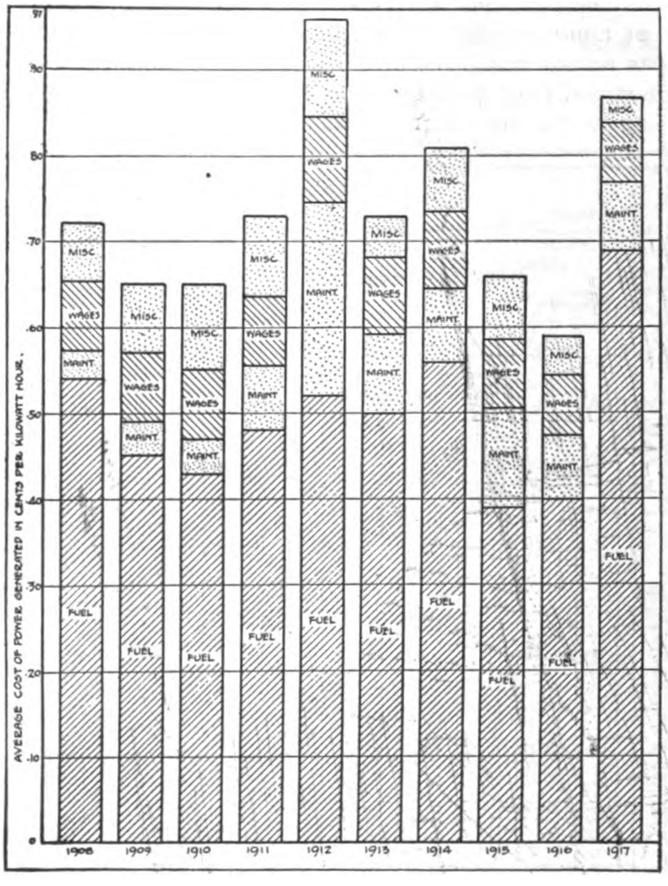
Computing a weighted average for materials actually bought in 1917 which had also been bought in any of the four preceding years, and using as a basis 1917 prices and 1913-1916 average prices, both of which prices were actually paid by the company, the engineers found that, estimating on the basis of the average consumption of these materials over the last five years, the cost index figure for 1917 was $0.5011 as compared with $0.4010 for the four preceding years, or an increase of practically 25 per cent. At the present time prices are still up, and it is impossible to forecast where they will be in the future.

OTHER EXPENSES, TAXES AND RENTALS

The reserve set up for injuries and damages makes up the major portion of the total general and miscellaneous expense account, having averaged 62 per cent of it for ten years. For the last four years the company has been setting aside 6 per cent of its total operating revenue to take care of this item. Since injuries and damages show a general trend toward an increase, it is scarcely to be expected that any radical reduction can be looked for in the account.

The expenses for the express department have shown a steady increase since 1908, but the department is more than self-supporting and the revenues have increased more rapidly than the expenses.

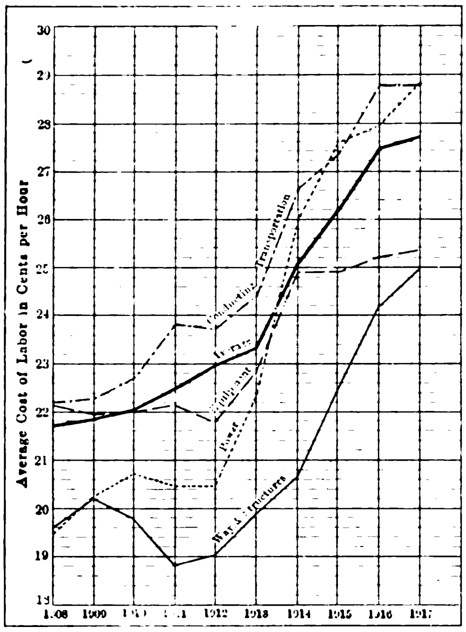
The percentage that the total taxes were to the operating revenue was 6.74 in 1908. The percentage reached its lowest point of 6.63 in 1911, from which it increased every year but one up to 1917, when it mounted to 9.04. If the percentage were based on the revenue obtained from passengers only, it would equal 9.82, which means that of every nickel taken in practically 10 per cent or 0.5 cent has to be paid out in taxes. To express the total change over ten years, the taxes in 1917 were 89 per cent greater than in 1908, although the operating revenue had increased only 41 per cent



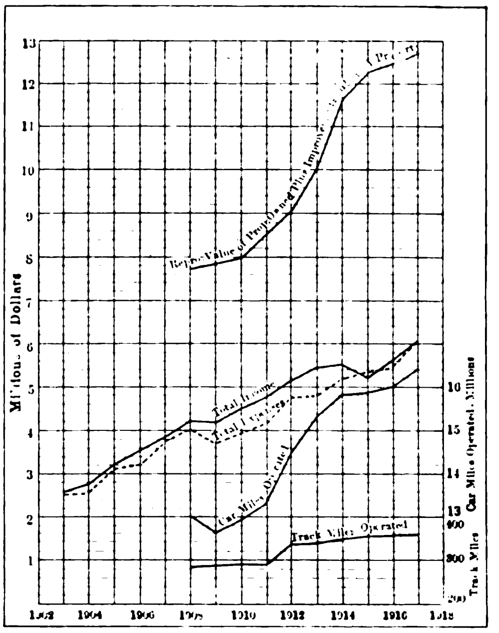
RHODE ISLAND—FIG. 1—AVERAGE COST OF POWER PER KILOWATT-HOUR FOR LAST DECADE and the cost of reproduction of all companies only 28 per cent. The growth of the tax burden is shown in Fig. 3.

The engineers prepared a statement of rentals paid for all leased properties, their outstanding securities and total cost of reproduction adjusted to the time they were taken over, together with the per cent return that the rentals were of both these values for the last ten years. The average rate of return on securities in 1917 was 5.16 per cent, and on the cost of reproduction 5.66 per cent. The highest rates in the decade were 5.90 per cent and 5.47 per cent respectively. These rates, the engineers state, indicate that either on total securities or cost of reproduction the rentals are moderate as compared to those for similar properties elsewhere.

Fig. 4 shows the relation between value, income, expenses, car-miles and track-miles in recent years. From 1908 to 1917 the track mileage operated increased from 285.01 to 351.16, and the car-miles per track-mile from 45,809 to 46,311. The miles of track increased 24.2 per cent and the car-miles 26 per cent, indicating that approximately the same service per mile of track was maintained. Operating revenue per mile of track increased from $14,717 to $16,528, and the revenue passengers per car-mile rose from 6.07 to 6.65. The operating revenue per car-mile increased from 32.13 cents to 35.69 cents. In 1908 the revenue passengers were 79,175,629 and the transfer passengers 11,579,015, the corresponding 1917 figures being 109,084,546 revenue and 15,590,691 transfer passengers. The transfer ratio was held within close limits during the period.

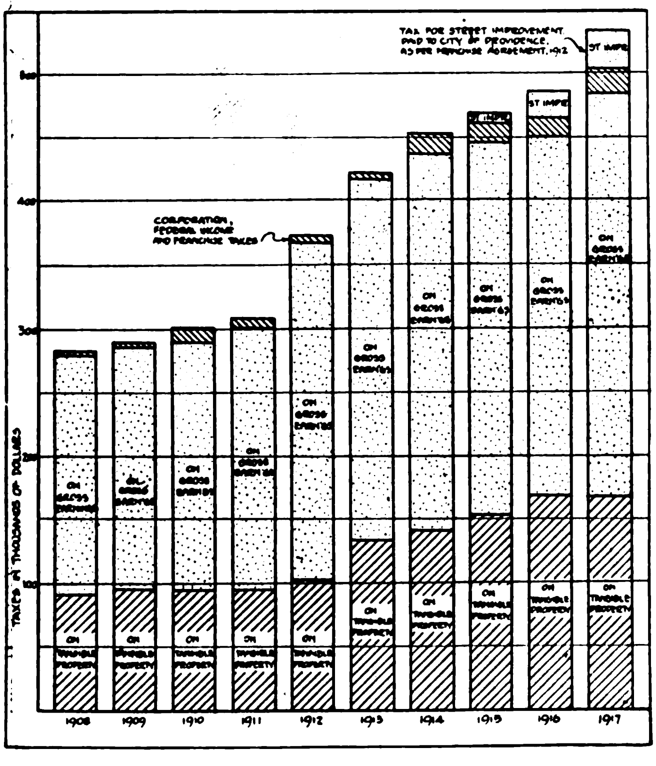


RHODE ISLAND—FIG. 2—AVERAGE COST OF LABOR IN CENTS PER HOUR FOR LAST DECADE



RHODE ISLAND — FIG. 4—INCREASES IN VALUE, INCOME, EXPENSES, CAR MILES AND TRACK MILES

The passenger revenue per revenue passenger in 1917 was 4.96 cents, a decrease from 5.01 cents in 1909.



RHODE ISLAND—FIG. 3—GROWTH OF TAX BURDEN DURING LAST DECADE

MR. GARDNER URGES IMMEDIATE RELIEF

In commenting upon the foregoing report of the engineers for the investigating commission, Mr. Gardner spoke for the federal trustees of the property (under the New Haven dissolution plan) in part as follows:

"Any candid examination of the affairs of the company was found to show that it has been heading for disaster. The greatest troubles seem to be two: (1) Increased cost of carrying on the business; (2) the greatly increased use of automobiles. The company has to-day no borrowing power. At any moment its financial weakness may compel radical curtailment of service. We say then, fully conscious of our trust, that the company needs relief and needs it immediately. We had hoped against hope that conditions confronting the company would improve, but conditions have been working not for but against the company.

CONDITIONS GROWING WORSE, SAYS MR. POTTER

Since June 30, 1917, which is the end of the period covered by the engineers' report, the financial condition of the Rhode Island Company has grown worse. This fact was emphasized by President Potter before the commission. There has been a total increase of only $47,020 in the operating revenue for July, August and September of this year, while the operating expenses have increased $183,762, an excess of $136,742.

The rise in expenses was due to the fuel and supply costs and the increase in wages. The August and September operating costs were affected largely by wages, concessions having been granted which amount practically to 15 per cent of the entire payroll. It is estimated that the payroll for the next year will be increased approximately $360,000 for the same hours of labor. The present price which the company is obliged to pay for coal, including marine and war insurance, is now in excess of $7.79 a ton. In spite of a constant effort to keep the supply up, the storage pile on Oct. 6, 1917, had been reduced to 15,004 tons, with only 2150 tons available from the overhead pocket of the station. Moreover, the company, in order to keep its lines in a safe condition, has been obliged to hire outside track labor at a higher rate than it is paying its own force.

For the nine months ended Sept. 30, 1917, after paying its operating expenses and fixed charges, the company had an actual deficit of $119,743. From present indications, said Mr. Potter, this deficit by the end of the calendar year will amount to at least $300,000, even without allowing for any depreciation reserve as recommended by Ford, Bacon & Davis. And for the fiscal year ending June 30, 1918, with the present prices of labor and material continuing, the company will fall short at least $600,000 of the amount necessary to meet its operating expenses and fixed charges, unless some relief is granted.

St. Paul Orders Equipment for the Cascade Electrification

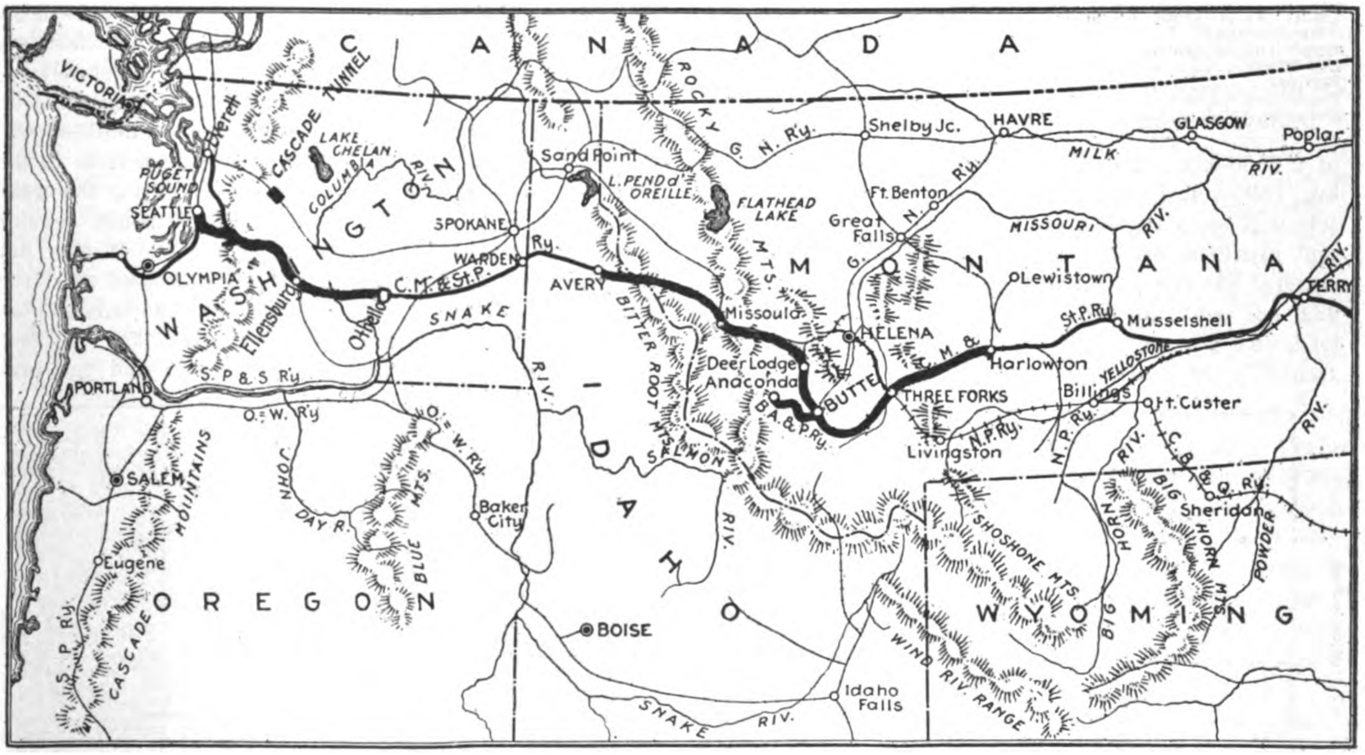
New Types of Locomotives Especially Designed for Passenger Service Will Be Used—Delivery Specified to Begin About the Close of the Year 1918

THE Chicago, Milwaukee & St. Paul Railway on Oct. 29 placed orders for the substation equipment of the 216.9 (route) mile Othello, Seattle and Tacoma division, and also for seventeen locomotives to be used on either the first or second electrifications as hereinafter detailed. To hasten delivery dates on account of the high cost of fuel oil the orders were divided between the Westinghouse and General Electric companies as follows: To the Westinghouse Electric and Manufacturing Company, ten locomotives and three substations, namely those at Kittitas, Doris and Taunton. To the General Electric Company, seven locomotives and five substations, located at Tacoma Junction (formerly Tacoma Shops), Renton (including former Black River Junction), Cedar Falls, Hyak and Cle Elum. Each substation includes one or more 2000-kw. motor-generator sets and corresponding high-tension apparatus.

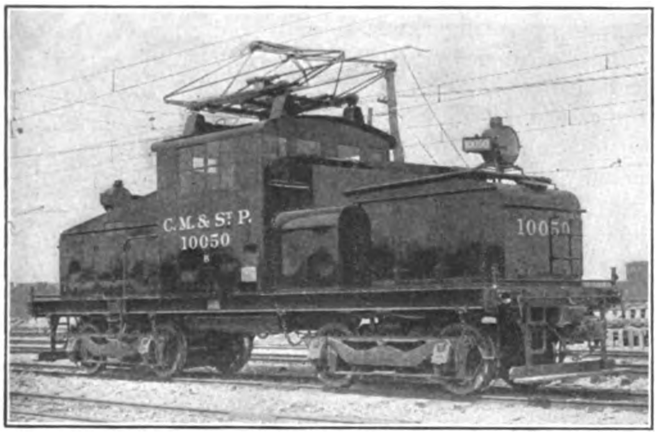
The passenger locomotives were guaranteed by the manufacturers to provide a capacity sufficient to haul twelve all-steel cars at 25 m.p.h. on a 2 per cent grade.

The locations of the substations, the numbers of units per station, and the mileage between stations are given in the table on page 820.

The general features of the extension of the St. Paul


C A N A D A
VICTORIA
PUGET SOUND
Everett
CASCADE TUNNEL
LAKE CHELAN
COLUMBIA RIV.
SEATTLE
OLYMPIA
WASHINGTON
Ellensburg
Othello
C.M.&St.P.
SPOKANE
WARDEN
Ry.
SNAKE
Sand Point
L. PEND d'OREILLE
AVERY
BITTER ROOT MTS.
ROCKY MTS.
G.N.Ry.
FLATHEAD LAKE
Shelby Jc.
HAVRE
MILK
GLASGOW
Poplar
RIV.
Ft. Benton
Great Falls
MISSOURI
RIV.
MONTANA
Lewistown
Missoula
HELENA
St.P.Ry.
Musselshell
TERRY
RIV.
Deer Lodge
Anaconda
BUTTE
B.A.&P.Ry.
M.&
Harlowton
THREE FORKS
Billings
YELLOWSTONE
Ft. Custer
N.P.Ry.
N.P.Ry.
Livingston
SALMON
S.P.&S.Ry.
PORTLAND
O.W.Ry.
JOHN DAY R.
O.W.Ry.
BLUE MTS.
Baker City
IDAHO
RIV.
SALEM
MOUNTAINS
Eugene
OREGON
CASCADE
S.P.Ry.
BOISE
SNAKE RIV.
Idaho Falls
WIND RIV. RANGE
SHOSHONE MTS.
WYOMING
BIG HORN RIV.
BIG HORN MTS.
C.B.&Q.Ry.
Sheridan
POWDER RIV.

ST. PAUL ELECTRIFICATION EXTENSION—MAP OF PRESENT AND PROSPECTIVE ELECTRIFICATIONS
Heavy line east of Avery shows present electrification, heavy line west of Othello shows electrification under way for which locomotives have just been authorized



ST. PAUL ELECTRIFICATION EXTENSION—75-TON SWITCHING LOCOMOTIVE

electrification of which this new equipment will form a part were covered in an article in the issue of the ELECTRIC RAILWAY JOURNAL for July 21, 1917, page 92. The present electrified section, that now in process of electrification, and the relation of these two to the company's trackage in Montana and Washington, are indicated on the accompanying map. The route mileage of electrified road between Harlowton and Avery is 437.6, and this added to the new mileage makes a total of 654.5 route-miles.

SUBSTATION APPARATUS

The 3000-volt d.c. motor-generator sets to be supplied will be similar to those previously furnished by the General Electric Company, namely, the combination of a 2500-kva., 2300-volt, 60-cycle motor and two 1000-kw., 1500-volt d.c. generators connected in series. These sets will carry three times their rated load, *i.e.*, 200 per cent overload, for five minutes. The efficiencies of the General Electric sets are to be: at 50 per cent overload, 92.6 per cent; at full load, 92.4 per cent; at one-half load, 88.8 per cent. The Westinghouse sets will be substantially the same in regard to capacity and efficiency.

LOCATION OF SUBSTATIONS, NUMBERS OF UNITS AND MILEAGE BETWEEN STATIONS

Substation	No. of 2000-kw. Motor-Generator Sets	Mileage Between Stations
Tacoma Junction	2	
Renton	1 (room for 2)	28.7
Cedar Falls (foot of 20-mile, 1.7 per cent grade)	2 (room for 3)	27.2
Hyak (other side of grade)	2 (room for 3)	21.7
Cle Elum	1 (room for 2)	29.0
Kittitas	2 (room for 3)	31.6
Doris (on 2.2 per cent grade)	2 (room for 3)	23.0
Taunton (end of line)	2	34.9

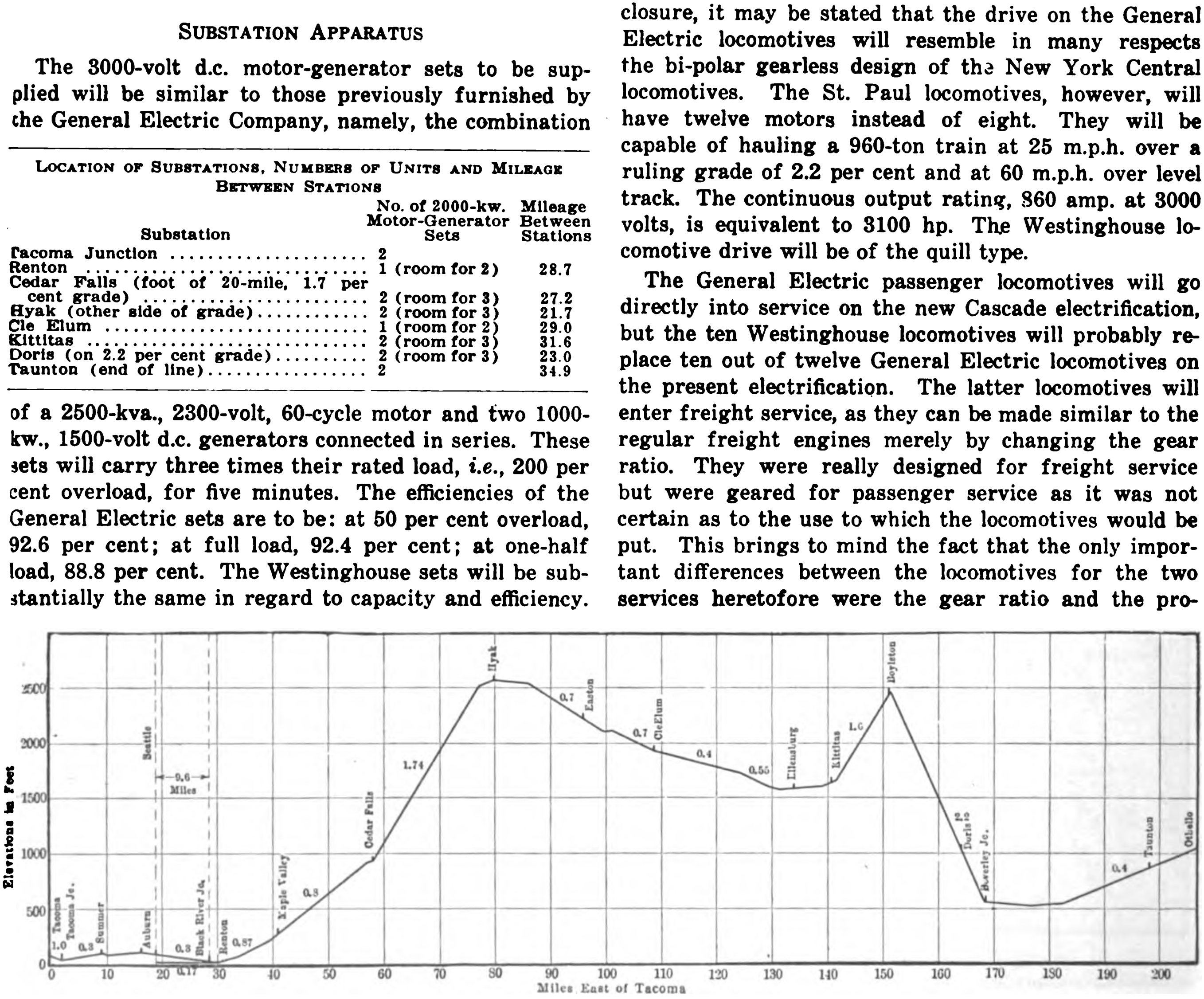
At Tacoma and Renton, 55,000-volt power covering about one-third of the requirements will be received from Stone & Webster plants, while the remainder, at 102,000 volts, will come from the Washington Water Power Company. There will be installed one 2500-kva. transformer for every 2000-kw. motor-generator set.

LOCOMOTIVES

Of the seven locomotives ordered from the General Electric Company, two are switching locomotives of the steeple-cab type illustrated. These are duplicates of two already in use, the details of which appeared in the issue of this paper for March 4, 1916, page 465. Each weighs 75 tons, and has a tractive effort of 22,000 lb. and a rating of 200 amp. at 3000 volts, corresponding to about 550 hp. The heavily braced and reinforced underframe is mounted on swivel trucks, each carrying two GE-225 motors, nose suspended. The endeavor has been to use parts of the switching locomotive equipment which would be interchangeable with the corresponding parts on the road locomotives. Thus, for example, a compressor much larger than necessary is installed in order to obviate the necessity for carrying extra parts.

The passenger locomotives will be the first St. Paul machines designed especially for passenger service. While the details of design are not yet ripe for disclosure, it may be stated that the drive on the General Electric locomotives will resemble in many respects the bi-polar gearless design of the New York Central locomotives. The St. Paul locomotives, however, will have twelve motors instead of eight. They will be capable of hauling a 960-ton train at 25 m.p.h. over a ruling grade of 2.2 per cent and at 60 m.p.h. over level track. The continuous output rating, 860 amp. at 3000 volts, is equivalent to 3100 hp. The Westinghouse locomotive drive will be of the quill type.

The General Electric passenger locomotives will go directly into service on the new Cascade electrification, but the ten Westinghouse locomotives will probably replace ten out of twelve General Electric locomotives on the present electrification. The latter locomotives will enter freight service, as they can be made similar to the regular freight engines merely by changing the gear ratio. They were really designed for freight service but were geared for passenger service as it was not certain as to the use to which the locomotives would be put. This brings to mind the fact that the only important differences between the locomotives for the two services heretofore were the gear ratio and the pro-



ST. PAUL ELECTRIFICATION EXTENSION—PROFILE OF OTHELLO, SEATTLE AND TACOMA DIVISION

vision of a heater for passenger trains. In the future, however, freight and passenger machines will be widely different. The passenger locomotives must not only provide for heating equipment but must also be capable of operating at the highest speeds without regard to water, snow and other weather conditions. For local passenger service the company will continue to operate the split halves of two existing locomotives.

As to deliveries it is provided that the Westinghouse Company is to deliver the first two locomotives in fifteen months from the signing of the contract, and the remainder thereafter at the rate of two locomotives per month, completing the entire order of ten in four months. Delivery of the General Electric equipment is specified at fourteen months. This important extension of the electrification is, like the preceding work, being carried out under the supervision of C. A. Goodnow, vice-president Chicago, Milwaukee & St. Paul Railway.

Public Utility Management*

How the Public, the Employee and the Investor Are All Concerned in a Partnership Arrangement with Mutual Responsibilities

BY C. NESBITT DUFFY
Vice-President and General Manager Manila Electric Railroad & Light Corporation, Manila, P. I.

THE management of a public utility will here be discussed from the standpoint of the public, the employee and the investor. These points are taken up in the order named not because of their respective importance or chronological precedence but simply in turn in the light of their joint relationships and mutual partnership responsibility.

MANAGEMENT FROM THE STANDPOINT OF THE PUBLIC

The public has the right to expect from a utility the best service practicable at the lowest cost possible under efficient management, taking into consideration the conditions under which the service is furnished and all of the elements of cost involved. The cost should include not only that of operating and maintaining the property used in furnishing the service, but all investment charges as well, including insurance, taxes, depreciation, provision for extraordinary contingencies and a fair return on the investment. A utility should provide and maintain reasonably adequate facilities and furnish reliable, safe and sufficient service. It should have its employees thoroughly trained in the performance of their duties, which should be done, with due regard for their responsibility to the public.

The management should conduct the business according to a wise, progressive, fair and liberal policy. The company should take part in all public movements looking to the benefit of the community served. It should cultivate and establish friendly relations with government officials, the newspapers and business interests, co-operating with them in every way possible in order to deserve, win and retain the confidence and good-will of the public. The management should not only be willing to receive but should invite fair and constructive criticism. All complaints, no matter how trivial, should be thoroughly investigated and the results explained to the complainants in a conciliatory and courteous manner, regardless of whether the complainant or the company is at fault.

The opportunity of discussing its business with the public promotes not only a better understanding between the company and the public, but a better knowledge of the mutual obligations resting on both. "Service" has been defined as "giving value received." The utility which serves the public best, all things considered, serves itself best.

The employee of a utility in return for honest, faithful and loyal service has the right to equitable wages, consistent with the conditions obtaining and the character and the importance of the work performed. He is entitled to fair and impartial treatment, with the opportunity to advance solely on merit. He has the right to expect independence in his employment without regard to political, religious, social, business or personal influence. The company should take an interest in his well-being from a moral, educational, social and economic standpoint, consistent with its obligations to the public and the investor.

FROM THE STANDPOINT OF THE INVESTOR

The investor has the right to expect that the public accord to the company fair and impartial treatment, with due consideration for the conditions obtaining and the problems involved in the conduct of the business, the protection of the investment therein and its mutual responsibility for the success or failure of the enterprise. The investor has the right to expect proper cooperation on the part of the public in the use of the facilities provided. It is the duty of the company to operate its property for the convenience and best interests of the public as a whole, but due allowance should be made for the "human equation" in the work of employees. The public is obligated to observe the rules of the company, formulated for its protection, and to do its part in order to secure good service.

The investor has a right to demand that the property be operated in the most efficient manner possible, consistent with good service, good wages and good dividends, and the safeguarding of his investment. In the investor's interest the employees should be required to render honest, faithful and loyal service in return for equitable wages and fair treatment, and they should be required to perform their duties with a full realization of their responsibility to the company and to the public. They should be made to understand that they are partners in the business, that they and the company will be judged by the manner in which they perform their duties and that the success or failure of the business depends very largely upon them.

The investor is entitled, because of the risks and hazards assumed in the investment as well as the value of the service to the public, to a fair return, with adequate provision for the maintenance and the depreciation of the property.

In the conduct of the business of a utility the public is entitled to good service; the employee to good wages; the investor to good dividends. Anyone who assumes the management of a utility is responsible for the accomplishment of these things, but they can be secured only through co-operative effort and the proper discharge of the mutual responsibility of the parties at interest. This is true of the ownership and operation of all public utilities.

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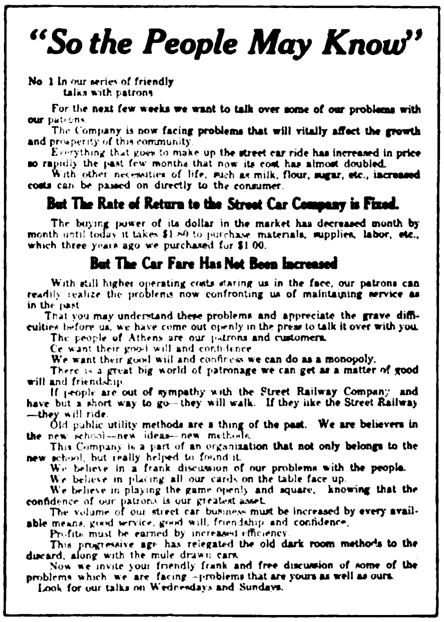
*Abstract of paper recently delivered before A. E. R. A.—N. E. L. A. joint company section No. 5.

"So the People May Know"

Series of Advertisements Being Used on Doherty Traction Properties to Aid in the Securing of Higher Fares—Already Proving Their Worth

ANOTHER "So the People May Know" series of advertisements, like that used some time ago on the Toledo property, is now being published by Henry L. Doherty & Company for its various other traction properties controlled through the Cities Service Company. The series was designed by E. R. Kelsey, publicity manager Toledo Railways & Light Company. The object of the advertisements is to present the problem of higher operating costs to the public in order to show why electric railways deserve higher fares. Already, it is said, the advertisements have been of material assistance in securing increased revenues in Bartlesville, Okla., and Meridian, Miss.



"So the People May Know"

No 1 In our series of friendly
talks with patrons

For the next few weeks we want to talk over some of our problems with our patrons.

The Company is now facing problems that will vitally affect the growth and prosperity of this community.

Everything that goes to make up the street car ride has increased in price so rapidly the past few months that now its cost has almost doubled.

With other necessities of life, such as milk, flour, sugar, etc., increased costs can be passed on directly to the consumer.

But The Rate of Return to the Street Car Company is Fixed.

The buying power of its dollar in the market has decreased month by month until today it takes $1.80 to purchase materials, supplies, labor, etc., which three years ago we purchased for $1.00.

But The Car Fare Has Not Been Increased

With still higher operating costs staring us in the face, our patrons can readily realize the problems now confronting us of maintaining service as in the past.

That you may understand these problems and appreciate the grave difficulties before us, we have come out openly in the press to talk it over with you.

The people of Athens are our patrons and customers.

Ce want their good will and confidence.

We want their good will and confidence we can do as a monopoly.

There is a great big world of patronage we can get as a matter of good will and friendship.

If people are out of sympathy with the Street Railway Company and have but a short way to go—they will walk. If they like the Street Railway—they will ride.

Old public utility methods are a thing of the past. We are believers in the new school—new ideas—new methods.

This Company is a part of an organization that not only belongs to the new school, but really helped to found it.

We believe in a frank discussion of our problems with the people.

We believe in placing all our cards on the table face up.

We believe in playing the game openly and square, knowing that the confidence of our patrons is our greatest asset.

The volume of our street car business must be increased by every available means, good service, good will, friendship and confidence.

Profits must be earned by increased efficiency.

This progressive age has relegated the old dark room methods to the discard, along with the mule drawn cars.

Now we invite your friendly frank and free discussion of some of the problems which we are facing—problems that are yours as well as ours.

Look for our talks on Wednesdays and Sundays.

ONE OF THE ADVERTISEMENTS USED BY DOHERTY ELECTRIC RAILWAYS

An example of the type of advertisement which Mr. Kelsey has written is shown in the accompanying illustration. The advertisements are all characterized by an expressed desire to secure and to maintain the good-will and the confidence of the patrons. The first two show clearly the grave problem that confronts electric railways in the way of rapidly increasing costs, after which Mr. Kelsey develops the idea of the importance of electric railways to the communities served. The injustice of paving taxes is explained, and it is made clear that any burdens arising from such charges or any other excess tax must come out of the pockets of the patrons. The subject matter in the advertisements is not presented in a stilted, formal manner, but rather as it would be in a friendly chat with the car-riders. The idea of "talking it over" with the patrons is played up in the introductions to the advertisements and is consistently followed.

At Meridian, Miss., the Meridian Light & Railway Company has discontinued the sale of twenty-four-rides-for-a-dollar tickets and is now charging 1 cent for transfers. It is said that a great part of the success of the increased fares there is probably due to the recent advertisements. They are believed to have minimized the complaints regarding the higher fares. Moreover, they have been of similar use in Bartlesville, Okla., where cut-rate tickets have been abolished.

For the Hattiesburg (Miss.) Traction Company no fare increase has been made because of the advertisements, but they have produced in the public mind a much better understanding of the company's difficulties. The St. Joseph (Mo.) company has not yet made an increase in fares, but the case will come before the Public Service Commission on Nov. 7.

AMERICAN ASSOCIATION NEWS

Executive Committee Meets

As this issue goes to press the executive committee of the American Association is holding a meeting at the office of the association in New York to consider the recommendations of the committee on military traffic as detailed in the issue of the ELECTRIC RAILWAY JOURNAL for Oct. 27, page 774. The suggestions involved the appointment of a representative of the association to be located at Washington for the purpose of keeping the government bureaus informed as to the facilities of electric railways for transporting war supplies. It was the sense of the transportation committee that the funds for this work should be raised by subscription among the companies and this point was also under discussion at the executive committee meeting. A report of the meeting will appear in next week's issue.

Personnel of Committee on Military Traffic

The appointments to membership on the American Association committee on military traffic are as follows: Arthur W. Brady, president Union Traction Company of Indiana, chairman; W. R. Alberger, vice-president and general manager San Francisco-Oakland Terminal Railways; C. Loomis Allen, president Allen & Peck, Inc.; W. H. Bloss, Ohio Brass Company; L. C. Bradley, district manager Stone & Webster, Houston, Tex.; H. E. Chubbuck, vice-president executive Illinois Traction system; T. C. Cherry, vice-president and general manager Rochester & Syracuse Railroad; Frank R. Coates, president Toledo Railways & Light Company; F. W. Coen, vice-president and general manager Lake Shore Electric Railway; J. F. Collins, vice-president and general manager Michigan United Railways; F. A. Davis, president and general manager Scioto Valley Traction Company; E. C. Faber, vice-president and general manager Aurora, Elgin & Chicago Railroad; F. R. Ford, Ford, Bacon & Davis, New York; C. L. Henry, president Indianapolis & Cincinnati Traction Company; J. N. Shannahan, president Newport News & Hampton Railway, Gas & Electric Company; Paul Shoup, president Pacific Electric Railway; W. C. Sparks, vice-president and general manager Rockford & Interurban Railway; Dana Stevens, vice-president Cincinnati Traction Company; R. B. Stearns, vice-president Bay State Street Railway; L. S. Storrs, president The Connecticut Company; R. I. Todd, president Indianapolis Traction & Terminal Company; C. N. Wilcoxon, president Chicago, Lake Shore & South Bend Railway; Chester P. Wilson, president Interstate Public Service Company; Britton I. Budd, president Elevated Railroads of Chicago.

The purpose of this committee is to promote co-operation with the government in military transportation and to secure a better distribution of traffic over interurban lines, especially near army cantonments.

EQUIPMENT and MAINTENANCE

HAVE YOU A GOOD WAY OF DOING A JOB?
—Pass It Along

These Articles Have Been Selected to Provoke Thought and Stimulate Discussion. All of the Technical Departments Are Represented

Steel-Tired Wheels Used in City and Interurban Service

Canadian Railway Makes Worn Steel Wheels Into Centers and Equips Them with Tires to Avoid Cost of Solid Steel Wheels

BY W. G. MURRIN
Assistant General Manager British Columbia Electric Railway, Vancouver, B. C

Steel-tired wheels have been in common use on European electric railways for some years, but on this continent, excepting on some interurban lines, this practice is almost unknown. The British Columbia Electric Railway, operating over 350 miles of track, of which 180 miles are interurban, has developed a practice of using on new equipments rolled-steel wheels which are afterwards made into centers and fitted with tires. This procedure has been found economical under local conditions and may be of interest to some other railways since the prices of both chilled-iron and steel wheels are mounting skyward.

The large amount of interurban equipment on this railway, including ten heavy locomotives, required suitable machinery in its repair shops, including a 42-in. wheel lathe. This no doubt facilitated the introduction of steel wheels on the city equipments, but other factors such as the distance of this property from wheel makers, and local climatic conditions which, particularly in Vancouver, cause unusually slippery rails during the wet season, contributed to the development of this practice, experience having indicated that slid flats are less prevalent with steel than with chilled-iron wheels. Flats on the steel wheels, also, can be more easily remedied.

A brief history of the experiences which led to the adoption of steel tires will perhaps be of interest. In 1905 the standard wheels were 33-in. cast iron, single-web plate wheels being used for interurban equipment. A number of double truck city cars of the Narragansett convertible type were built and equipped with 30-in. wheels, but the smaller motor clearance on temporary ballasted tracks, and the apparent tendency of the smaller wheel to develop slid flats more rapidly than the others, led to their being discarded. In 1909 two experimental sets of steel-tired wheels of English manufacture were installed, one each on city and interurban cars, and the performance of these resulted in specifying 33-in. rolled-steel wheels for thirty new city cars ordered in 1910. The following year government regulations forced the elimination of iron wheels from all interurban passenger equipments, owing to the danger from broken flanges, etc., and a number of cars were equipped with steel-tired wheels having cast-iron centers of the Midvale bolted type. The noticeable reduction of the flat-wheel nuisance which followed the use of steel resulted in extending its application to city cars, and consequently the shops were equipped with suitable machinery to care for them.

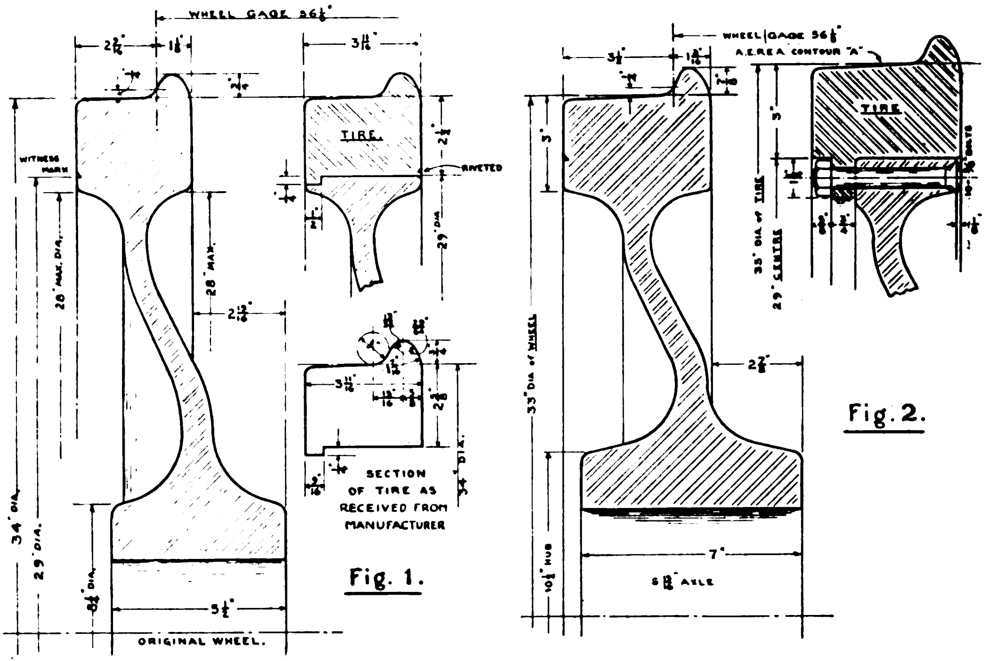


Fig. 1. Fig. 2.

WORN STEEL WHEELS ARE MADE INTO CENTERS AND ARE EQUIPPED WITH TIRES—CITY AND INTERURBAN WHEELS ARE SHOWN RESPECTIVELY IN FIGS. 1 AND 2

STEEL TIRES PLACED ON STEEL CENTERS

Then the price of steel wheels began to rise, and the economy of using tires suggested the idea of putting them on the steel wheels. For both city and interurban equipments rolled steel wheels are selected of suitable dimensions so that at their final turning they can be made into centers. The English method of tire fastening by rolling the inside edge of the tire over that of the center was adopted for the city wheels, and the Midvale bolted tire, now rapidly becoming standard, was selected for the interurban wheels.

Experience so far has shown that the use of steel tires effects a saving over that of either solid steel or chilled iron wheels, even if the F. C. S. wheel is included. The amount of steel scrapped from a worn-out tire is considerably less than from a solid wheel, and a market for scrap tires can be found where the wheel centers cannot be disposed of. The life of a tire is about the same as that of a steel wheel and averages about four years, during which time four cast-iron wheels would have to be installed. According to prices as at the end of the year 1916, the costs per thousand car-miles of city equipment, including shop costs and returns for scrap, etc., were for chilled-iron F. C. S. wheels, 30 cents; rolled-steel wheels, 25 cents; and for tires, 20 cents.

There is also a saving in time for cars in shop, as during the four years a car with iron wheels will be shopped twelve to fifteen times for wheel grinding, rewheeling, etc., as compared with four to six times for turning or renewing tires. Iron wheels are scrapped mostly for slid flats, shelled-out spots or chipped flanges, and frequently a car has been shopped for wheel change after less than a week's running. Steel wheels or tires are nearly always shopped for worn flanges, the tendency of alternate wheels to wear sharp being cared for by changing the positions of the wheels under the car when half worn. Except in unusual cases such as for bad slid flats from emergency stops, proper inspection makes it possible to attend to the steel wheels at the time of general overhauling, so that no time is lost on this account, the rule being that the wheels are ready for return to the car long before the inspection and overhauling of the motors, control, brakes and other equipment on the car has been completed.

The accompanying drawings show sections of the wheels as purchased from the manufacturer, and after retiring, Fig. 1 being the city equipment and Fig. 2 the interurban. The city wheel weighs practically the same after retiring as before. The interurban wheel with steel center is much lighter than with a specially built cast-iron center, and has a neat appearance with its tire.

How the Pavement Plow Works in Brooklyn

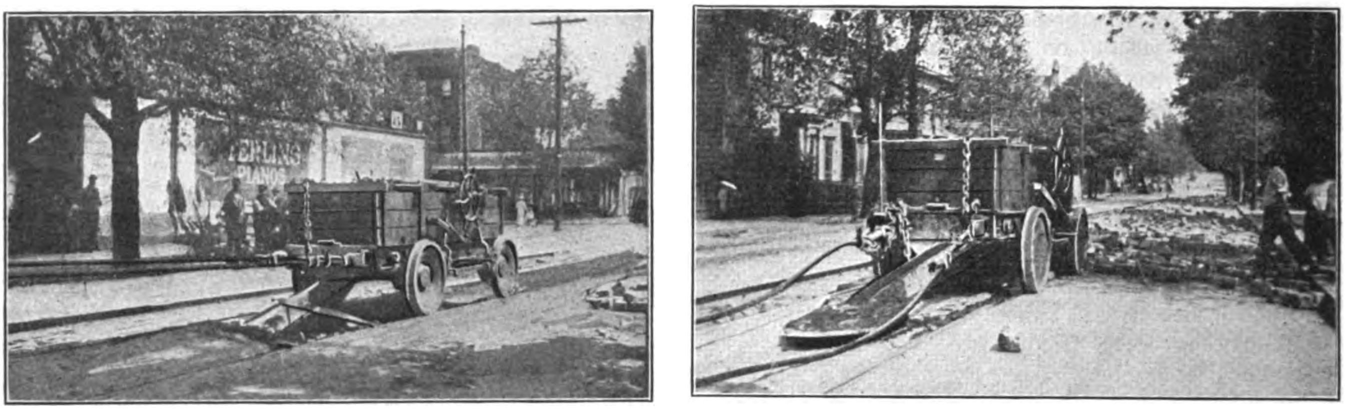
Plow Is Towed by Fifty-three-Ton Dumping Car at the Rate of Seven Feet per Second—Costs of Hand and Plow Work Compared

BY R. C. CRAM

Assistant Engineer Way and Structure Department, Brooklyn Rapid Transit System

The Clark pavement plow has been described in the ELECTRIC RAILWAY JOURNAL and no doubt its purpose and general performance in service are quite familiar to engineers in charge of track matters. Nevertheless, but little information relative to the economies effected by the device has been published; hence a rather brief statement of results obtained in Brooklyn may be of some interest.

A comparison between the work done by the plow and that done by manual labor can be made from data taken on a difficult job that was recently completed. The work was perhaps the most difficult which could be assigned to the plow. It consisted of excavating 8-in. granite block pavement having 1:1 cement grouted joints, laid in 9-in. tram-girder tracks. The latter had 2½-in. x ⅜-in. tie rods spaced about 10 ft. apart. The paving joints and tie rods were in excellent condition, and it was found in course of manual excavation that the paving blocks would generally break before the joints gave way. This indicates that the pavement was nearly monolithic. The plow had little difficulty in breaking up the pavement, although the best results were not obtained until the counterweight box had been loaded to its fullest capacity and the towing cable increased from 1¼ in. to 1½ in. in diameter. For hauling the plow we used an automatic dumping car of 20-ton capacity and weighing 53 tons total. This was fitted with special draft rigging.



VIEW OF PAVEMENT PLOW HEAVILY LOADED AND JUST BEGINNING TO TEAR UP THE PAVEMENT BETWEEN THE TRACKS, AND PAVEMENT PLOW AFTER CONSIDERABLE PAVING HAS BEEN TORN UP. NOSE OF THE PLOW HAS COME OUT DUE TO RIDING UP ON EXCAVATED MATERIAL

Tearing up this pavement manually, it took five men one hour to bar out 27 linear feet of pavement between the rails, and the cost was $1.23. The plow broke out 674 linear feet of pavement in one minute and forty-three seconds actual plowing time with a total of forty minutes between the arrival and departure of the plow and towing car. Part of this time was used in changing from the regular towing bar to the towing cables used on the plow. After the work was completed, of course, these had to be changed again. The plow works at the rate of 7 ft. per second when actually plowing and in four seconds it did as much work as the five men did in an hour. In this instance at least twenty-five hours' labor or nearly three nine-hour days were saved by the use of the plow.

From the data just given a comparison of the cost of hand labor and the plow work can readily be made. On our property there is a tariff charge from the freight department to the track division of $12.50 for the use of the towing car for the forty minutes required for this job. This is a minimum charge and would have been no greater had we used the towing car for half a day. However, it would have taken five men twenty-five hours to bar out 674 ft., and the cost of doing the work in this way would have been at least $30.75, so that the plow saved more than half the cost of the hand work even though we had to pay a high rate for towing. The accompanying illustrations show the plow in operation in Brooklyn.

Car Meter Maintenance Costs One Dollar a Year for Each Meter

Total Operating Cost, Including Clerical Labor, Stationery and Instruction, $8.97 a Year per Meter —Observations Taken Over Two and One-Half Year Period

BY F. V. SKELLEY
Assistant Superintendent Tri-City Railway, Davenport, Iowa

The Tri-City Railway & Light Companies have had 100 Economy meters in use on the cars of the Tri-City Railway and the Clinton, Davenport & Muscatine Railway for two and one-half years, during which time an accurate record has been kept of the operating expenses and the labor and material costs in maintaining these devices. The meters were installed in April and May, 1915, and the first readings were taken in June of the same year. The following table includes a complete list of all expenditures during this period:

Four pairs of cable terminals	$1.28
Three damping disks	.54
Thirty external resistance coils	24.00
Two steel shafts	.75
Two jeweled guides	1.00
Two screws	.07
Five pounds mercury	5.00
Cost of changing meters on cars for annual tests	60.00
Testing meters (two annual tests)	150.00
Total maintenance expense	$242.64

As this expense covered two and one-half years' service, the average charge per year was about $97, or 97 cents per meter per year. The item of $60 for changing meters for making tests was figured on a cost of 30 cents per meter. This was the cost under the old method of making connections. A later method of making these connections, pictured herewith, has reduced the material cost substantially.

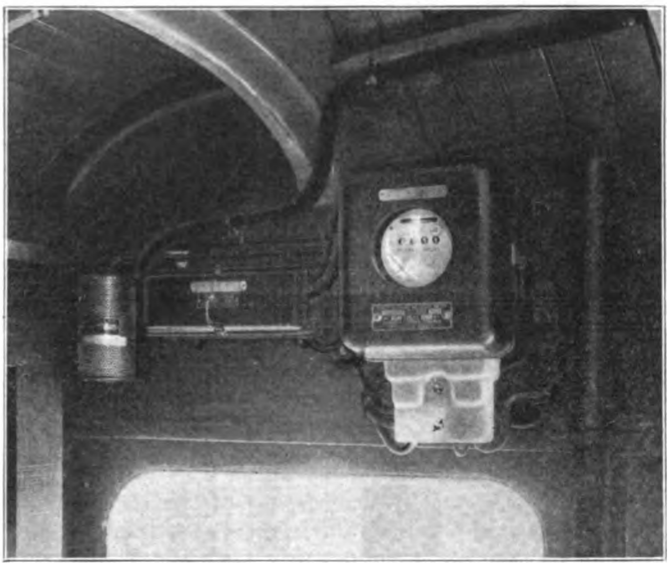
The office expense connected with the use of these current consumption meters is made up of the following yearly charges:

Clerk hire	$480.00
Stationery	120.00
Supervision of instruction	200.00
Total	$800.00
Cost per meter	$8.00

Adding to this $8 operating expense a charge of 97 cents for maintenance, a total yearly cost of $8.97 is obtained.

Under the item of "supervision of instruction," is included the small amount of time spent on the cars with the men and in preparing bulletins. This, however, does not represent the amount that should be expended in this direction, for the results obtained from the use of these efficiency devices will be in direct proportion to the interest aroused among the men.

It has been our practice to post the comparative standing of the motormen in the trainmen's room every two weeks. At the same time a bulletin is posted calling attention to methods of saving power, and to some of the interesting results obtained during the two weeks' period. As we have no school of instruction here we have not found it practical to give lectures to the men, all coaching having been done on the cars. Owing to the unsettled conditions of labor little progress has been made in the last six months, but as soon as we are able to hold our men for any length of time we plan on giving them a special training in the methods of power saving. A man who stays in our employment only a month or two has all he can master in that time to become familiar with the operation of his car, and we can expect to do little with him in the matter of energy saving.


LATEST METHOD OF MAKING METER CONNECTIONS IN DAVENPORT-MUSCATINE INTERURBANS

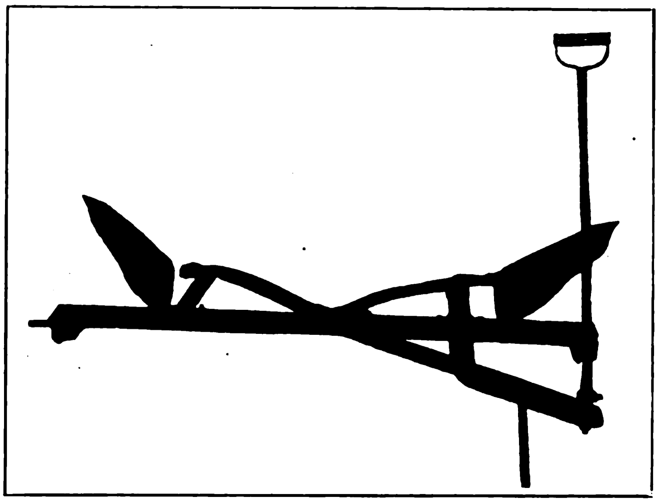
We find it practically impossible to secure any accurate figures in regard to the savings obtained from the use of the meters on account of the variable conditions encountered. A change in schedule speed of cars affects the power consumption and makes comparative results of no value. The meters were placed on the cars here in 1915 during a business depression brought on by severe jitney competition. Since then business has increased and some lines have shown an increase in power consumption in spite of our effort to effect an economy. However, in general, I am satisfied that a meter on a car has a good influence on the motorman and encourages him in an effort to save.

The St. Joseph (Mo.) Railway, Light, Heat & Power Company has increased its coal storage capacity from 250 tons to 10,000 tons. Coal is being unloaded by a 20-ton locomotive crane. By the improved facilities the company expects to save $3,000 a year.

Snow Scrapers Made at a Cost of $30 Each

BY R. A. WILLSON
General Superintendent Washington Water Power Company, Spokane, Wash.

The secret of preventing tie-ups due to snowstorms is to keep the tracks clear. During the early part of the winter as soon as the ground commences to freeze, it is our practice to send out the big snow plow, described in the ELECTRIC RAILWAY JOURNAL of Jan. 6, 1917, page 39. This plow is run over all unpaved districts and it scrapes the mud down to the level of the ball of the rail. In this way it is possible for the scrapers to reach the rail head. We keep up this plowing while there is any thawing that permits wagons to raise the mud.



HOME-MADE SNOW SCRAPERS OF WASHINGTON WATER POWER COMPANY

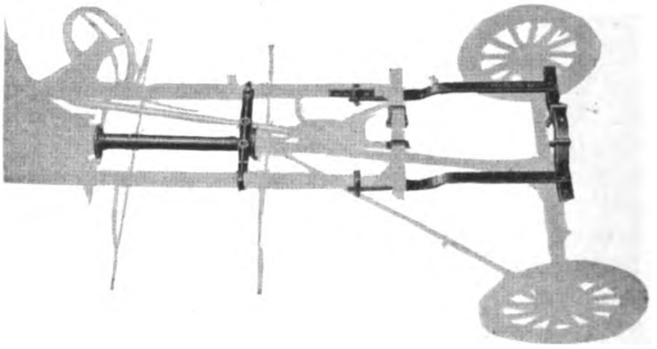
With the ground on both sides level with the rail there is little chance of the snow packing and being frozen on the rail. Then the use of the scraper is all that is necessary to keep the line free for travel.

The scraper which we use was designed by the writer and has proved effective in every way. The illustration shows the general arrangement of the blades, transverse member, frame and operating lever. The transverse member is ¼-in. x 3-in. x 4-in. angle iron, which is attached to the car by a bolt through either end. The frame is made of ¼-in. x 2½-in. spring steel, and the scraper blades are 12-in. x 24-in. plow steel. The motorman can regulate the pressure on the blades by means of a handle with a toothed rack which engages a plate on the platform floor. The shares of the scrapers are made of spring steel and the angle of the share is such that any obstruction that the scraper will not remove will be passed over without damage. The spring feature absolutely takes care of any unevenness in the track, changes of the grade, oscillation of the car, etc. The car can be backed with the scraper in the down position without any damage other than a lot of noise which will immediately attract the motorman's attention. We have had practically no breakages of scrapers. The shares are so curved that at 10 or 12 m.p.h. the scrapers will shoot the snow clear of the devil-strip and if necessary they will remove snow up to a depth of 1 ft. above the head of the rail. Of course, in heavy snow storms the plow must be run occasionally to keep the snow from packing under the motor cases. The scrapers were built in our shops at a cost of about $30 for material and labor.

Another Ford Converted into a Line Truck

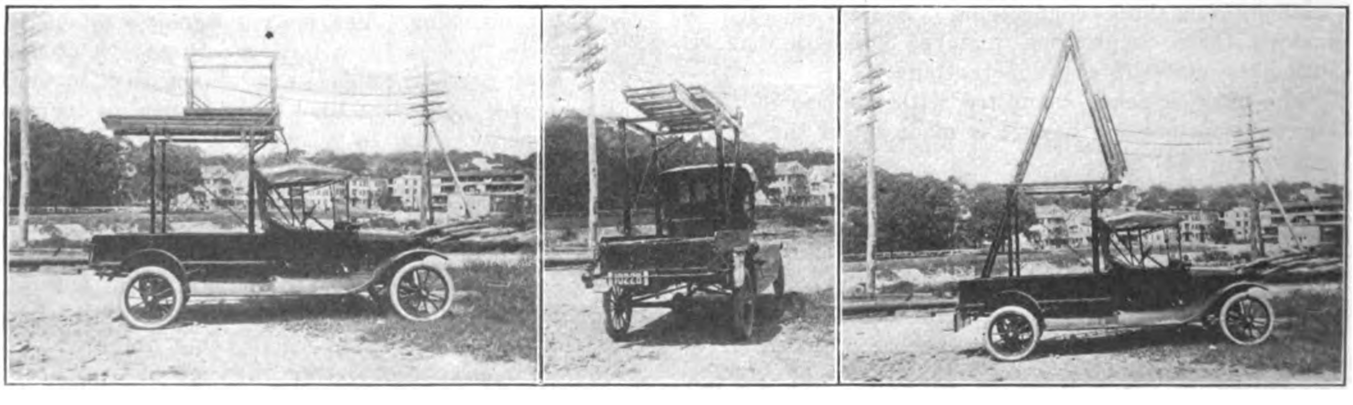
Special Extension Used to Obtain 130-In. Wheelbase and Semi-Elliptic Springs Added to Rear Axle

For use on the Waterbury division of the Connecticut Company a line truck has been constructed from a Ford runabout, the design being a modification of the ones described in the issues of the ELECTRIC RAILWAY JOURNAL for Aug. 26, 1916, page, 364, and April 7, 1917, page 653.



CHASSIS OF FORD RUNABOUT, THE PARTS OF THE SPECIAL EXTENSION BEING SHOWN IN BLACK

In this case it was thought that the truck would be called upon to carry material other than that required in making minor repairs, and for this reason it was decided to reinforce the truck so that it would be able to handle this work. The company procured an ordinary Ford runabout, removed the sloping back and installed what is known as a 30-in. H-D extension, which is shown in one of the accompanying illustra-



LIGHT-WEIGHT LINE TRUCK ON WATERBURY DIVISION OF THE CONNECTICUT COMPANY tions. In addition to putting on this extension, semi-elliptical springs were installed on the rear axle parallel to the axis of the truck. This was done primarily to make the truck more stable both while it is in motion and when it is at a standstill and the tower is being used. An ordinary delivery body was then added to the chassis.

The tower itself was built by the Connecticut Company's forces at the New Haven shops. The tower is located behind the seat in such a way that it permits the driver to have an unobstructed view at all times.

The cost of the principal parts of the line truck were as follows:

Ford runabout f.o.b. New Haven	$365.00
30-in. H-D extension complete with delivery body (labor and material)	217.00
Cost of tower (labor and material)	95.60
	$677.60

In addition to these items the truck has been equipped with a Stewart searchlight, a rear view mirror, one 6-volt, 80-amp., type B-4 Edison storage battery, and a speedometer. The searchlight and storage battery make it possible to hunt line troubles at night, and the speedometer gives an accurate record of the mileage run by the truck.

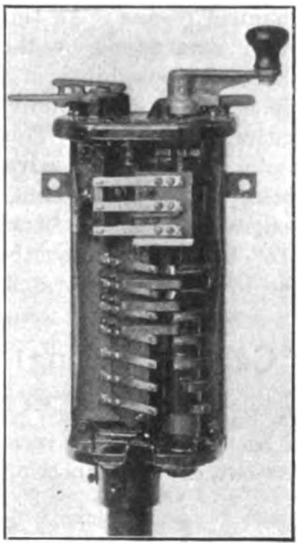
Multiple-Unit Control on New Bay State Cars

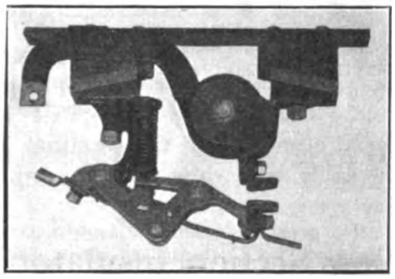
Motor Connections Made by Contactors Operated by Cam Shaft Which Is Actuated by Air Engine

The control system to be used on the new No. 4300 series convertible cars of the Bay State Street Railway, Boston, Mass., is known as the Sprague GE type PC-5 control, and although it is a recent development it has already been used extensively enough to demonstrate its reliability. While based upon the fundamentals of a master controller, a motor controller and certain auxiliary apparatus, and performing the same functions as other multiple-unit systems, it differs radically from them in the manner in which the motor circuit connections are made. In the PC-5 control these connections are made by contactor units actuated by a series of cams mounted on a shaft, this shaft being rotated by an air engine controlled by the master controller.

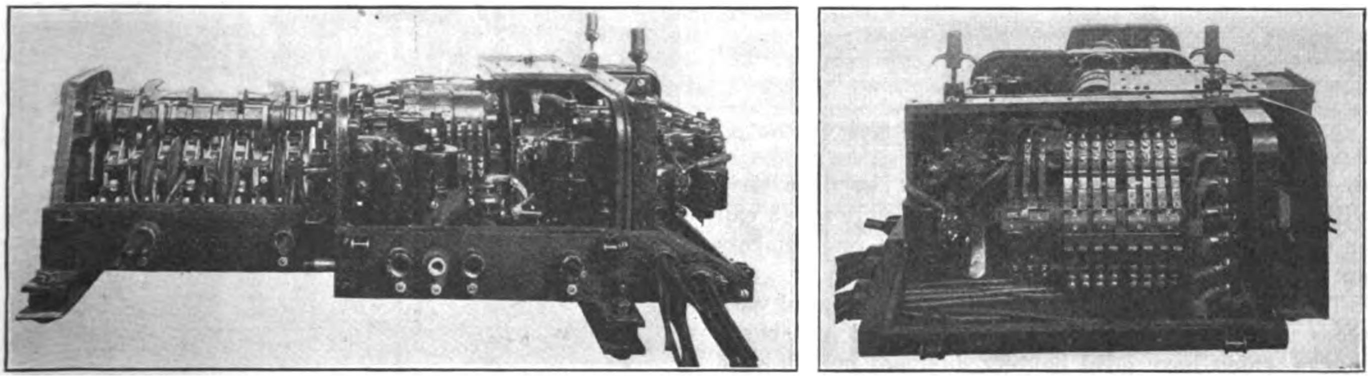
The contactor unit as illustrated consists of two contact tips, the lower one being carried by an arm which is raised by the pressure of the cam against the roller bearing on the under side of the arm. To open the circuit the cam moves around so that the arm is released and forced quickly downward by the spring. The contactor units are equipped with magnetic blowouts and arc chutes.

The air engine which rotates the cam shaft consists of a rack mounted between the pistons of two opposed air cylinders. The admission of air to one cylinder occurs simultaneously with the exhaust from the other, these operations being governed by magnet valves controlled by the master controller. The contactor units together with a line breaker, reverser, overload and current-limit relays are all assembled in a case as a single unit. The line breaker consists of a contactor equipped with a power blowout coil and operated by an air cylinder controlled by magnet valves. The breaker will open the circuit if either air pressure circuit fails. The reverser cylinder is operated by an air engine of construction similar to that used for the contactor units. Current for operating the control circuit is obtained from the line, and air for the engines of the motor controller, reverser and line breaker is obtained from the car air-brake system.


MASTER CONTROLLER USED WITH PC-5 CONTROL


CAM-OPERATED CONTACTOR UNIT

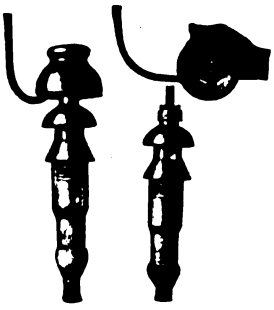
The master controller is similar to that used on the Sprague-GE types M and MK control systems. It is equipped with a small supplementary lever or by-pass which enables the motorman to cut out the current-limit relay and then advance the motor controller step by step in cases where conditions of the road or the service are such that the normal accelerating current for which the current-limit relay is set is not sufficient for accelerating. A special feature of the by-pass permits the controller to advance only one step for each movement of the supplementary lever. The controller can, therefore,


MOTOR CONTROLLER IN WHICH CONTACTOR UNITS ARE OPERATED BY CAM SHAFT ACTUATED BY AIR ENGINE. REVERSER SHOWN AT RIGHT IS ALSO AIR OPERATED. ILLUSTRATIONS HAVE BEEN INVERTED TO SHOW APPARATUS MORE CLEARLY

be advanced from point to point only by successive movements of the lever. Excessive jumps in the accelerating current are thereby eliminated. This arrangement gives the advantages of automatic and non-automatic control combined.

A feature of the PC control system is that the motor connections are made in the correct sequence by mechanical means. As the contactors must close in the order determined by the setting of the cams on the shaft, the possibility of improper operation that sometimes occurs with individually operated contactors is entirely eliminated. This method of operating the contactors has also the advantage of cutting out all interlocks on the contactors, which greatly simplifies the control. Thus the benefits of automatic acceleration are obtained without the complication necessary with the individually operated contactors.

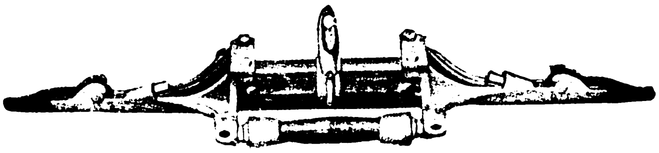
Cable Terminal with Disconnection Feature Improved


OUTDOOR CABLE TERMINAL WITH IMPROVED DISCONNECTING FEATURE

An outdoor cable terminal of new design known as the outdoor disconnection type has recently been placed on the market by the Standard Underground Cable Company, Pittsburgh, Pa. In the new terminal all the copper parts are covered by a porcelain hood, as shown in the illustration, thus permitting the disconnection of the aerial extension wire even while the circuit is alive. The stem of the new terminal is a modification of the regular cap-nut stem and has some additional advantages where frequent disconnection of the aerial circuit from the terminal is necessary to protect the cable men while repairs are being made.

New Section Insulator with Adequate Provision Against Warping

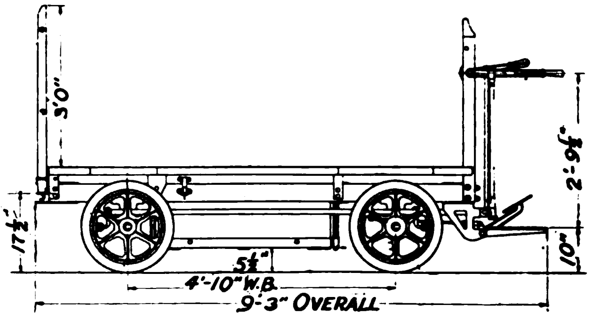
A trolley-wire section insulator of improved design has been developed by the Ohio Brass Company, Mansfield, Ohio. The insulating section is a fiber running piece which fits into a slot in a heavy compression beam which prevents it from warping and helps to give it a smooth, continuous, running surface. The fiber strip with its two bronze arcing tips forms a unit which can be removed by taking out two bolts when replacements are necessary.


TROLLEY-WIRE SECTION INSULATOR OF IMPROVED DESIGN

The end castings are of malleable iron equipped with renewable cam tips. The wire is anchored in tapered chucks which have good holding qualities and provide an easy means of installing the wire. The wood strain insulators at the side and in the same plane as the trolley wire take up all stresses and eliminate any tendency to buckle.

Power Trucks for Handling Freight

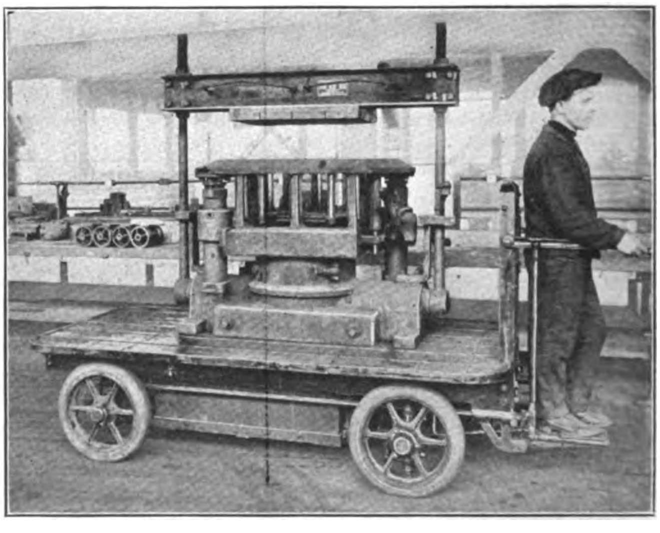
Many railways are now carrying freight and express in much larger quantities than before the war. Efficiently to handle large shipments at the terminals, in spite of the shortage and high cost of labor, other means should be used than the common one-man push truck. A power truck which seems well adapted to this class of service is shown in the illustrations. It is manufactured by the Samuel L. Moore & Sons, Elizabeth, N. J., who state that about 15 cents per ton can be saved by the use of the power truck, one machine and operator doing the work formerly done by twelve men with hand trucks. The source of power is a storage battery of sufficient capacity to operate the truck for a full ten-hour day without recharging.



DETAILS OF FREIGHT HANDLING TRUCK

The principal dimensions of the truck are shown in the drawing. The frame is built of 4-in. channel steel braced with large gusset plates. The platform is 23 in. above the floor and is made of 1½-in. oak planking, laid in sections which are hinged so as to give access to the driving motor and battery. The characteristic features of the truck which are not shown are as follows:

Capacity	4000 lb.
Speed	8 to 10 m.p.h. light; 5 to 7 m.p.h. loaded
Loading platform	7 ft. 6 in. x 4 ft.
Turning radius	6 ft. to center line of truck
Motor rating	36 volts, 35 amp., 1000 r.p.m.
Controller	3 speeds forward, 3 reverse


ELECTRIC FREIGHT HANDLING TRUCK IN OPERATION

London Letter

Municipal Tramway Association Met in September—Edinburgh Proposes Construction After the War—Women of Glasgow Perform Skilled Labor

(From Our Regular Correspondent)

The sixteenth annual conference of the Municipal Tramways Association was held at Blackpool on Sept. 20 and 21, under the presidency of Henry Mozley, general manager of the Burnley Corporation Tramways. The papers presented were "Notes on Tramway Finance," by J. Barnard, general manager of the Bolton Corporation Tramways; G. W. Holford, general manager of the Salford Corporation Tramways, and P. Priestly, general manager of the Oldham Corporation Tramways; "Special Fares on Tramways," by W. Murray, tramways manager of the Walthamstow Urban District Council; and "Development of Tramways," by Arthur Ellis, city electrical engineer and tramways manager of Cardiff.

Unbounded faith in future tramway development characterized most of the speeches delivered at the conference. The restrictions placed upon railway traveling during the last two years have caused a further transference of local traffic from the railways to the tramways, and it is believed that this traffic will become a permanent accession of the tramway. In his paper Mr. Ellis suggested that the railways would in the future apply most of their energies to long-distance traffic, leaving the tramways to do the local carrying. This applies not only to passengers but also to certain kinds of freight traffic. There is much to be said at the present time in favor of the greater use of tramways for freight traffic and for establishing spur lines and connections with the railways. If something in this direction could be done at once it would relieve the congestion on the railways and do much to solve the problem of facilitating the transit of manufactured goods, foodstuffs and coal. By using the tramways for this purpose freight could be deposited almost at the doors of the consumer instead of having to be carted from one or two central railway depots. This in itself would be of tremendous advantage. It is probable that the future will see the tramways being used more extensively for carrying freight.

The tramways committee of Edinburgh has been instructed to take preliminary steps for obtaining authority to construct tramway lines between the city and South Queensferry, though no actual work is to be done before the end of the war. In a report drawn up by the city engineer two routes are indicated—one by way of Dean Bridge and the other by way of Comely Bank. In each case it is insisted that an essential to success would be a through service of cars from a convenient center or terminus in the city to the Hawes Pier, South Queensferry—close to the south end of the Forth Bridge. As regards the first of these routes it might not be found impracticable to operate the service across the Dean Bridge without overhead wires. Objection is not taken to these on the ground that they would be ugly or inartistic in themselves, but because the valley and bridge have in their combination a character of their own which overhead equipment might go far to spoil. By this route the distance would be 8 miles, the tramway being on roads for 3 miles and in fields for 5 miles, while by the second there would be 3⅝ miles of road track and 5 of field track—a total of 8⅝ miles. It is urged that the construction of such a line as soon as possible would be all the more appropriate, seeing that the lease of the Edinburgh Tramways to a private company is almost at an end, and that when that lease expires the lines are to be taken over by the corporation.

It is stated that the Board of Trade electric power supply committee has arrived at certain preliminary conclusions and is about to take evidence from authorities interested. The London County Council special committee realizes the difficulties in present circumstances of putting forward any comprehensive scheme either for the county of London or for Greater London, but is arranging a conference as it feels that public authorities in London either owning or having power to purchase electric undertakings should meet in order to discuss the whole situation as it affects Greater London.

Illustration of the pressure which has been put on the tramways undertaking of the London County Council as a consequence of the war is afforded by the figures showing the increase of traffic on the Woolwich routes. Between July, 1914, and July, 1917, the number of cars running into Woolwich increased 75.25 per cent. The service during the maximum rush increased in the same period by 170 per cent. The carrying capacity of the cars running into Beresford Square, Woolwich, is 17,327 passengers an hour. The maximum number of cars arriving at Woolwich in an hour has increased from seventy-six in July, 1914, to 205 at present.

The employees of the Sunderland Corporation Tramways applied recently through the General Workers' Union for an increased war bonus. The matter was referred to the committee on production. After hearing both sides at a conference in London the committee has made the following award: That in lieu of war bonus, the men shall receive a war wage advance of 12*s.* a full ordinary week; that the women shall receive 2*s.* 6*d.*, bringing their advance up to 8*s.* 6*d.* a week; that boys and youths under the age of eighteen shall receive 1*s.* 6*d.* a week in addition to the bonus already paid, bringing them up to 5*s.* advance. In all cases the bonus or war wage is to be taken into account in the calculating of overtime.

The grievances of the Wallasey tramway employees have been considered by the tramways committee, and the following resolution has been passed: (1) The committee considers that the Council must be the judge as to whether or not women should be trained as drivers and it cannot recommend to the Council that it alter its previous decision. (2) That the application of the conductresses for an increase of a farthing per hour after twelve months' service cannot be granted in view of the application for increased allowance now before the committee on production. (3) That the employees who are requested to be in attendance at the carhouses at fixed hours be paid for the duration of their attendance. The leaders of the employees have decided to submit the resolution of the tramways committee to headquarters in Manchester. Meanwhile the employees will continue their work.

The extent to which women have taken the place of men as conductors and drivers of tramway cars in Glasgow is well known. What is not so generally realized is the extent to which skilled labor is being performed by women in the workshops and depots of the department. The total number of workers employed by the department is about 5600, and of that number fully 2500, or nearly 50 per cent, are women. Prior to the outbreak of war the number of women in the employ of the department was very small, and their duties were mainly of a clerical nature. During the last three years the work of substituting women for men on the cars has gone on steadily until at present the outside staff includes about 1360 conductresses and about 400 women drivers. The work of both classes has been satisfactory to the management and the public, notwithstanding the considerable increase which has taken place in traffic since the war began. Women's capacity for performing duties of a highly skilled and technical nature has been displayed strikingly in the work of the power stations and depots of the tramway system. In the principal electrical power station five women are engaged as switchboard attendants, four as cleaners, and one as a clerk, thus releasing ten trained men for work of national importance elsewhere. Eight women are employed in the substations as switchboard attendants, one substation being entirely staffed by women, who do the work formerly done by trained electricians. At the depots 490 cleaners have taken the places of men, many of whom are now at the front or in munition works. Six women act as inspectors of the street switch boxes connected with the electrical power supply, while a number of others are employed on what was previously men's work, such as cleaning and keeping car controllers in order, driving motor cars used by the department, doing clerical work, etc. They are also engaged in the tramway stores, the sawmill and the paint shops, and in other branches of the department's activities. A large section of the Coplawhill Depot has been set apart for the execution of important government contracts. Nearly 100 skilled women are engaged on this work. A. C. S.

News of Electric Railways

Traffic and Transportation

Financial and Corporate Personal Mention Construction News

Franchise Draft Completed for Toledo

Terms of Proposal Reviewed Briefly—Copies of the Ordinance Will Be Distributed to Voters for Ratification by Popular Vote

After working eighteen months on the draft of a railway ordinance for Toledo, an agreement has been reached between that city's special traction committee and the Toledo Railways & Light Company whereby a "community ownership" system is outlined. As noted in the ELECTRIC RAILWAY JOURNAL for Oct. 20, page 734, the agreement as drawn up by the consultants embodies various original ideas. These include principally the creation of a new company, to be known as the Community Traction Company, which will operate under a twenty-five-year franchise. This franchise provides that at the end of five years the traction property may be purchased or leased by the city.

The ordinance as drawn up will be printed and distributed to the voters so that they may thoroughly understand the proposed agreement. After the valuation of the property, the question of enacting the proposed ordinance will be voted upon at a referendum. Before the final ordinance is submitted to a vote, the car commission will receive suggestions and modifications of the plan which may be made by the public. It thus seems possible that within a comparatively short time the long-pending traction problem in Toledo will be settled.

OUTLINE OF IMPORTANT FEATURES OF GRANT

As decided upon under the personal co-operation of Henry L Doherty, chairman of the board of the company, the proposed regulations for the street railway are very elaborate. The most important features of the plan are these:

There is to be a separation of the electric railway from the electric and gas properties of the Toledo Railways & Light Company. The traction properties are to be controlled by a corporation which is to be called the Community Traction Company, the capital stock of which is to equal the value of the street railway properties as determined by the valuation board. This stock will be held by five trustees to be named in the final ordinance, and the stock will be voted by them. In return for its equity in the Community Traction Company, the Toledo Railways & Light Company is to receive trust certificates.

STOCK TO BE SOLD TO PUBLIC

The stock of the Community Traction Company will be sold to the public in $10 shares, and may be bought by any one upon the installment plan. It is further provided that this stock must always yield an income of 6 per cent unless such yield cannot be obtained without increasing the fare to more than 5 cents. At the end of five years the city may at any time purchase the traction properties for an amount equal to the par value of the capital stock of the company issued and outstanding, plus a premium of 6 per cent. In addition, the city shall assume all debts and obligations of the company contracted in good faith. At any time after five years the city may lease the property of the Community Traction Company by paying 25 per cent of the purchase price as determined, plus a monthly rental of one-half of 1 per cent on the unpaid balance of the purchase price. In order to acquire the property the city will also have to pay at least 2 per cent annually toward such purchase.

The Toledo, Railways & Light Company agrees to purchase, within the first eighteen months, $1,000,000 of additional stock in the Community Traction Company. Money received from the sale of this stock is to be used to pay for extensions and betterment of the lines during the first five years. Further funds are created to take care of operation, maintenance, depreciation and renewals.

FIVE-CENT CASH FARE, WITH GRADUATED TICKET FARE

It is provided that the cash fare on the Community Traction Company's lines may never be in excess of, or less than, 5 cents. With the cash fare remaining stationary, any changes in fare will be made by adjusting the number of tickets which may be purchased for 25 cents, and by regulating the issuance of transfers. The highest fare contemplated in the ordinance, is to be a 5-cent fare with a free transfer. This maximum fare is graduated down to the minimum rate which is a 5-cent cash fare, ten tickets for 25 cents, 1-cent charge for a transfer with ticket fare, and no rebate. A rate of fare to begin with will be established by the final ordinance, and any future modifications of the rate will depend upon the action of the city and the condition of the equalizing fund as outlined in the following section.

HOW FARES WILL BE GOVERNED

The rate of fare established when the ordinance goes into effect is to continue for six months, or until the company shall have accumulated a fund of $150,000 after deducting taxes, allowances, dividends and various other payments. That fund will be known as the "equalizing fund." The minimum level of this fund will be $100,000 and the maximum $200,000. When the fund reaches the minimum level, the company may put into effect the next higher rate of fare, but if the Council rejects the increased fare, the matter must be arbitrated. When the fund reaches the maximum level of $200,000, all surplus is to be deposited in the amortization fund or the City Council may decrease the rate of fare. The maximum, intermediate and minimum levels of this fund are subject to change when the capital stock of the company exceeds $7,500,000.

The amortization fund is to be similar to a sinking fund. Whenever the franchise has only fifteen more years to run before its expiration, the company is to pay an amount each year into this amortization fund. For example, if at the end of the first ten years of the present twenty-five-year franchise, no provision has been made for the renewal of the franchise, the company must begin its monthly payments to the amortization fund, which fund is to be held by the five trustees. The payment into the amortization fund is not to exceed in any month more than one-half of 1 per cent of the capital value, and the total to be raised during the fifteen years is not to be more than 75 per cent of the capital value.

The City Council is to have supervisory powers in regard to service. There are provisions for arbitrating all matters in dispute, and arbitration is to be enforced by withholding one-sixth of the dividends until the company complies with the award.

HOW MR. DOHERTY REGARDS THE AGREEMENT

Mr. Doherty has issued the following statement in regard to the tentative agreement drawn up in Toledo:

"I believe the community plan on which we have agreed points the way to a solution of the street railway problem in cities, and possibly other public utility problems as well. And while the negotiations between the Toledo commission and myself have seemed to stretch to undue length, still the job was worth doing thoroughly if worth doing at all.

"I started in on the negotiations determined to go as far as I possibly could to reach a fair agreement, and to yield everything to the city I could yield and still be able to finance the proposition.

"At times it has seemed to me that the commission pushed me too hard and demanded more than was fair. There were times when it looked to me as if no agreement at all could be reached that would result in a sane solution or any solution of the problem. I had given my word at the outset that I would do all in my power to help solve the Toledo problem, and pride stimulated me to go the limit to reach an agreement. I did go the limit, and I believe now that this community plan form of settlement will arouse a lively interest all over the country—much more even than did the so-called Cleveland plan.

MR. DOHERTY INSISTED ON PROTECTING THE STOCKHOLDERS

"At times when I appeared to be making my stiffest stand, it was because I considered it imperative that the prospective stockholders in the Community Traction Company be absolutely protected in their investment. If the people of Toledo were to be invited to invest in that stock on my recommendation, I simply had to have an agreement that would enable me honestly to recommend it as a sound investment. In all my experience no stockholder in any of my companies ever lost a cent. I want to keep that record clear as to the car riders of Toledo if they invest in the Community company. I believe now we have safeguarded in every way the prospective stockholders and have made it possible for Toledo to control her own electric railway system and show other cities the way."

Increase in Wages in St. Louis

According to an announcement posted during the week ended Oct. 27 in the various carhouses of the United Railways, St. Louis, Mo., 3000 motormen and conductors in the employ of the company will share in an increased scale of wages effective from Nov. 1. The increase will mean an additional payment of salaries amounting to $130,000 annually. The bulletin stated that since the World's Fair in 1904 the company had voluntarily increased the wages of the employees 40 per cent. The reason for the increase just announced is given as follows:

"War conditions, the tremendous increase in the cost of supplies and the additional burdens placed on the United Railways have proved a severe strain on the resources of the company. Notwithstanding the company's difficult position, it is glad to make this raise as a recognition of the higher cost of living and as an appreciation of the faithful and loyal service of its employees.

"This is a further advance immediately following the inauguration last September of the bonus system, which rewarded the employees for skill and carefulness in avoiding accidents. By means of skill and care it is possible for the men to increase their own wages."

For new men, who spend one year as a period of training, and who formerly received 24 cents an hour, the new rate will be 26 cents. Second-year men will now receive 27 cents an hour; third-year men, 28 cents; fourth-year men, 29 cents; fifth-year men, 29½ cents; sixth-year men, 30 cents; seventh-year men, 30½ cents; eighth-year men, 31 cents; ninth-year men, 31½ cents; tenth-year men, 32 cents, which is the maximum.

Coal Scarcity Still Causes Trouble

Because of the poor quality of fuel it was forced to use at its generating stations, the Ohio Electric Railway was compelled to operate cars every two hours instead of every hour over its various divisions on Oct. 16. Several other roads have experienced difficulty of this kind recently. Roads are forced to accept such fuel as is left after the lake business is taken care of under the priority order. What they get is often of a very inferior grade and contains impurities which could not be taken out in the hurry of loading.

Homer H. Johnson, the new fuel administrator appointed by Dr. Garfield, has announced that little relief can be obtained unless the priority orders are modified in such a way as to allow a portion of the coal to go to the utilities and industries. He has asked the Federal Coal Administration office at Washington for a modification which will allow the railroads to use a certain percentage of their cars for the shipment of coal needed in Ohio.

At the present time coal is being supplied to the utility companies on ration, and any break in the arrangement would result in a suspension of operation.

St. Louis Grant Protested

Officers of the United Railways Object to the Proposed Settlement Grant as Recently Amended

Richard McCulloch, president of the United Railways, St. Louis, Mo., and Thomas M. Pierce, general counsel of the company, appeared before the public utilities committee of the Board of Aldermen on Oct. 23 in connection with the proposed ordinances looking toward a settlement of the differences between the city and the company. They declared that unless bill No. 1 or bill No. 2 was recommended by the committee without material alteration the company would not accept any settlement ordinance.

SETTLEMENT PRICE TOO SEVERE

Mr. McCulloch pointed out the changes which make it impossible for the company to accept the substitute measure, to which reference was made in the ELECTRIC RAILWAY JOURNAL of Oct. 27, page 783. He asserted that the company was not asking for new rights. It wanted to be relieved of the mill tax problem and have its franchises validated, so that it could readjust its finances and obtain money for improvements. The company had not asked for the right to use the city streets, and the Aldermen ought not to approach the settlement ordinances from that angle. The company now has the right to use the streets, and the city should not tack on obligations for such use. Mr. McCulloch said that the company did not ask for a subway franchise and would be willing to have the entire subway clause stricken out of the ordinances.

AMENDED ORDINANCE COULD NOT BE ACCEPTED

Mr. Pierce declared that it would be futile for the city to pass the proposed substitute ordinance, because the bondholders of the company would not accept it. He is reported to have said:

"The United Railways Company cannot reorganize its finances under the substitute ordinance that is now proposed. The bondholders or new investors would not accept an ordinance which gives the city the right to tear up our tracks on Olive Street, or any other street, and give them to some other company. Their money is at stake, and they must protect it. It would be of no use for the committee to hold further public hearings to listen to impracticable ideas in an effort to find out what the people think about the proposed ordinance. We are here to tell you what the company thinks about the measure, and we cannot go any further, and will make no further trades."

The committee adjourned to meet again on Oct. 25. The two bills pending were framed last June by a joint committee, five members representing the city and five the company. Bill No. 1 provides a partnership with the city and the company, in which all profits above 6 per cent on a capital of $60,000,000 would be split equally between the city and the company. Further, the company would obtain a fifty-year franchise and a repeal of the mill tax and franchise taxes, or taxes aggregating $480,000 a year. Bill No. 2 does not provide for a partnership, but gives the company a fifty-year franchise. Under it the city would get 3 per cent of the gross earnings in lieu of the mill tax and the franchise taxes. The city has the right, under this bill, to buy the property at an agreed value of $60,000,000.

PUBLIC HEARINGS TO BEGIN NOV. 6

The public utilities committee of the Board of Aldermen decided on Oct. 25 in executive session "not to recommend United Railways settlement bills No. 1 or 2." It was reported, however, that some concessions would be made to the company, but on Oct. 29 the committee, while it made some slight changes in the measure before it, held firm to its refusal to grant a fifty-year franchise as provided in both of the original bills, and made a stand on a thirty-one-year grant to 1948. In lieu of the mill tax and the franchise taxes, which now aggregate $480,000 a year, it was at first proposed to levy a tax of 3 per cent on the gross earnings. Later it was suggested that the city also receive 25 per cent of the net profits above 7 per cent on a valuation of $60,000,000 and 50 per cent on the net profits above 8 per cent on that valuation. These changes were written into the measure as amended on Oct. 29. The company is to have ten years in which to pay the accumulated mill tax of about $2,000,000. No interest will be charged on this amount for the first five years, but after that 5 per cent will be exacted on the unpaid balance. The plan was to submit a copy of the amended bill to Mr. McCulloch in time for him to discuss its terms at a meeting set for Nov. 2. Public hearings on the new measure will probably be begun on Nov. 6.

Car Purchase Order Upheld

B. R. T. Preparing to Carry Case to the United States Supreme Court in Test of Commission's Power to Order Improvements

The Appellate Division of the Supreme Court, First Department, New York, has decided against the appeal of the Brooklyn Rapid Transit Company from the order of the Public Service Commission requiring the company to purchase 250 additional surface cars. In effect the court upheld the commission's order. The decision was handed down on Oct. 27. It was rendered without comment.

The company has sixty days to file an application for appeal. Prior to the action in the State courts the Brooklyn company petitioned for an injunction against the Public Service Commission in the United States District Court, Eastern District, before Judge Veeder. This application was denied, but under a recent statute, the judge convened a special Federal Court of Appeals on Sept. 19 to hear argument. Judge Veeder was unanimously sustained. The company is now making up the record for an appeal against this decision to the Supreme Court of the United States, to be presented as soon as printed. The grounds for this procedure are that under the commission's order the company has been denied due process of law; that the order is tantamount to confiscation of property, and that the Public Service Commission act is unconstitutional.

Injunction Against Seattle Extension

A temporary restraining order has been obtained by T. N. Haller, Seattle, through the Superior Court of that city, enjoining Mayor H. C. Gill, Superintendent of Streets Charles R. Case, the city treasurer and city comptroller, and other members of the Board of Public Works from proceeding with the construction of an extension to Division A of the Seattle Municipal Railway on Fifteenth Avenue Northwest and Leary Avenue, or other street, northerly or westerly of the Fifteenth Avenue bridge, and from proceeding with the bridge approach. The complaint was filed following a favorable vote of the trustees of the Seattle Chamber of Commerce and Commercial Club, and was supported by affidavits from Councilmen Will H. Hanna, chairman of the finance committee, and R. H. Thomson.

In a communication to the City Council in regard to the Haller injunction, Hugh M. Caldwell, corporation counsel, reminded that body that the legal department of the city government had not been taken into its confidence when the extension of the municipal electric railway into Ballard under the superintendence of the street department was authorized by the Council. The Council referred the question of co-operation with the legal department in defending the action to the judiciary committee, enlarged by the temporary appointment of Judge W. H. Moore to the committee, with instructions to the committee to aid the corporation counsel as far as possible in defending the suit.

Right-of-Way Suit Settled

Missouri Short Line Settles with Interstate Railway for $250,000

All controversies over right-of-way of the Kansas City, Clay County & St. Joseph Railway, the Missouri Short Line, were disposed of by the settlement made in Jefferson City recently. The judgment against the line for $1,500,000, in favor of the Interstate Railway, had been appealed to the Supreme Court in 1915, and had been pending since. On Oct. 24 a judgment was filed by stipulation, in which the judgment of the lower court was reversed, following which the appellant paid $250,000 to Senator James A. Reed, representing the Interstate Railway.

The suit of the Interstate company was brought to trial in the Jackson County Circuit Court in the summer of 1915. The amount of damages asked was $2,000,000. It was charged that the Missouri Short Line had seized its right-of-way between Kansas City and St. Joseph for an electric line. While this suit was being tried, a suit that had previously been filed by the Kansas City-St. Joseph Electric Railway for $200,000 damages against the Missouri Short Line on the same charge was dismissed. It was understood that the Kansas City-St. Joseph Company had disposed of its interest to the Interstate company. The latter's right-of-way claims had to do with part of the line from the St. Joseph end, the Interstate's claims being from the Kansas City end.

LOWER COURT VERDICT $1,500,000

The jury in the Jackson County Court rendered a judgment for $1,500,000 against the Missouri Short Line. A new trial was denied. The Interstate company asked a receivership, on the ground that the bonds of the defendant, $3,135,000, and the judgment, $1,500,000, together exceeded the road's valuation of $3,900,000. The receivership was granted although the company had shown that it had $200,000 cash on hand, and received $1,500 a day income. Receivers were appointed, and served until June, 1916. An appeal bond of $3,400,000 was required of the appellant to the Supreme Court. The receivers acted until this was given.

The Interstate Railway was never built. Much of the testimony at the trial of the suit had reference to the validity of the options of the company for right-of-way.

After the judgment in favor of the Interstate company was rendered in Kansas City, a suit was filed in St. Joseph by parties who claimed ownership of part of the stock of the Interstate company. This suit, however, was not prosecuted.

Washington Strike Report Ready

The report of the Senate committee which inquired into the strike of the trainmen of the Washington Railway & Electric Company, Washington, D. C., called last March, has been printed. On the committee of inquiry were Key Pittman, W. L. Jones and Hiram W. Johnson. Separate statements of conclusions and recommendations are made by the members.

Mr. Pittman says that every means should be provided for free, fair and full negotiations between the employer and the employee collectively and every opportunity and assistance should be given to them to adjust their differences, but that when these differences cannot be adjusted the public must adjust them. According to Mr. Pittman this can only be done in two ways—first, through absolute control over wages, hours and operating conditions by a commission having full authority within constitutional limitations, or by government ownership and operation.

Messrs. Jones and Johnson say that it is for the proper committee of the Senate to recommend such legislation as it may deem wise and that whatever opinions they might express will be personal opinions of the members of the committee upon the general questions involved. They commended to the careful consideration of the committee on the District of Columbia the creation of an individual public utilities commission with enlarged powers to regulate and control the public utilities of the district, and to examine into and supervise the relations between such public utility employers and employees and to pass upon grievances and disputes that may arise between them. The advisability and practicability of the consolidation of the two street railways operating in the District should be carefully investigated, and finally the question of government ownership and operation of these public utilities should be fully considered.

Mr. Johnson says that he is of the opinion that government ownership and operation of the electric railways of the District is wise and desirable. He recommends that such action be taken.

Mr. Jones' personal views are very favorable toward government or municipal ownership and operation of electric railways, but he has not given the conditions in the District sufficient study to feel justified in joining in a specific recommendation to that effect.

The hearings are embraced in a bound volume containing 1751 pages.

M. O. Meeting in Oakland.—Mayor Davie of Oakland, Cal., has been authorized by the City Council to invite representatives of all improvement clubs, civic bodies and other citizens' organizations to meet with him at an early date to discuss the feasibility of a plan for taking over the properties of the San Francisco-Oakland Terminal Railways for municipal operation. This is regarded as a political move, as it seems likely that the Mayor will be recalled.

Los Angeles Committee Reports on Municipal Ownership.—In Los Angeles, Cal., a committee appointed by the City Club has brought in a report to which several months' work has been devoted that sets forth the advantages of complete municipal ownership of all public utilities. The report states that there would be a saving of "17 per cent of the entire public service cost." Under the heading "What Los Angeles Should Undertake" is listed the electric railway service of the city.

Census for Technical Military Service.—The American Institute of Electrical Engineers is planning soon to send to its members a data sheet asking for information in regard to possible military or other government service which they are willing and able to perform. A similar census with the same standard blank will be conducted by several similar organizations, including the American Society of Mechanical Engineers, American Gas Institute, Illuminating Engineering Society and New York Electrical Society.

Relief Asked from Unjust Burdens.—The Portland Railway, Light & Power Company, Portland, Ore., Franklin T. Griffith, president, has written the City Commissioners, asking an expression from them as to the disposition of the unjust burdens of pavement of streets between car tracks, paying tolls for crossing the Willamette River bridges, and providing free rides for patrolmen and firemen. It is stated the original suggestion for abolishment of the city's charges came from the Public Service Commission in its recent decision in the 6-cent fare case.

United Railroads Files Damage Suit.—The United Railroads, San Francisco, Cal., on Oct. 10 filed a claim for $856,250 damages against the city of San Francisco. The claim is that the city's construction of tracks on Market Street, paralleling the private company's lines from Church Street to Van Ness Avenue, has hindered passengers in reaching the inner tracks and has for months obstructed access with trenches and piles of earth. The items for which compensation are asked are: Depreciation of franchise value, $700,000; loss by excavation, $25,000; loss of revenue at $750 a month to 1929, $131,250. Total $856,250.

Washington Railway & Electric Employees Boost Liberty Loan.—In connection with the second Liberty Loan campaign the Washington Railway & Electric Company, Washington, D. C., appointed a Liberty Loan booster committee, composed of eighty of its employees, with L. B. Schloss as chairman. The company subscribed to a block of bonds with a view toward allowing its employees to purchase the bonds on the installment plan. The employees entered the campaign with enthusiasm and a total of $44,900 was subscribed by 745 of the employees. This total exceeded by $20,900 the amount subscribed for the first Liberty Loan.

Move to Forfeit Amarillo Franchise.—The city of Amarillo, Tex., has forfeited the franchise granted to the Amarillo Street Railway and the City Commission has passed an ordinance providing that the city shall take over the lines and other property of the railway for operation under municipal ownership. The property, consisting of 9 miles of track and a number of cars, power lines, etc., will be condemned and purchased by the city. The railway suspended service on Oct. 20, placed its cars in the carhouse, and placed guards about its power station. The suspension of service by the company was referred to in the ELECTRIC RAILWAY JOURNAL of Oct. 27, page 789.

Women Clean Toledo Cars.—One of the first things which the Doherty organization has done in order to meet the scarcity of labor due to war-time conditions has been the substitution of women for men as cleaners of the cars of the Toledo Railways & Light Company, Toledo, Ohio. This experiment has been in progress for some time, and Frank R. Coates, president of the company, is well satisfied with the change. Not only are the women good substitutes for the men, but they are doing the work of cleaning the cars more thoroughly than did their predecessors. Toledo is the only place in the Doherty organization which has begun to employ women for manual labor on electric railways.

Short Strike on Sandwich, Windsor & Amherstburg Railway.—Service was resumed in Windsor, Ont., and neighboring towns on Oct. 22, after a strike of the employees of the Sandwich, Windsor & Amherstburg Railway lasting one day. James Anderson, general manager of the company, authorized George McLeod, superintendent of the company, to sign an agreement with the employees that no change would be made in the runs for four months. In the future the control of employees will be left entirely with the superintendent. The strike is said to have been ordered because Mr. Anderson had refused to remove a non-union employee who, it is alleged, recently received choice of a run from Mr. McLeod.

Assessment to Be Reviewed.—Under a writ of certiorari allowed by Supreme Court Justice Trenchard, the Trenton & Mercer County Traction Corporation, Trenton, N. J., has renewed the legal contest over the amount of assessment made in 1916 on its property for taxing purposes. The new move, made by Frank S. Katzenbach and Edmund M. Hunt counsel for the company, will permit of the review of an assessment allowed by the State Board of Taxes and Assessments, which assessed the company $568,000. The argument made for review was based on the ground that there is no "going concern" value, but that the legal assessment is contained in the $1,500,000, which represents the physical value of the property.

A Warning or a Threat?—In discussing the action of the State Public Service Commission of Washington in granting to the Seattle Lighting Company authority to increase its gas rates, Hugh M. Caldwell, corporation counsel of Seattle, said: "Following as this does upon the farcical hearing, as a result of which the commission permitted the elimination by the Puget Sound Traction, Light & Power Company of the 4-cent car ticket, it is evident that if the citizens of the city of Seattle are to have anything to say in dealing with the public service corporations, which are in existence now only by virtue of franchise contracts heretofore entered into with the city direct, the Public Service Commission will have to be abolished or its personnel radically changed."

Wage Increase in Washington.—Announcement has been made by the Capital Traction Company, Washington, D. C., that in order to aid its employees in meeting the high cost of living, made more acute by war conditions, the company will pay, during the continuance of such conditions, to all trainmen an additional 2 cents an hour over and above the present scale of wages, effective on and after Oct. 26, 1917. Corresponding increases are to be made to all other employees of the company. With the increases allowed trainmen, first-year men will now receive 27 cents instead of 25 cents an hour. For the second year the rate will be 27½ cents an hour; third year, 28 cents an hour; fourth and fifth years, 29 cents an hour; sixth year, 30 cents an hour, and seventh year, 32 cents an hour.

Railway Sues City for Damages.—Arthur C. Hume, receiver of the South Shore Traction Company, New York, N. Y., forced into receivership in 1910, has sued the city in the Federal Court in Brooklyn to recover $1,750,000. The company contracted with the city of New York under Mayor McClellan, to operate a surface railway over the Queensborough Bridge and through the South Shore of Long Island to a point where Central Avenue intersects the Nassau County line. Between the signing of the contract, May 20, 1909, and Oct. 29, 1912, Receiver Hume alleges, the city so hindered operations as to damage the company to the amount sought. The franchise and physical property of the company were purchased by the Manhattan & Queens Traction Corporation, which is now operating the line.

Civic League Opposed to Cleveland Subway and Terminal Plan.—The Civic League, which makes a business of passing judgment upon all candidates and legislative measures affecting the public at Cleveland, Ohio, has condemmed the subway and terminal plan of Mayor Harry L. Davis. The league objects to the plan in the first place because the members of the subway commission it would create would be appointed by the Mayor and because such a commission would have the authority to issue bonds on the approval of the people, grant franchises, employ its own engineers, attorneys and experts. It says that the law under which a commission may be appointed was enacted to meet local needs in Cincinnati. The plan will be voted upon at the fall election, but the league does not suggest anything constructive to take its place.

San Francisco Valuation Conference Progressing.—The conferences are continuing between M. M. O'Shaughnessy, representing the city of San Francisco, Cal., and William von Phul, vice-president and general manager of the United Railroads, looking toward a basis of negotiations for the sale of the property of the railroad to the city, but no definite decision had been reached up to Oct. 23. In commenting on the progress made, Mr. O'Shaughnessy said recently: "Little difficulty has been experienced in reconciling differences as to the correct methods of forming a basis for the physical valuation. Much discussion has been had as to the correct method of appraising the value of the net profits of the company for the unexpired term of the franchises and endeavors have been made to reconcile conflicting differences on this phase of the problem. It is hoped that some basis will be arrived at soon by which the total valuation can be computed."

Defense in Seattle Bridge Cases.—Judge Everett Smith in the Superior Court, Seattle, Wash., recently ordered stricken from the records two or three grounds of defense set up by the Puget Sound Traction, Light & Power Company, in a suit brought by the city of Seattle to recover $67,917 as the company's proportion of the cost of the Fremont Avenue bridge, and $333 monthly rental therefor. The company's argument that it had been damaged many times more than the amount prayed for by the city, by the removal of the bridge at Stone Avenue, over which the Council had granted a franchise until Dec. 31, 1934, was allowed by Judge Smith to stand. Shortly after the closing of Stoneway Bridge to traffic on the opening of the Fremont Avenue bridge, the company filed a claim against the city for $280,000, claiming that amount of cumulative damages during the life of its electric railway franchises. A decision in this case is expected to settle the rental that will be charged for the use of other bridges on which electric railway cars are operated.

Cincinnati Grant Contested.—The Supreme Court of Ohio heard argument on Oct. 16 in connection with the quo warranto suit of Prosecuting Attorney John V. Campbell of Hamilton County against the Cincinnati Street Railway, the Cincinnati Traction Company and the Board of Rapid Transit Commissioners of that city. The petitioners in the suit aver that the Bauer act and the ordinances adopted under it by virtue of which the rapid transit system for Cincinnati is to be built is in violation of the home rule provision of the constitution. Those who uphold the agreement entered into between the board and the companies say that the real question is not whether the home rule provision of the constitution authorizes the franchise agreement for the use of the city-constructed rapid transit system, but whether the Rogers act of 1896 gives the city power to go ahead. The provisions of the ordinance were reviewed at length in the ELECTRIC RAILWAY JOURNAL of April 7, page 633. The vote in favor of the ordinance was noted in the issue of April 21, page 748.

New York Governor Appoints Improvement Committee.—Governor Whitman has announced the names of a commission which is to investigate the west side improvement situation in New York and report to the next Legislature. The members are William H. Van Benschoten, chairman; Ralph S. Rounds, Charles A. Beard, Henry L. Stoddard and Cyrus C. Miller. Under the law a joint committee of the Public Service Commission and the Board of Estimate have control of the matter. If an agreement is not reached with the New York Central Railroad by Dec. 1 the entire matter passes into the control of the Public Service Commission. The next thing to be done under the law is for the commission to hold public hearings at which all may appear and state their views. Commissioner Hervey, chairman of the joint committee, in a recent letter to the Governor, said that everything had been done except to hold the hearings. He suggested that an investigation by a special committee of the progress which has so far been made would be welcomed by the joint committee.

Financial and Corporate

Annual Report

Galveston-Houston Electric Company

The comparative statement of income, profit and loss of the Galveston-Houston Electric Company, Galveston, Tex., and its subsidiaries for 1915 and 1916 follows:

	1916	1915
Railway earnings	$1,826,297	$1,819,290
Light and power department	116,591	114,987
Miscellaneous earnings	1,952	1,952
Total earnings	$1,944,840	$1,936,228
Expenses of operation	$928,291	$874,744
Maintenance	178,091	200,431
Taxes	129,726	131,282
Net earnings	$708,732	$729,771
Interest charges	$321,757	$331,036
Bond sinking funds	117,236	102,273
Preferred dividends (6 per cent)	180,000	180,000
Common dividends (—; 3½ per cent)	....	139,580
Total deductions	$618,993	$752,889
Surplus	$89,739	*$23,118

*Deficit.

The gross earnings for 1916 showed only a slight increase over 1915, and as operating costs had already been reduced in 1915, it was not possible to improve the net earnings. In fact, except for August (which was comparable with the storm month in 1915), the monthly earnings statements did not begin to show increases until in November.

The advance that was made, however, was due to a gradual increase in gross earnings of the Houston property, equaling 11.5 per cent for the year. This was caused by a reduction in the number of jitneys and a general improvement in business conditions. The earnings of the Galveston property decreased 10.5 per cent, owing to the interruption of the shipping trade as a result of the shortage of foreign vessels and the consequent increase in shipping from the Atlantic seaboard instead of Galveston. The earnings of the interurban line from Galveston to Houston declined 11 per cent, for the lack of business activity in Galveston affected the inter-city riding.

Jitney regulation in Houston requiring a bond from operators became effective on Nov. 1 and tended to decrease the number in operation. On Jan. 1, 1917, only 112 jitneys renewed their licenses, as compared to about 300 in operation at the beginning of 1916.

Boston Elevated Passes Dividend

The directors of the Boston (Mass.) Elevated Railway on Oct. 29 took no action on the quarterly dividend due to be declared at that time. The company, it is said, may show for 1917 4 per cent earned upon its stock. Of this 3.5 per cent will have been distributed during the year, the payments being 1.5 per cent in February, one-half of 1 per cent in May and 1.5 per cent in August. In 1916 stockholders received 5 per cent; in 1915, 5.5 per cent; in 1914, 5 per cent, and in each year from 1913 back to 1902, the full 6 per cent.

The *Boston News Bureau* says:

"The passing of the dividend is a step to which the directors have been forced most reluctantly. If ever a board of directors fought for a property and lay awake nights devising methods of new economy, greater operating efficiency and in the last few months many temporary and perhaps desperate expedients, it has been the directors of the Boston Elevated Railway. Had the company been served by a less faithful and painstaking directorate, the dividend would have been passed a year ago.

"The company's credit has declined to a point to-day where it obviously can sell no securities of any kind except at a ruinous discount. If the public authorities of Massachusetts have any intelligence for measuring or comprehending financial facts, one of the first jobs they tackle should be the Boston Elevated problem."

Empire State Railroad Corporation

New Company of This Name Organized to Succeed to Part of Empire United Railways' Property

At the organization meeting held in Syracuse on Oct. 30, of the new Empire State Railroad Corporation, which has been formed to take over part of the property of the Empire United Railways, Inc., the following directors and officers were elected: H. S. Holden, William Nottingham, Harold Tenney, Joshua Backman, J. C. Nelson and Thomas W. Meachem, Syracuse; W. H. Lippincott, Philadelphia; C. E. Hotchkiss and F. R. Ford, New York, directors; H. S. Holden, president; F. R. Ford, chairman of executive committee; J. C. Nelson, vice-president and general manager; H. J. Clark, treasurer; S. C. Stivers, secretary and comptroller; J. H. Yoder, auditor; H. C. Beatty, assistant secretary; J. M. Hyland, assistant treasurer.

The new company took over the property from the receiver at midnight on Oct. 31. This new company will own the interurban electric railway between Syracuse and Oswego, including the local electric railway system in Oswego and the Syracuse terminal which is in the center of that city. The Rochester & Syracuse Railroad uses this Syracuse terminal under a rental agreement. The Empire State Railroad Corporation also owns the interurban electric railway extending from Auburn to a connection with the Rochester & Syracuse Railroad at Port Byron, 26 miles west of Syracuse, and also owns part of the local electric railway system in Auburn which is operated by the Auburn & Syracuse Electric Railroad. The total track owned by the Empire State Railroad Corporation is 83 miles, of which 70 miles are interurban and 13 miles city track. Power is supplied by the Niagara, Lockport & Ontario Power Company from Niagara Falls, Salmon River and Oswego River hydro-electric developments reinforced by steam relays.

The Empire State Railroad Corporation has the following capitalization:

Underlying bonds:	Issued
Syracuse, Lake Shore & Northern first mortgage 5 per cent gold bonds due 1947	$2,500,000
Auburn & Northern Electric Railroad first mortgage 5 per cent gold bonds due 1945	250,000
Mortgage notes, 6 per cent, three-year	350,000
Total funded debt	$3,100,000
Preferred stock, Series A, 6 per cent cumulative	$250,000
Preferred stock, Series B, 6 per cent non-cumulative	1,250,000
Common stock	1,450,000
Total stock	$2,950,000
Total funded debt and stock	6,050,000

Addition to Valuation Asked

Missouri Short Line Has Asked the Missouri Public Service Commission to Add About $3,000,000 to Its Valuation

The Kansas City, Clay County & St. Joseph Railway, Kansas City, Mo., the Missouri Short Line, filed on Oct. 24 with the Missouri Public Service Commission a request for the addition of about $3,000,000 to its valuation which was set by the commission three years ago at $3,900,000. The expenses of the suit with the Interstate Railway over right-of-way, involving the settlement at $250,000 and the various costs, are specified as part of the additional valuation asked, these expenses being naturally chargeable to construction account. The company has also spent money in improvements since the $3,900,000 valuation was made.

The company asks for a proper amount in the valuation for going value, an item eliminated by the commission. An additional amount is asked for working capital, that allowed by the commission being insufficient.

The company asks also that it be allowed an addition to the valuation on account of its contract for the use of the A. S. B. bridge, and for its power contract. It is shown that these contracts saved an expense of $1,250,000 for a suitable bridge over the Missouri River, and $300,000 which would have to be expended for a power house. There was no allowance in the original valuation for these contracts.

The company asks also for a proper allowance for the contract under which it enters Kansas City, and the contract under which it enters St. Joseph.

The introduction of commutation rates 15 miles out from St. Joseph and the same distance out from Kansas City hinges to a certain extent on the result of the application for a new valuation. The Public Service Commission had two years ago ordered the institution of commutation rates based on about 1 cent a mile. This order was held up, and still is held up, by an injunction in the federal court. The railway company has filed a stipulation that commutation rates based on 1.3 cents per mile would be satisfactory to the people asking a rate. Now, J. R. Harrigan, general manager of the company, has indicated that if the valuation he has asked is granted, he will voluntarily put in the commutation rate based on 1.3 cents a mile. This rate is higher than commutation rates in effect on two other interurbans serving Kansas City; but the companies observing such rates are asking the Kansas commission to abrogate them.

B. R. T. Earnings for Quarter

The Brooklyn (N. Y.) Rapid Transit Company has published earnings figures for the quarters ended Sept. 30, 1916 and 1917, as follows:

	1917	1916
Gross operating revenue	$8,180,337	$7,719,324
Operating expenses	4,385,197	4,175,597
Net from operation	$3,795,140	$3,543,727
Taxes	585,408	539,780
Operating income	$3,209,732	$3,003,947
Non-operating income	107,170	125,710
Gross income	$3,316,902	$3,129,657
Income deductions	1,558,368	1,401,837
Net income	$1,758,534	$1,727,820

A substantial increase of $461,013 or 5.9 per cent was secured in gross operating revenues. Increases of $209,600 in operating expenses and $45,628 in taxes, however, coupled with a decline in non-operating income, reduced the gain in gross income to $187,245 or about 6 per cent. Income deductions increased $156,531, owing to new rapid transit fixed charges, and the final result for the last quarter was an increase of only $30,714 or 1.8 per cent in net income.

Alton & Jacksonville Railway, Alton, Ill.—The Alton & Jacksonville Railway will present arguments before the Illinois Public Utilities Commission on Nov. 5 for permission to dismantle the line and dispose of the property.

Chicago (Ill.) Railways.—At the annual meeting of the Chicago Railways H. H. Hettler was elected a director of the company to succeed Edward S. Hunter, resigned.

Chicago, Aurora & De Kalb Railroad, Aurora, Ill.—The final report of F. W. Cherry, receiver for the Chicago, Aurora & De Kalb Railroad, has been approved in the Circuit Court at Geneva and an order has been entered by Judge Irwin discharging the receiver. The creditors of the company who threw the property into the hands of a receiver had their claims met under the plan referred to in the ELECTRIC RAILWAY JOURNAL of March 31, page 615. Control of the road is now said to be vested in H. H. Evans and his associates.

Cleveland (Ohio) Railway.—According to the operating report of the Cleveland (Ohio) Railway for September, the interest fund has approached dangerously near the point at which an increase in the rate of fare will have to be made. There was a decrease of $25,806 from the previous month, leaving the sum now in the interest fund $336,226. The minimum is $300,000. A total deficit of $289,834 has accumulated in the maintenance and operating funds since March 1 of this year. This deficit will probably have to be taken care of by March 1, 1918, but just what means will be employed for this purpose has not been discussed. A total of 32,054,407 passengers was carried in September. This is an increase of 5.16 per cent over the same month in 1916. To meet this the service has been increased 3.75 per cent.

Danbury & Bethel Street Railway, Danbury, Conn.—Judge Burpee of the Superior Court has appointed James E. Walsh of Greenwich receiver of the Danbury & Bethel Street Railway. The application was made by Albert H.

Flint, New York, who alleged that the payment of a note for $1,000 was overdue. The company has an authorized capital stock of $623,000, of which $320,000 is outstanding. The company has paid no dividends on the stock since January, 1912, when 2 per cent was distributed. It paid 4 per cent per annum from January, 1907, to the time dividends were suspended. It has outstanding $339,500 of first and refunding mortgage 5 per cent bonds; $63,000 of debentures due on March 1, next, and $86,000 of debentures due on Jan. 2, 1921.

Illinois Traction Company, Peoria, Ill.—The Danville Street Railway & Light Company has applied to the Illinois Public Utility Commission for permission to issue $81,000 of consolidated and refunding mortgage 5 per cent bonds. The Decatur Railway & Light Company has applied to the commission for permission to issue $60,000 of first and consolidated mortgage 5 per cent bonds. Both companies are controlled by the Illinois Traction Company.

Kansas City, Clay County & St. Joseph Railway, Kansas City, Mo.—The suit of the Interstate Railway against the Kansas City, Clay County & St. Joseph Railway for $2,000,000 has been settled for $250,000. The settlement is referred to at length on page 832 of this issue of the ELECTRIC RAILWAY JOURNAL.

Louisville (Ky.) Traction Company.—The directors of the Louisville Traction Company will meet on Nov. 27 in New Jersey to carry out the details of dissolution of that corporation and exchange of the stock for stock of the Louisville Railway. The proposed exchange of stock has been referred to previously in the ELECTRIC RAILWAY JOURNAL of March 3, page 410; April 7, page 663, and Oct. 13, page 696.

Mahoning & Shenango Railway & Light Company, Youngstown, Ohio.—The Mahoning & Shenango Railway & Light Company has asked the Ohio Public Utilities Commission for permission to issue $3,700,000 of 7 per cent bonds, to sell at not less than 90. The money is to be used for improvements and paying obligations.

Norwood, Canton & Sharon Street Railway, Sharon, Mass.—The property of the Norwood, Canton & Sharon Street Railway has been sold to William J. O'Connor, Fall River, Mass., a dealer in junk. It was stated that Mr. O'Connor contemplates tearing up the road, but that the selectmen of Norwood and of Sharon object to this unless the highway over which the road operates is put into good condition. Recently the fare over the road was raised to 14 cents for a 6-mile run. The 3 miles in Sharon and the same distance in Norwood were each 7 cents.

Rochester, Syracuse & Eastern Railroad, Syracuse, N. Y.—The bondholders of the Rochester, Syracuse & Eastern Railroad, who failed to deposit their bonds with the bondholders' protective committee, will receive about $305 per $1,000 bond, according to the report of C. Loomis Allen, receiver of the company, filed with Justice Hubbs in the Supreme Court. The total receipts from June 1, 1916, to Sept. 30, 1917, the period of receivership, amounted to $1,134,908, and total disbursements were $874,040, leaving a balance of $260,868, which is to be turned over to the protective committee. This committee now has a total of $1,771,154, of which $1,000,000 was realized by the sale of the road to the reorganization committee. The remainder is in the hands of the Columbia Trust Company, New York, trustee, and the receiver. From the $260,868 to be turned over by the receiver $30,000 in current bills must be paid, in addition to fees for attorneys and a small claim for injuries.

Southern Traction Company, Bowling Green, Ky.—The property of the Southern Traction Company has been sold to the Cal Hirsch Sons' Company, St. Louis, Mo., for $21,000, subject to the approval of the court. It is believed that the purchaser contemplates dismantling the plant. This was one of the properties referred to in the article, "Mortalities Increase," published in the ELECTRIC RAILWAY JOURNAL for Oct. 27, page 788.

Union Traction Company, Nashville, Tenn.—The Union Traction Company, incorporated under the laws of Tennessee on Oct. 8 as the successor to the Nashville-Gallatin Interurban Railway, has made a mortgage to the Nashville Trust Company securing an issue of $300,000 of thirty-year 6 per cent first mortgage gold bonds, issued at the rate of $10,000 a mile. The bonds are dated Dec. 1, 1917, are due after thirty years, but are callable after three years at 105 and interest in amounts of $5,000.

United Railroads, San Francisco, Cal.—The California Railroad Commission has authorized the United Railroads to use $310,807 of its depreciation fund to reimburse its treasury in part for expenditures for additions and betterments from July 1, 1915, to Aug. 31, 1917, being in addition to $139,193 authorized by a decision of the commission dated Aug. 29, 1915. In August, 1915, the commission directed the United Railroads to establish a depreciation account of $550,000 a year for three years, $25,000 a month, $300,000 a year to be expended only for the construction of additional facilities or extensions and the fulfilling of franchise obligations, or the improving of service. Recently the United Railroads applied to the commission for permission to use $583,662 of the fund to replace money spent to better its system. The commission says that it has not had sufficient time to check all the reported expenditures, but at least $450,000 represent proper capital charges. The commission deducts $139,193 for that amount allowed, as stated above, in a previous decision.

Electric Railway Monthly Earnings

Period		Operating Revenue	Operating Expenses	Operating Income	Fixed Charges	Net Income
BANGOR RAILWAY & ELECTRIC COMPANY, BANGOR, ME.						
1m., Sept.,	'17	$80,836	•$42,701	$38,135	$19,000	$19,135
1 " "	'16	74,833	•38,244	36,589	18,164	18,425
12 " "	'17	871,269	•496,695	374,574	224,813	149,761
12 " "	'16	810,403	•440,681	369,722	212,565	157,157
CHATTANOOGA RAILWAY & LIGHT COMPANY, CHATTANOOGA, TENN.						
1m., Sept.,	'17	$72,342	•$129,262	†$56,920	$29,539	†$86,450
1 " "	'16	105,056	•72,995	32,061	29,528	2,533
12 " "	'17	1,347,092	•1,023,185	323,907	357,053	†33,146
12 " "	'16	1,214,613	•766,421	448,192	356,153	92,040
CLEVELAND, PAINESVILLE & EASTERN RAILROAD, WILLOUGHBY, OHIO						
1m., Aug.,	'17	$56,717	•$31,183	$25,534	$11,574	$13,960
1 " "	'16	46,303	•24,825	21,478	11,467	10,010
8 " "	'17	356,811	•217,283	139,528	93,582	45,946
8 " "	'16	307,896	•170,842	137,054	91,098	45,956
EAST ST. LOUIS & SUBURBAN COMPANY, EAST ST. LOUIS, ILL.						
1m., Sept.,	'17	$320,857	•$218,882	$101,975	$65,495	$36,480
1 " "	'16	260,888	•152,922	107,966	63,150	44,816
12 " "	'17	3,543,807	•2,302,744	1,240,063	773,360	466,703
12 " "	'16	2,862,052	•1,701,587	1,160,465	752,969	407,496
FEDERAL LIGHT & TRACTION COMPANY, NEW YORK, N. Y.						
1m., Aug.,	'17	$230,227	•$168,927	$61,300	$49,663	$11,637
1 " "	'16	203,228	•129,261	73,967	48,296	25,671
8 " "	'17	1,798,732	•1,248,311	550,421	392,126	158,295
8 " "	'16	1,657,124	•1,116,855	540,269	389,228	151,041
HUDSON & MANHATTAN RAILROAD, NEW YORK, N. Y.						
1m., Sept.,	'17	$508,219	•$241,344	$266,875	$218,019	$48,856
1 " "	'16	475,988	•218,846	257,142	214,390	42,752
12 " "	'17	1,484,579	•726,521	758,058	653,118	104,940
12 " "	'16	1,370,638	•629,238	741,400	643,739	97,661
INTERBOROUGH RAPID TRANSIT COMPANY, NEW YORK, N. Y.						
1m., Sept.,	'17	3,073,470	•1,810,984	1,262,486	1,070,000	‡§455,207
1 " "	'16	3,007,107	•1,449,978	1,557,129	993,277	‡§619,582
3 " "	'17	8,909,808	•5,202,030	3,707,778	3,203,754	‡§1,356,191
3 " "	'16	8,390,087	•4,282,345	4,107,742	2,979,989	‡§1,295,348
LAKE SHORE ELECTRIC RAILWAY, CLEVELAND, OHIO						
1m., Aug.,	'17	$180,006	•$114,431	$65,575	$35,174	$30,400
1 " "	'16	167,567	•89,799	77,768	36,455	41,313
8 " "	'17	1,165,162	•785,736	379,426	276,339	103,087
8 " "	'16	1,054,483	•663,977	390,506	290,972	99,534
LEWISTON, AUGUSTA & WATERVILLE STREET RAILWAY, LEWISTON, ME.						
1m., Sept.,	'17	$86,834	•$57,184	$29,650	$15,538	$14,112
1 " "	'16	78,549	•50,793	27,756	15,134	12,622
12 " "	'17	883,572	•652,173	231,399	185,869	45,530
12 " "	'16	785,306	•526,854	258,452	189,810	68,642
NASHVILLE RAILWAY & LIGHT COMPANY, NASHVILLE, TENN.						
1m., Sept.,	'17	$210,085	•$134,315	$75,770	$40,980	$34,790
1 " "	'16	206,901	•127,708	79,193	41,887	37,306
12 " "	'17	2,434,511	•1,553,323	881,188	494,302	386,886
12 " "	'16	2,339,406	•1,436,945	902,461	512,046	390,415
PORTLAND RAILWAY, LIGHT & POWER COMPANY, PORTLAND, ORE.						
1m., Sept.,	'17	$501,149	•$299,150	$201,999	$177,545	$24,454
1 " "	'16	453,731	•244,193	209,538	178,811	30,727
12 " "	'17	5,833,067	•3,197,453	2,635,614	2,165,120	470,494
12 " "	'16	5,422,757	•3,052,791	2,369,966	2,179,732	190,234

•Includes taxes. †Deficit. ‡Includes non-operating income. §Includes accruals, under rapid transit contracts with city, payable from future earnings.

Traffic and Transportation

Mileage Rate for Chicago, North Shore & Milwaukee Line

Illinois Commission Grants Fare Increase and Change from Five-Cent Zone System—Company Receives Benefit of Present Abnormal Traffic

The Illinois Public Utilities Commission in a recent order authorized the Chicago, North Shore & Milwaukee Railroad, Highwood, Ill., to increase its rates on account of increased operating expenses, and to change its passenger fare schedule from a zone system to a mileage basis. The order characterized the zone system as inherently discriminatory and inevitably causing friction. It stated also that the right of the commission to disregard franchise provisions fixing rates of fare was clear.

In computing the return to be allowed the company, the commission declined to consider temporary traffic conditions of uncertain duration, arising from the unusual war-time activities at Fort Sheridan and the Great Lakes Naval Training Station. Though these conditions worked to the benefit of the company, it had operated at a disadvantage in the past and would have to do so again on the return of normal conditions. Rates based on the present abnormal circumstances, the commission said, would be clearly unfair to the company.

NEW MILEAGE RATE AUTHORIZED

The old passenger schedule of the company was based upon a 5-cent zone system, there being ten zones in Illinois on the main line and three upon the Libertyville branch. For this schedule the company is now authorized to substitute one based upon a ticket rate of 2 cents a mile, the same as authorized by the Wisconsin Railroad Commission for the company's line in that State. The minimum fare will be 5 cents, but no fare within the corporate limits of any municipality is to exceed 5 cents. Conductors are authorized to collect fares of the amount ending in 5 or 0 next greater than the ticket fare from passengers paying cash from stations where tickets might have been procured.

The rate for round-trip tickets is to be double the one-way rate, and twenty-five ride communtation tickets are to be sold for twenty-three times the one-way rate. A 1000-mile mileage ticket will be sold for $17.50. Fifty-ride commutation tickets are to be sold to children of eighteen years and under on the basis of 1 cent a mile with a minimum charge of $1.50 for fifty rides. These tickets may be restricted to hours between 7 a. m. and 6 p. m. on week days only, during all months except July and August. Children five years and under, when accompanied by an adult, are to be carried free; but over five years and under twelve years, they are to pay half the regular fare, the half-fare payment being raised to 5 or 0.

PROBABLE RATE OF RETURN FOR 1917 WILL BE 5.61 PER CENT

The old rates, in effect throughout 1917, would probably have resulted in a return of 4.25 per cent, after providing for depreciation, upon the fair value of the property. Had the new rates been in effect throughout 1917, the return would have been 7.8 per cent. As it is, a return of 5.61 per cent can be expected for 1917, which is not considered unreasonable. The company is required to report quarterly as to its financial progress.

The fair value of the property in Illinois was determined to be not less than $5,100,000. The original cost of the property in Illinois and Wisconsin as shown by the books was $13,918,862, but the original cost of the Illinois section could not be accurately ascertained. The petitioner purchased the property at receiver's sale on May 1, 1916, paying and assuming obligations therefor to the amount of $2,680,001, including capital stock of $100,000. The commission decided that $120,000 reasonably represents the depreciation accruing for 1918 and each year thereafter, and that 3.5 per cent of the cost of the depreciable property is deemed sufficient for future additions and betterments. A sum of $30,000 must be set aside for depreciation before the end of this year.

COMMISSION CRITICISED PAST EXPENDITURES

The propriety of many of the company's past expenditures was questioned. With regard to station construction, the order held that it need not be limited to shelter purposes, and that a pretentious building in a wealthy community like Lake Forest, harmonizing with the general surroundings, is justifiable; but that an expensive station on the outskirts of a municipality like Zion City represents an unreasonable expenditure. Bridges built for four tracks, where the right-of-way of the most heavily burdened portion of the road limited it to two tracks, and where the two tracks over such bridges were not employed to full capacity though the line had been in operation for twelve years, were held to be overbuilt and the excessive expenditures unreasonable. The construction of a double-track branch line beginning and ending in small villages and running through almost exclusively farm territory, on which traffic has been developed to such a limited extent that only one track is used, was held an unwarranted expenditure. A return was allowed only on the reasonable investment in the line. Property owned by the interurban company, but used exclusively for street railway purposes in the city of Waukegan was included in the valuation for interurban rate-making purposes only to the extent of the incidental worth of the convenience of having such a system operated in connection with the company's main line.

Several valuation questions arose. The commission condemned the use of lump sums of any considerable amount, the determination of legal expenses by means of fixed percentage of other expenditures, and the determination of taxes by taking the average of the actual expenditure during the five years next preceding the valuation. Only the amounts actually paid for franchise privileges were allowed, and no allowance was made for going value as a separate item. Paving paid for by special assessment was held a proper charge when the land is inventoried at its actual cost, but not when it is valued upon a reproduction basis. Ballast was depreciated.

Rate Changes in Ohio

Review of Some Passenger and Freight Rate Changes Allowed by the Ohio Commission and of Applications Now Pending Before that Body

From steps already taken it is evident that it is the policy of the Public Service Commission of Ohio to grant the applications of interurban electric railways for increased fares wherever it can be shown that additional income is necessary for their financial safety or to meet the higher expenses brought about by war conditions. A number of these requests have already been decided in favor of the roads, notwithstanding the fact that objections have in some cases been made by their patrons. The commission, however, has always taken the time necessary to go into the merits of the requests thoroughly, even where the change was urged for an early date to prevent deficits or threatened shortages in other directions. In the case of some of the roads, the new schedules are higher than those of the steam roads. Laws governing them, so far as fare schedules are concerned, have been interpreted as not applying to interurban lines, and this has given the commission an opportunity to judge each case upon its merits. In order, however, not to be unjust or cause the roads to lose business, the electric railways have been allowed to make competitive rates wherever this was found necessary for their protection. It may be said with some degree of assurance that this privilege will not be abused, for the interurban roads, in a general way, need as large an income as can be obtained and will make no reduction where it is not necessary.

PASSENGER FARE ADVANCES ALLOWED

The Western Ohio Railway, with headquarters at Lima, was one of the first to make application for an increase in its passenger schedule. It had been operating on a basis of 2 cents a mile, but was able to show the commission that an increase was urgent. Within a short time an order was issued, giving it the right to formulate a schedule on the basis of 2½ cents a mile.

Shortly afterward the Cleveland, Southwestern & Columbus Railway asked for authority to revise its passenger schedule on the basis of 2½ cents a mile and, after a brief delay, this petition was also granted. The one-way fares on this road are all higher than those of the steam roads, except on some of the long hauls, where there is competition from the steam lines. The same condition exists at a point or two in other places where round-trip tickets are now sold at a reduction that will meet the steam rates. Five-cent fare zones have been shortened from 2½ miles to 2 miles. Not much trouble has been encountered from the public in establishing the new schedule.

A revised passenger schedule, on the basis of 2 cents a mile, went into effect on the Northern Ohio Traction & Light Company, Akron, on Oct. 1. Although the former fare basis was low, this road has been one of the most prosperous in the State and the new basis, therefore, is not as high as that of some of the other roads. All round-trip tickets have been eliminated and other changes have been made which place the road on a better basis than it has been in the past, so far as rates of fare are concerned. Like others, it has had to take care of some competition.

The Stark Electric Railway, Alliance, has been granted authority to make an increase in passenger rates by the elimination of discounts on round-trip tickets and to advance the price of its 500-mile books from $7.50 to $10. It is now working under this advance.

ELECTRIC FREIGHT RATES ADVANCED

All Ohio electric railways doing a freight business have been authorized by the Public Utilities Commission to revise their freight rates upon the basis of rates recently granted to the steam roads. This means a 15 per cent advance over what are known as Zone A rates, and these were established by making a like advance over the original rates. The electric railways were instructed to file their revised freight schedules with the commission by Oct. 31.

SOME PASSENGER INCREASES NOW PENDING

An application for an increase of about 15 per cent in the basis passenger rate on the Lake Shore Electric Railway, Cleveland, is now pending before the Public Utilities Commission. A brief hearing was held on the matter on Oct. 23. The commission withheld its decision for two or three weeks. It is probable that a revised schedule cannot be put into effect by this company until about Nov. 15.

While no formal application has been filed with the commission by the Cleveland, Painesville & Eastern Railway, with headquarters at Willoughby, that company is checking up its figures and in all probability will make a request for a passenger increase within a few weeks. It is doing a large passenger business, but its equipment and track must be kept in first-class condition to meet demands.

The Mahoning Valley Railway, Youngstown, Ohio, made application on Oct. 19 for an advance in its passenger rates. While boards of trade and other organizations in the towns through which the company operates have filed objections with the commission, no trouble is anticipated in securing authority from the commission to make the desired increase, since good reasons for taking the step have been advanced.

Tickets Withdrawn in Portland

The Portland Railway, Light & Power Company, Portland, Ore., following the ruling of the Public Service Commission referred to at length in the ELECTRIC RAILWAY JOURNAL of Oct. 27, page 757, has withdrawn from sale car tickets at 4½ cents and school tickets at 3½ cents, and has instituted the new rate of 5 cents for unlimited tickets, and 4 cents for school tickets. It is estimated that the saving effected under the change will be at least $5,000 a month to the company, or 10 per cent of the $50,000 a month that the new increase in wages and the eight-hour day will cost the company. Tickets now held by patrons of the company will be honored for fare as usual. The company is experimenting with revised schedules for its electric railway lines in an effort to ascertain where economies may be effected without curtailing service.

Buffalo Recommendations Adopted

President Connette of the International Railway Says That Commission's Traffic Recommendations Have Been Complied with or Will Be Met

All of the recommendations embodied in the report of Charles R. Barnes, electric railway inspector for the Public Service Commission of the Second District of New York, as the result of his survey of traffic conditions on the Buffalo, N. Y., lines of the International Railway will be adopted by the company. Appearing at a hearing before the commissioners in Buffalo, E. G. Connette, president of the International Railway, and Thomas Penney, vice-president and general counsel, told of the company's plans for improving its service in the 5-cent fare zone.

SAFETY ISLAND TO BE IMPROVED

Application has been made to the City Council by the International Railway for authority to enlarge the safety island at Shelton Square and build a shelter over it at an estimated cost of $8,000. The enlarged safety island would permit the loading of three cars at one time at this congested transfer point. The Niagara and Grant lines which start from Shelton Square are two of the heaviest patronized arteries to the west side and Riverside district. The shelter will be built of steel and will have a tile roof.

Another important change which the company expects to make is the routing of the Broadway and other east side lines around the Soldiers' Monument in Lafayette Square. It is proposed to lay a single track loop around the monument so as to loop cars around the Lafayette Square and thereby remove a large part of the traffic congestion from Washington street south of the square.

EXTENSION OF ELMWOOD LINE

President Connette told the commissioners that tracks are now being laid on the Elmwood Avenue extension from Hertel Avenue to the north city line so as to accommodate the rapidly increasing traffic in the north-end industrial district. It is estimated that 20,000 passengers board cars in this district between the hours of 5 and 6.30 o'clock every night. Plans are also being made for an efficient loading terminal in this vicinity. Cars carrying passengers from this new industrial district will run as express cars over a new route so as to eliminate the congestion on Elmwood Avenue during the evening rush hours.

Large additions are being built to the company's power generating equipment. Substations are being built at North Division and Oak Streets and in Military Road near the Hertel Avenue carhouse. The new 10,000-kw. equipment, at the old Niagara Street power house, will soon be ready.

NEW LIGHTS FOR CARS

Mazda-type lamps have replaced the old carbon lights in all of the company's cars. Cars returning to the carhouse from the city lines after the rush-hour traffic will hereafter stop and pick up passengers who desire to ride as far as the carhouse. Rerouting plans are being worked out for various east side lines so as to reduce the running time between outlying sections and the heart of the downtown section of the city. The skip stop has been placed in operation on all of the company's city lines, and the 100 new front-entrance center-exit Peter Witt cars are now arriving from the Kuhlmann shops in Cleveland at the rate of ten a week. Many of these cars are now in use on the Niagara Street line.

RECOMMENDATIONS ALL MET

President Connette also explained that little difficulty will be experienced this winter in heating the company's cars. All of the near-side pay-as-you-enter cars have been equipped with coal stoves with forced circulation and the new electrical equipment will allow the company to heat the other types of cars with electricity. Additions have been made to the company's snow-fighting equipment and orders have been placed for some new equipment, including additional double-truck snow plows, sweepers, etc. President Connette told the commission that every recommendation has been fully complied with or plans have been made for putting the recommendations into effect as soon as practicable.

Electric Freight for Cattle Show

Freight Facilities of Kansas City Railways Make Possible the Holding of Annual Exposition Which Proves Unusual Success

The Kansas City (Mo.) Railways performed a valuable freight service recently by hauling cattle to and from the American Royal Live Stock Show, which was held on Oct. 1 to 6. The American Royal, which was started in 1898, is the annual exposition of beef cattle in Kansas City. Except for the facilities of the Kansas City Railways, the show would probably have been omitted this year or held in another city. Neither the stockyards, where the show was usually held, nor Convention Hall, where it was held the past two years, could be used this year. Clyde Taylor, vice-president and acting president of the railway, suggested Electric Park as a good location because transportation facilities for the people are excellent on account of the large traffic during the summer and because it affords ample buildings and grounds. The objection to it was that a distance of 5 miles from steam railroads made too long a drive for fine cattle. This objection was removed, however, when Mr. Taylor declared that his company could bring the cattle to within about a mile of the park and thus greatly reduce the inconvenience to the stockmen.

EIGHTY CARS HAULED

The stock cars were delivered to the Kansas City Railways at Dodson, where physical connection is made with the steam roads. They were then hauled 9 miles by electric locomotives and through the residence districts to Forty-sixth and Main Streets, where docks had been erected, lights and telephones installed, and facilities provided for handling the cattle. In hauling the total of eighty cars regular passenger traffic on the line was undisturbed. There were no accidents and, so far as known, no objection from residents of the district.

In the last few years the freight business of the Kansas City Railways has increased rapidly, practically all the building materials for several fine residence districts having been hauled over its lines. The trackage of the freight terminal was useful for storing cars during the recent show. Because of provisions for handling large crowds at Electric Park, more than 150,000 people had attended a patriotic festival there during the previous week. There were many comments on the accessibility of the resort for the exposition, especially in view of the fact that by comparatively small track improvement, heavy freight could be brought directly to the district in trainload lots.

Traffic Perils Increase

In New York City 25,000 People Are Injured in a Year in Street Accidents of All Kinds

Theodore P. Shonts, president of the Interborough Rapid Transit Company, New York, N. Y., is calling upon the public to take a lively interest in the "alarming increase" of traffic accidents. Mr. Shonts declares that the street traffic and the consequent congestion in New York have reached a point that is dangerous, and that the city must take some action to impress on every individual his own responsibility for the safety of others. Mr. Shonts, in his statement, says in part:

25,000 INJURED IN YEAR

"The increase in street accidents of all kinds, on and off the car lines, has become appalling. About 25,000 persons a year are injured, and the number is constantly increasing. Many lives are lost in street accidents which a little care would have prevented.

339 PERSONS HURT IN CAR ACCIDENTS IN MONTH

"On Oct. 28 there was put before me a report of accidents of all kinds on the New York Railways in the month of September. It showed that 339 passengers were hurt on the New York Railways in September in getting on and off cars. Many of these accidents happened after the car had been brought to a stop, and were due entirely to carelessness.

"New York people have scant idea of the tremendous increase of street traffic of all sorts in the last year, and there is every prospect that the coming winter will see traffic congestion far worse than the city has ever known.

225,000 AUTOS IN NEW YORK CITY

"There are 225,000 automobiles operating in New York City. This is about 50,000 more than a year ago. Yet there seems to be even less care exercised by the people driving. The experience of our company leads us almost to think that every driver makes it his special object to run his automobile on the car tracks. Due largely to this practice there were 391 collisions in September between cars and vehicles, in which twenty-six car passengers were injured or at least thrown in these accidents.

"There were 1277 accidents of all kinds in September on the surface lines, as compared with 927 in the same month last year, an increase of about 38 per cent. The responsibility for some of these accidents rests on the company, due either to some mechanical failure or man failure, but for the most part they are the natural result of overcongestion."

Pro Bono Publico Autos

Commissioner J. M. Mann of Portland, Ore., in charge of the department of public utilities, is investigating the Pro Bono Publico Club, which is operating automobiles on the city streets without bonding the drivers or complying with any of the other jitney laws passed by the people at the last city election. Secretary-Treasurer Emerson of the Pro Bono Publico Club asserts that the club is not operating jitneys and that only members of the organization can ride in the cars. However, anyone paying 25 cents and giving his name to any of a number of agents can secure a membership card, which entitles him to five rides on either of the two lines now in operation. Other privileges of the "club," such as shoe shines and lunches at cost, checking of baggage and free telephones, promised to the "members" have not yet materialized. Twenty-five cars are leased or rented, and drivers are hired to operate them. In order to test the legality of the "club," fifteen drivers who have been operating the jitneys have been arrested.

Milwaukee Fare Hearing Nov. 7.—Hearings are to begin on Nov. 7 on the petition of The Milwaukee Electric Railway & Light Company, Milwaukee, Wis., to the Railroad Commission of Wisconsin for the readjustment of its street and interurban railway fares.

Jitney Zone Restriction Removed.—The section of the traffic ordinance of Waterbury, Conn., which forbids jitney drivers from stopping to take on or let off passengers between Exchange Place and Brook Street, on East Main Street, has been suspended by vote of the Aldermen.

Fare Hearing in Rutland Postponed.—The hearing before the Public Service Commission of Vermont to consider the petition of the Rutland Railway, Light & Power Company for the right to increase the fares on its lines in Rutland and on the main line to Poultney, has been postponed to Nov. 1.

Fare Increase Protested.—A protest has been filed with the Public Service Commission of Pennsylvania by the cities of Harbor Creek and Northeast, Pa., against the proposed increase in passenger fares on the Buffalo & Lake Erie Traction Company, Buffalo, N. Y. The rates affect only the schedules within the State of Pennsylvania.

I. T. S. Fare Basis Change Under Advisement.—A public hearing was held on Oct. 26 on the application recently made by the Illinois Traction System to the Public Utilities Commission of Illinois for permission to file tariffs substituting for its present zone system a 2-cent-per-mile ticket fare and 3-cent-per-mile cash fare. As there were no objectors at the hearing, the commission took the application under advisement.

Hearing on Nov. 12 on Petition for Return to Five-Cent Fare.—The Public Utilities Commission of Connecticut on Oct. 25 acknowledged the receipt of the petition from the city of Hartford asking that the Connecticut Company be compelled to return to the 5-cent fare in Hartford. The commission took the matter under advisement and on Oct.

31 announced that it would hold a hearing at Hartford on Nov. 12 at 11:30 a. m.

Protest Against Pottstown Fare Increase.—The Burgess and Town Council of Pottstown, Pa., have filed a complaint with the Public Service Commission of Pennsylvania against the increase in passenger rates by the Reading Transit Company. The company operates from Chestnut Hill, Montgomery County, to Boyertown, Berks County. It is contended that the company has increased the rates from 5 to 6 cents in Pottstown, but not in other boroughs through which it passes.

More Philadelphia & Western Rate Hearings.—At the hearing held on Oct. 25 by Public Service Commissioner Ryan on the complaint against Philadelphia & Western Railroad rates out of Philadelphia the commissioner said that so far counsel for the plaintiffs had not shown sufficient cause for a ruling by the commission enjoining the increased rates. Further time was allowed for an examination of the company's books by accountants representing the company and the plaintiffs, following which examination another hearing will be held.

Conference on Uniform Operating Rules in Connecticut.—Representatives from all the electric railways operating in Connecticut held an all-day conference on Oct. 25 with the Public Utilities Commission regarding the adoption of uniform operating rules for the different railways. It was decided that representatives of all the companies receive a copy of the rules and regulations of the Connecticut Company and that they report back to the commission on Jan. 4 of next year in regard to any changes in the rules of that company which they may deem to be expedient so that the amended rules can be adopted as standard for the State.

Bus Line to Be Operated by Railway.—The Peninsular Railway, San Jose, Cal., has received permission from the Railroad Commission of California to operate three automobile stages between Palo Alto and Camp Fremont at a 10-cent fare, making connection with the company's electric cars from San Francisco at the company's depot in Palo Alto. The company will publish a schedule in connection with round-trip tickets issued by its interurban railroad at the rate of 10 cents per round trip, the amount added to the round-trip rates on the electric line. The commission has also granted authority to two motor bus companies to operate automobiles between Palo Alto and Camp Fremont.

Jitney Drivers to Fight Ordinance.—Jitney drivers of Waco, Tex., have taken steps looking to the formation of an organization to fight an ordinance recently enacted by the City Commission which prohibits the loading or unloading of passengers on certain streets within the business district of the city. The ordinance, while not intended primarily as a prohibitive regulation of jitneys, has had that effect, since it prohibits jitneys from stopping within the business district to discharge or take on passengers. The ordinance was intended to relieve congestion within the business district. The jitney drivers have employed an attorney and announce that they will take the case to the higher courts.

La Salle Excludes One-Man Operation.—A few months ago the Chicago, Ottawa & Peoria Railway attempted to gain the consent of the local authorities of La Salle, Ill., to operate the local cars with one man. This authority was not granted by the city officials, but they did not forbid such operation and so the company began one-man operation during the slack times of the day, using two men during the rush hours in the morning and evening, as a trial of the system. This service was continued about two months, when the City Council, without notice, passed an ordinance making it obligatory on the part of the company to use two men on all cars at all times. The company has therefore been forced to discontinue its one-man operation for the present at least.

Rerouting Plan at Columbus Approved.—In an informal way the Columbus City Council has approved the rerouting plan for the cars of the Columbus Railway, Power & Light Company, Columbus, Ohio. It was intended to eliminate the congestion on High Street, but a change allowing West Side cars to continue on that thoroughfare will reduce traffic only about 25 per cent from present conditions. Harold W. Clapp, general superintendent of the company, informed the Council that the company objects to the plan and will be unable to make changes in track and supply cars provided by it. He said that the rate of fare was too low to take care of operation as it is now. The plan was formulated by a number of civic associations. The formal vote will be taken later.

Service Complaint Dismissed.—The complaint by Isaac R. Breen, as Mayor of Watertown, N. Y., against the Black River Traction Company charging unsafe and inefficient service has been dismissed upon the evidence submitted at a hearing held at Watertown on Sept. 8. It appears that at the time the complaint was made the railway was involved in a disagreement with its employees, who left the road. The company then employed other men to operate its cars. At the time the complaint was filed with the commission there was more or less disturbance in Watertown due to the employment by the company of so-called "strike breakers." Conditions have since changed and the cars are now being operated by practically the same men who left the company's employ during the dispute. In addition reports submitted by Charles R. Barnes, electric railroad inspector of the commission, show that reasonable service is being furnished by the company in Watertown.

New Traffic Rules in Lexington.—A new traffic measure has been enacted by the City Commission of Lexington, Ky., providing for safety zones at congested points in the downtown streets and requiring cars of electric railways to stop on the near side of intersections. Vehicles must stop 5 ft. to the rear of cars halted to discharge or take on passengers, except where safety zones are provided; automobiles must pass electric cars to the right; the speed limit is reduced from 12 m.p.h. to 10 m.p.h. in the congested district and the limits of this district extended. Glaring headlights are taboo and owners and drivers of pleasure vehicles are required to lock them securely when they are parked in areas where parking is permitted. The Board of Commerce and the Automobile Club co-operated in framing the regulations, which are left to the Department of Public Safety for enforcement. Penalties include fines up to $25 and imprisonment up to thirty days at the discretion of the court.

Increase in Traffic on New York's New Transit Lines.—Recent figures tabulating the number of passengers carried on the new rapid transit lines of the Interborough Rapid Transit Company show large increases over the estimates made by experts when the dual system contracts were signed. Besides, the new lines have not affected the increase in passenger traffic on the old lines. The Queensboro subway when opened in June, 1915, carried 40,136 passengers. In September of this year 1,301,684 passengers were carried. On the White Plains Road line, which was opened last March, 179,142 passengers were carried in the first month, and in September 310,342 passengers were carried. On the Jerome Avenue line, opened in June, the number of passengers carried has increased from 168,150 in that month to 247,970 in September. The shuttle line on Seventh Avenue from the Pennsylvania Railroad station to Times Square Station, about 1 mile long, opened in the same month, carried 99,636 passengers, and in September this total had increased to 252,255.

Protests Filed Against Proposed Elimination of Four-Cent Ticket.—Briefs have been filed with the Public Utilities Commission of Utah by Davis County, Bountiful, Centerville and Midvale in opposition to the petition of the Utah Light & Traction Company for permission to discontinue the sale of fifty tickets for $2. The brief filed by Davis County states that one of the principal objections to the proposed increases on the suburban lines is that the new tariff discriminates against the suburban protestants in favor of Salt Lake City. The elimination of the 4-cent ticket and the extra charge for transfer is a blanket increase, affecting the suburban patron equally with the city patron, but for the suburban patron another fare has been added in the extra zone. The Midvale brief asserts that the commission is without jurisdiction in the premises because the franchises come under control of the city. It is contended that the railway company should not be permitted to retain the parts of the franchises which are beneficial to it and repudiate the other terms and conditions under which the permits to operate were granted.

Personal Mention

Edward J. Cook, chief engineer of all the lines of the New York State Railways, with office in Rochester, has resigned.

F. E. Fryhstrand has been appointed acting assistant treasurer of the Middlesex & Boston Street Railway, Newtonville, Mass.

Frank J. Vestal will hereafter hold the title of superintendent of steam power with the Union Traction Company of Indiana, Anderson, Ind.

J. H. Lockett has been appointed master mechanic of the electric lines at Oakland, Alameda and Berkeley, Cal., of the Southern Pacific Company.

G. H. McFee has been appointed superintendent of transportation of the Boston & Worcester Street Railway, Framingham, Mass., effective Nov. 1.

James Watt, shop foreman of the Union Railway, New York, N. Y., has been appointed master mechanic of the Berkshire Street Railway, Pittsfield, Mass.

J. Jordan, vice-president and general manager of the Cleveland, Painesville & Eastern Railroad, Willoughby, Ohio, has resigned to become president of the Electric Package Company.

Joseph A. Barry, formerly general manager of the New Jersey & Pennsylvania Traction Company, is now doing special work for several electric railways in the Western and Southern States.

Albert C. VanDreisen has been made secretary of the Toledo Railways & Light Company, Toledo, Ohio. He will succeed C. E. Murray, who has resigned as secretary and auditor of the company.

E. H. Masterson has been appointed day foreman of Fort Wayne city cars of the Fort Wayne & Northern Indiana Traction Company. He has been in the employ of that company for the last thirty years.

Ralph E. Aiken, carhouse foreman of the Third Avenue Railway, New York, N. Y., has resigned to accept the appointment of inspector of equipment with the Public Service Commission for the First District of New York.

Chester N. Chubb, at present manager of the Northern Indiana Gas & Electric Company, South Bend, Ind., has been appointed general manager of the People's Light Company, a subsidiary of the United Light & Railways Company, which operates in Davenport, Rockingham and Bettendorf, Iowa.

C. S. Keever has been appointed superintendent of transportation for the Union Traction Company of Indiana, Anderson, Ind., to succeed Charles A. Baldwin. Mr. Keever has been division superintendent at Muncie and Tipton for a number of years. He was the oldest division superintendent of the company from the standpoint of service.

Edward R. Kelsey, manager of publicity of the Toledo Railways & Light Company, Toledo, Ohio, and Governor of the Rotary district comprising Ohio, Michigan and West Virginia, is engaged in organizing the Rotary clubs for the support of the Y. M. C. A. war fund and the soldiers' recreational fund campaigns. He was scheduled to speak in several towns in the district during the last few days.

R. B. MacDonald, formerly general manager of the Fort Dodge Gas & Electric Company, Fort Dodge, Iowa, has been appointed general manager of the People's Power Company, which operates in Moline, Rock Island and other surrounding Illinois towns and supplies energy to the Tri-City Railway, Davenport. Speaking of his appointment, B. J. Denman, vice-president and general manager of the Tri-City Companies, said: "Mr. MacDonald has been in our service more than eight years, formerly as general superintendent, and for the last three years or more as general manager at Fort Dodge. This new appointment comes to him as a merited promotion in the United Light & Railways Company organization."

Charles H. Hile was elected secretary of the New England Street Railway Club and editor of the *Street Railway Bulletin* at the first fall meeting of the club on Oct. 25. Mr. Hile is widely known in the electric railway field, having been president of the club in 1910-1911 and for about twenty years an executive officer of the Boston (Mass.) Elevated Railway. He received his education at Pennsylvania State College, from which he was graduated in 1892 in mechanical engineering. He afterward took a post-graduate course in electric railway engineering at the University of Wisconsin. He next spent a year on the staff of the Philadelphia Traction Company in connection with the electrification of the company's horse car lines, after which he went to Boston to become engineer in charge of underground conduit construction for the Boston Elevated Railway. After three years of service he became superintendent of wires and conduits, an office which he held for eight years, and then became assistant to the vice-president and later chief of maintenance. Mr. Hile is a member of several national engineering organizations and has a host of friends in New England who are congratulating both him and the club upon his election.

C. H. HILE

Herbert A. Faulkner, secretary of the New England Street Railway Club for the last five years, resigned his post on Oct. 25. He plans to leave for California at an early date. Before Mr. Faulkner entered the electric railway field he was engaged in newspaper work and was well known for his writing in connection with traffic matters. He was formerly passenger agent of the Bay State Street Railway and was an intimate friend of the late Henry E. Reynolds, who was assistant general manager of that company at the time of his death.

Alfred Sweeney, assistant to the general manager of the Cumberland County Power & Light Company, Portland, Me., has been elected assistant general manager. Although this is only a slight change in title, Mr. Sweeney's authority is considerably increased. Mr. Sweeney was graduated from Pratt Institute, Brooklyn, N. Y., in 1904. He entered the employ of the Lambertville Heat, Light & Power Company, Lambertville, N. J., as electrician, and was sent from there to Florence, S. C., to hold a similar position with the Florence Electric Light Company, which was under the same control. Later he went to Norfolk, Va., to work in the track and power departments of the Norfolk & Portsmouth Traction Company and in 1908 he entered the employ of the Lewiston, Augusta & Waterville Street Railway at Lewiston, Me. The following year he was made superintendent of track, and in 1911 assistant to the general manager. In 1912 the Lewiston, Augusta & Waterville Street Railway was purchased by the Cumberland County Power & Light Company of Portland, Me., and both companies, together with the Portland Railroad, came under common control under one management. Mr. Sweeney continued until the present time in the position of assistant to the general manager of the combined companies, which afterward included the York County Power Company and the Westbrook Electric Company.

ALFRED SWEENEY

A. G. Snell has been appointed division superintendent of the Union Traction Company of Indiana with headquarters at Muncie. His jurisdiction extends over the Muncie city lines and the Muncie and Portland, the Muncie and Union City, the Muncie and Hartford City and the Muncie and Newcastle interurban divisions. He succeeds Clarence S. Keever, who becomes general superintendent.

L. C. Bewsey has accepted a position in the mechanical department of the Manila Electric Railroad & Light Corporation, Manila, P. I., which is operated by the J. G. White Management Corporation, New York, N. Y. Mr. Bewsey has been connected with the mechanical department of the International Railway at Niagara Falls, N. Y., since June 4, 1917. He was superintendent of the Union Traction Company of Indiana at Indianapolis from February, 1910, to December, 1914, when he resigned to accept the position of superintendent of the Buffalo, Lockport & Rochester Railway, Rochester, N. Y. He was then in charge of the transportation, traffic, freight, claim and substation departments and was for some time in charge of the mechanical department. Mr. and Mrs. Bewsey will sail from San Francisco in order to reach Manila shortly before Dec. 10.

M. W. KIRKWOOD

Matthew W. Kirkwood, who, as noted in these columns recently, has been appointed general manager of the Galt, Preston & Hespeler Street Railway and the Lake Erie & Northern Railway, Galt, Ont., began his electrical experience in the installation of the arc lighting system at Georgetown, Ont., many years ago. Later, in about the year 1890, he was connected with the operation of the power plant, located at Glen Williams, which supplied this system. In 1894 Mr. Kirkwood was employed in the construction of the power station at Preston of the Galt, Preston & Hespeler Street Railway, which began operation in the fall of the same year. He was retained in the maintenance of way department and the following year assisted in the building of the line from Preston to Hespeler. Later, he was placed in charge of equipment, track and line and supervised the building and equipping of the line to Kitchener and Waterloo in 1902. Five years later he was appointed superintendent of the road, the position he has retained until his recent promotion to succeed the late Martin N. Todd. Mr. Kirkwood had charge also of the electrifying and equipping of the Lake Erie & Northern Railway in 1915, and was made superintendent of that road when it began operation in February of the following year.

Obituary

Robert S. Ives, who for a number of years was superintendent of the Chicago & Milwaukee Electric Railroad, previous to the time it went into receivership, died on Oct. 21 at the age of forty-eight years. His remains were buried at Racine, Wis., on Oct. 23. Mr. Ives began his work in the electric railway field with the Tri-City Railway in Davenport, Iowa, and was later superintendent of the Chicago & North Shore Street Railway, which subsequently became a part of the Chicago Surface Lines.

Oliver H. Hughes, chairman of the Ohio Public Utilities Commission, died in a hospital in Columbus on Oct. 29. He had been ill for several days. Judge Hughes was a valued member of the commission and was popular with utility companies because of his ability and sense of fairness and justice. He served about six months as adjutant general as an appointee of Governor J. M. Pattison and was appointed to membership on the Ohio Railroad Commission in 1905. He continued as a member of its successor, the Utilities Commission, until 1915, when he resigned. He was reappointed last January.

Construction News

Construction News Notes are classified under each heading alphabetically by States.

An asterisk (*) indicates a project not previously reported.

RECENT INCORPORATIONS

***Selma (Ala.) Traction Company.**—Incorporated with a capital stock of $10,000. Incorporators: Hugh Mallory and others.

Kansas City, Lees Summit, Lone Jack & Eastern Railway, Kansas City, Mo.—Articles of incorporation have been adopted by the Kansas City, Lees Summit, Lone Jack & Eastern Railway to construct an electric railway between Kansas City, Lees Summit and Lone Jack. Capital stock, $1,000,000, divided into 10,000 shares of $100 each. Among the directors are W. T. Thomas, Lone Jack; E. H. Graves, Lees Summit; C. W. Chandler, Kansas City, and C. H. Witthar, Leeds. [Sept. 15, '17.]

FRANCHISES

St. Louis, Mo.—The Municipal Free Bridge Commission has approved a draft of an ordinance for an interurban loop from the highway deck of the municipal bridge to the business section of the city. The proposed loop will extend north on Seventh Street to Walnut, east on Walnut to Sixth, north on Sixth to Chestnut, west on Chestnut to Seventh and south to the bridge. It is estimated that the cost of the improvement, including the removal of car tracks, will be about $150,000. The St. Louis & East St. Louis Interurban Railway and the St. Louis & Illinois Railway have applied for permission to use the bridge.

Toronto, Ont.—The Ontario Railway Board has extended indefinitely the time in which the Toronto Railway may construct its proposed extension on Pape Avenue, the company not having been able to secure the rails.

Dover, Pa.—Highway Commissioner O'Neil has been advised by Deputy Attorney General Keller that he may grant a permit to the Dover-Rossville Transit Company, which proposes to operate a trackless trolley between Dover and Rossville, to erect poles on State highways in York County and direct the manner and method of construction or impose such reasonable conditions as he may deem necessary in the electric power line and wires.

Dallas, Tex.—The Commissioners' Court has approved an amendment to the franchise recently granted to the Dallas Southwestern Traction Company for a right-of-way over Dallas County roads providing for a slight change of route in the company's proposed lines. [Oct. 22, '17.]

Norfolk, Va.—The Norfolk Southern Railroad has received a franchise from the City Council to construct a line on Cove Street, thus enabling the company to use Cove Street instead of Monticello Avenue for its cars to Virginia Beach and Cape Henry.

TRACK AND ROADWAY

Little Rock Railway & Electric Company, Little Rock, Ark.—Work will soon be begun by the Little Rock Railway & Electric Company double-tracking its Forest Park line through Pulaski Heights to Mount St. Mary Convent.

Los Angeles (Cal.) Railway.—In order that improved service may be provided, the Board of Public Utilities has ordered the Los Angeles Railway to extend its South Park Avenue line from South Park and Slauson Avenues to Sixty-first Street and Moneta Avenue.

Municipal Railways, San Francisco, Cal.—In order to operate the "D" line cars to the Presidio, the Board of Works has asked the Board of Supervisors to set aside $35,000 to construct tracks in Greenwich Street from Scott to Baker Street.

Indianapolis Traction & Terminal Company, Indianapolis, Ind.—The Board of Public Works has ordered the Indianapolis Traction & Terminal Company to double-track its West Michigan Street line from Holmes Avenue to Tibbs

Avenue, and to repair the Alabama Street tracks north of Fort Wayne Avenue.

Wichita-Walnut Valley Interurban Railway, Wichita, Kan.—Application has been made by the Wichita-Walnut Valley Interurban Railway to the Public Utilities Commission of Kansas for permission to sell $2,000,000 of stock. Funds from the stock sale are to be used in the construction of a line from Wichita to Eldorado and Augusta through the Butler County oil fields. Charles Payne, secretary. [Sept. 22, '17.]

Washington, Baltimore & Annapolis Electric Railroad, Baltimore, Md.—An addition of eight levers will be made to the electric interlocking plant of the Washington, Baltimore & Annapolis Electric Railroad located at Naval Junction, Annapolis. This installation is required by the additional traffic made by the United States government cantonment there. The Railway Signal Company, Rochester, will furnish this addition.

Boston (Mass.) Elevated Railway.—Work has been begun on the construction of a new trolley line to the new South Boston Fish Pier. The line will connect with the Boston Elevated Railway at the junction of Summer Street Extension and the viaduct leading to the Commonwealth Pier, and will extend from there to the South Boston Fish Pier. The line will be built by the State and will be leased to the Boston Elevated Railway for operation. It is expected that the line will be ready for operation in ninety days. The cost is estimated at about $30,000.

Omaha & Council Bluffs Street Railway, Omaha, Neb.—This company is considering the construction of an extension from Albright Street west on Harrison Street to Fortieth Street, or south from Thirty-sixth and Q Streets to Harrison Street.

Public Service Railway, Newark, N. J.—The Hamilton Township Committee has adopted an ordinance requesting the Riverside Traction Company and the Public Service Railway to relocate their many poles on Liberty Street.

International Railway, Buffalo, N. Y.—The Ontario Railway Board of the Province of Ontario, Canada, which was recently directed to investigate the Canadian division of the International Railway, has found the roadbed and rails to be in good condition. The line extends from Chippewa to Niagara Falls, Ont., and from that point along the upper bank of the Niagara River Gorge to Queenstown, Ont. This latter line forms a part of the Great Gorge Route belt line. Stone ballast has been recommended along the entire line and continued renewing of old ties is also advocated. In respect to weeds between the tracks, the report says that weeds are a considerable source of trouble. The company is now using a machine for destroying them.

New York (N. Y.) Railways.—The Public Service Commission for the First District of New York has closed the investigation recently instituted by it, upon complaint of Mayor Mitchel, as to whether the operation of the street surface railroad tracks on Central Park West constitute a menace to life and property. Counsel for the New York Railways Company, which operates the tracks in question, and counsel for the City of New York, were given until Nov. 5 to submit briefs. If the commission determines that the operation of the railroad is a menace to life and property the Board of Estimate and Apportionment can compel the relocation of the tracks to minimize the danger, and power is given to the commission to apportion the cost of the work in the event that a difference of opinion arises between the railroad company and the city.

Black River Traction Company, Watertown, N. Y.—While a definite plan of extension has not yet been adopted, the Black River Traction Company has under consideration several plans for extended service to meet the demands of the increasing population of Watertown.

Chillicothe Electric Railroad, Light & Power Company, Chillicothe, Ohio.—It is reported that the government will construct a double-track extension of the line of this company to Camp Sherman, with a loop at the camp.

Cleveland (Ohio) Railway.—The City Council of Cleveland has authorized the Cleveland Railway to spend more than $40,000 for track repair on Clifton Boulevard, N. W., from Lake Avenue, N. W., to West 117th Street.

Columbus Railway, Power & Light Company, Columbus, Ohio.—New tracks will be laid by the Columbus Railway, Power & Light Company on Mount Vernon Avenue, east of Taylor Avenue, in front of property owned by the Board of Education on that corner. It is probable that this will eventually be the route used by the company to extend its lines to Bexley, connecting with the Main and Neil line.

Mahoning & Shenango Railway & Light Company, Youngstown, Ohio.—Plans are being considered by the Mahoning & Shenango Railway & Light Company for the construction of a temporary bridge to replace the old Cedar Street span of the East End bridge, which has been ordered out of use for traffic purposes by the City Council. The proposed plan calls for a temporary bridge which can be used by vehicular and street car traffic and which will relieve traffic conditions in the Poland Avenue district.

***Sneedville, Tenn.**—A preliminary survey has been made for an electric railway from Sneedville to Morristown. Power would be supplied from hydro-electric plants which are being completed on Richardson's Creek and on Clinch River. George L. Berry of the Pressmen's Home is interested.

Northern Texas Traction Company, Fort Worth, Tex.—Work has been begun by the Northern Texas Traction Company on a loop extending east on Weatherford Street to a connection with the tracks on Belknap Street opposite the court house. This loop will touch the terminus to be established by the company on Belknap Street where all interurban and local cars not in use will be stored. This is expected to relieve the congestion that has existed on Belknap Street.

SHOPS AND BUILDINGS

Fort Dodge, Des Moines & Southern Railroad, Boone, Ia.—The Zitterell Construction Company, Chicago, has received a contract for the construction of a new carhouse adjoining the present one at Fort Dodge. The new building will have a capacity for five cars and an engine. Emergency repair shops will be established in the new carhouse.

Kansas City, Mo.—The City Council of Kansas City has passed for the third time an ordinance locating the proposed union station for the use of interurban railways at Tenth and McGee Streets. Mayor Edwards has vetoed two former ordinances locating the station at Tenth and McGee Streets.

International Railway, Buffalo, N. Y.—Application has been made to the City Council by the International Railway for authority to enlarge the safety island at Shelton Square and build a shelter over it at an estimated cost of $8,000. The enlarged safety island would permit the loading of three cars at one time at this congested transfer point. The shelter will be built of steel and will have a tile roof.

Northern Ohio Traction & Light Company, Akron, Ohio.—Contracts will be awarded by the Northern Ohio Traction & Light Company for the construction of a train shed and underground subway on North Main Street.

POWER HOUSES AND SUBSTATIONS

International Railway, Buffalo, N. Y.—Large additions are being built to the power generating equipment of the International Railway. Substations are being built at North Division and Oak Streets and in Military Road near the Hertel Avenue carhouse. The new 10 000-kw. equipment at the old Niagara Street power house will soon be ready.

Rutland Railway, Light & Power Company, Rutland, Vt.—A new transmission line will be erected by the Rutland Railway, Light & Power Company from Castleton Corners to Hampton, N. Y. The company has purchased a new 335-hp. motor from the F. R. Patch Manufacturing Company, Rutland.

Puget Sound Traction, Light & Power Company, Seattle, Wash.—Plans have been completed by the Puget Sound Traction, Light & Power Company for the substructure for the coal pulverizing plant to be erected at its Western Avenue power station, at a cost of about $80,000.

Wisconsin Gas & Electric Company, Kenosha, Wis.—This company will extend its power and generating and transmission system at Racine and throughout the southern part of Wisconsin.

Manufactures and Markets

Discussions of Market and Trade Conditions for the Manufacturer, Salesman and Purchasing Agent

Rolling Stock Purchases Market Quotations Business Announcements

Market in Middle West Largely for Maintenance and Repairs

Equipment for Reducing Labor or Producing Greater Economy on Old Cars Moving Fairly Well—C., M. & St. P. Orders New Equipment, but Car Buying Is About Over for the Year

The general market conditions prevailing in the Middle West states are not dissimilar to those in other sections of the country. The railways have been prevented by bond market conditions from putting out new issues, and hence the making of any improvements which call for significant amounts of new money have been curtailed. The effect of this has been felt in the markets for high-tension insulators, poles and ties, electrical equipment, overhead materials, rails and track specialties, etc., but in many instances this slack is rather welcomed by the manufacturers, particularly those manufacturing electrical materials, as an opportunity is thus afforded to catch up somewhat with orders already placed. The purchases which are being made, and these are frequently in sizable orders, may be classified very largely as materials and supplies for replacements and maintenance work. In many instances second-hand cars placed in operation for extra service to cantonments, etc., have been equipped with old-type motors recovered almost from the scrap heap. In spite of their recognized weaknesses and high-maintenance cost and energy consumption these old motors have been utilized instead of purchasing new ones.

There is practically no buying of new cars in this territory, and it is generally felt that the new car program for the year, except for a few scattered orders for light-weight safety cars, has been completed. There is good likelihood that the order for thirty cars for the Chicago, North Shore & Milwaukee Railroad, on which bids were recently closed, will not be placed this year, partly on account of the very high costs and partly because of the uncertainties of future traffic to be derived from the Great Lakes Naval Training Station at Fort Sheridan, located on its lines. The latter will not be used again as an officers' training camp, and whether or not it will be otherwise occupied has not been made known by the war department. Also, the possibilities of an early peace put some doubt on the stability of traffic from the naval training station, absence of which would, of course, mitigate against the need for additional equipment now. One order for six large, powerful, interurban cars for the new electrification work at Salt Lake City was let last week. This had been anticipated for some time.

There is some activity in connection with steam railway electrification work, as the high coal costs and extreme demands on the hauling capacities of the steam locomotives directs interest to the electric locomotive as a means of increasing the carrying capacity. The Chicago, Milwaukee & St. Paul this week placed orders for equipment for a further extension of its electrified divisions, including fifteen passenger locomotives of much greater capacity than those at present in use and two switching locomotives. For further details see page 819 of this week's issue of the ELECTRIC RAILWAY JOURNAL.

In contrast to new cars and equipment, devices which how a saving in operating expenses through labor or material or energy saving, are moving fairly satisfactorily. For instance, roller, center and side bearings have been in fair demand because of the savings in flange wear and consequent reduction of labor through less frequent turnings or wheel changes. The large amount of labor saved through the use of slack adjusters and the very high price of turnbuckles are both acting to make the demand for automatic adjusters unusually good, with a resulting rather long delivery period now prevailing. Similarly, other labor-saving devices are moving satisfactorily. The delivery on most of these devices is fairly prompt.

Delivery on high-tension insulators is now variously reported from sixty days to eight months, and about the same on pole-line hardware, due especially to government requisitions of large amounts of these materials for cantonments, etc. This long delivery on these items is probably somewhat responsible for some of the off condition in the pole market, although part of the slump here is normal for this time of the year. While the price of copper has been fixed at 23½ cents, there is none to be had at this price. In addition to the large requirements of the government, the copper mills are under contract for all they can supply for a considerable period ahead at much higher prices. What the situation will be when these contracts have been completed it is difficult to say, but the government price for copper means nothing in the market at the present time. Some purchasers have expected prices commensurate with 23½-cent copper, but in so doing have overlooked the fact that the manufacturers have contracted their copper requirements for many months ahead in order to insure a continuous supply of materials to their customers, and of course any arbitrary price fixing cannot immediately have any influence on costs of manufacture and hence on selling prices.

A National Committee to Pass on New Devices

Too Little Investigation by Department Heads, Thereby Causing Stock Accumulation, Suggests Move for Standardization of New Equipment

BY W. H. SMAW
Purchasing Agent Georgia Railway & Power Company. Atlanta, Ga.

It occurs to the writer that, no matter how much is preached or said in the interest of standardization, the desired effect will not be attained until the railway and lighting companies come closer together and confer with one another more frequently as to the advisability of adopting new ideas.

Every salesman that comes along with something new is generally successful in interesting some one in the organization with his proposition. It may be the head of the department, or one of the linemen, or the man in the shop, or the man in the central station. A requisition is then made up and approved by the head of the department, in many cases without the slightest investigation as to the merits of the article to be purchased, and in most instances it is one man's continuous fight to keep down such abuse.

The buyer sees the accumulation in his stockroom of material bought and never used and, the writer believes, watches more closely than anyone else, except the general manager, the mercury in the thermometer of expense in its steady climb. But, without the co-operation of the heads of all branches of his company, he is unable to check such extravagance.

From the manufacturers' standpoint, it is to their interest to bring out new devices and new materials. But the writer is of the opinion that if everything used in our industry had to be approved and accepted by a committee of the American Electric Railway Engineering Association before any member company would consider its adoption, and the law laid down in each company that nothing could be bought unless it were approved, this would be one step at least toward actual standardization.

Supply Men Must Give Child Labor Guarantees on Goods

New Federal Act Requires Person Putting Goods in Interstate Commerce to Guarantee Them to Be Manufactured in Accordance with Law

By the provisions of the federal child labor act, which became effective Sept. 1 last, all supply men or dealers and manufacturers of goods parts of which, whether all or some, are purchased from other manufacturers must, before placing goods in interstate commerce, obtain from the manufacturers of such goods or parts signed guarantees that such goods or parts were produced or manufactured in an establishment in which within 30 days prior to the removal of such goods therefrom no children under the age of fourteen were employed or permitted to work, nor children between the ages of fourteen and sixteen were employed or permitted to work more than eight hours in any day or more than six days in any week, or after the hour of 7 p. m. or before 6 a. m.

Rules and regulations heretofore issued specify only the guarantee to be supplied by the manufacturer. Now the dealer to engage in interstate commerce must give a guarantee. Forms of guarantees, in the opinion of the Children's Bureau, Department of Labor, Washington, D. C., sufficient to protect the supply men, may be had by applying to the department. A commission agent is considered in this connection as a dealer and therefore must place his guarantee as a dealer on all goods which he shall hereafter place in interstate commerce.

New Incandescent Lamp Contracts Are in Force

Provisions Against Price Increase Contingency Are Made by Stipulating the Dates on Which Advance Can Be Made

On Thursday of this week the new contracts for the purchase of Mazda incandescent lamps went into effect. For the first time provisions are made against the contingency of prices having to be advanced. Formerly it was taken as a matter of course that any change in lamp prices would be downward. Manufacturing conditions, however, have changed to such an extent in the last three years that, except for a downward revision of the 50-watt size, when the demand had reached a predetermined volume, manufacturers have been able only with great difficulty to keep prices from advancing. Glass, chemicals and labor have been a constant source of worry. Production economies have been made and have enabled the manufacturers to date to sell at the same prices, but at smaller profits.

Rumors are now strong in the trade that higher prices on lamps can be expected with the new year. At any rate, provisions are made so that an increase can take place on Jan. 1, 1918, if conditions warrant it.

According to the contract for purchases advances will be effective only as of Jan. 1, April 1, July 1 or Oct. 1. It is further agreed that whatever changes are made the net price to the purchaser for any lamp purchased under the contract shall not exceed present schedules by more than 10 per cent.

All lamps billed after the date on which increases become effective will be billed at the higher rate, except that orders for immediate delivery which do not exceed the normal requirements of the purchaser for one month will be filled on the basis of prices prevailing on the date of acceptance of the order, even though delivery be delayed beyond the date of advance in price.

This contract is only for purchasers—*i.e.*, electric railways, central stations, isolated plants, etc.—not dealers.

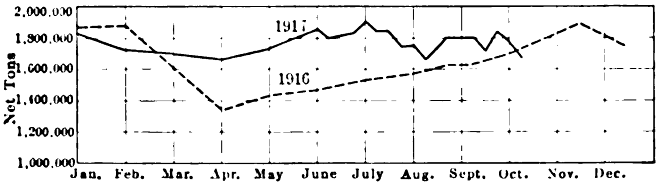
Railway Supply and Metal Prices

The weekly quotations on electric railway supplies which formerly were placed at the end of this page will hereafter be found at the end of the last page of this section.

Bituminous Coal Situation

Report by Government Shows Daily Production Now Less than a Year Ago

The United States Geological Survey has just issued the accompanying chart showing the estimated average total production per working day of bituminous coal in the United States, including coal coked. The data since June 16, 1917, are plotted by weeks. According to the report, the average daily production during October, 1917, is 76,000 tons less than the daily production during October, 1916, and the daily average now is the lowest since the week of Aug. 18, when the mid-August strikes in Central Illinois were at their height.



AVERAGE TOTAL DAILY PRODUCTION PER WORKING DAY OF BITUMINOUS COAL

The accompanying table shows the percentage of full-time output produced and lost for principal causes by all the mines reporting causes of lost time. As will be noted, the loss through car shortage has been larger than from any other cause since Sept. 22, and during the week ended Oct. 13 amounted to more than three times the loss due to labor shortage and strikes. The car shortage was especially marked in Indiana, Ohio, the Pittsburgh district, the Winding Gulf field of West Virginia and the Cumberland-Piedmont field in Maryland.

PERCENTAGE OF FULL-TIME OUTPUT PRODUCED AND LOST FOR PRINCIPAL CAUSES BY ALL MINES REPORTING SEPT. 8 TO OCT. 13, 1917

			Lost on Account of					
Week Ended	Percentage Produced	Total Percentage Lost, All Causes	Car Shortage	Labor Shortage and Strikes	Mine Disability	No Market	All Other Causes	No Cause Given
Sept. 8..	79.8	20.2	6.5	7.8	5.1	0.3	0.4	0.2
Sept. 15..	*78.0	22.0	9.8	8.0	3.0	0.1	0.8	0.2
Sept. 22..	75.3	24.7	10.5	9.2	3.9	0.1	0.9	0.1
Sept. 29..	77.7	22.3	12.2	6.0	4.2	..	0.8	0.1
Oct. 6..	77.6	22.4	10.4	6.5	4.7	..	0.7	0.1
Oct. 13..	76.9	23.1	14.3	4.1	3.9	..	0.7	0.1

*Does not include Cumberland-Piedmont, Hazard, Ky., or Arkansas "anthracite" districts.

Manufacturers Very Busy Now

Facilities Installed for War Orders Will Be Useful for the Manufacture of Electric Railway Apparatus Later

Although the depressed condition of the electric railway industry of the country has affected adversely the orders which electric railway companies have been able to give for equipment, most of the manufacturers who have specialized in electric railway apparatus are more busy than at any other period in their history. Those whose facilities are suited to the manufacture of munitions or arms are manufacturing these supplies for the United States Government and for our allies. Others are busily engaged in the construction of other military equipment, such as aeroplane engines and parts, ammunition wagons, radio outfits, military searchlights, rails, locomotives and cars for military railways, etc. Some of these manufacturers had already devoted portions of their shops to the manufacture of military supplies before the outbreak of the war between the United States and Germany, but since the United States actively entered the war there has been an increase in every department and shop. Factory extensions have been built, more workmen have been engaged, and the works exhibit an activity for which there has been no parallel, even in the period of 1907, when there was so much activity in electric railway construction.

The situation affects electric railway companies in two ways—one at present, one in the future. At present it means that there may be some delay in filling railway orders. Government orders necessarily have priority, but electric railway companies which do not receive their equipment as soon as they might otherwise expect may have the feeling of satisfaction that the delay is caused by work necessary for the national defense. In these circumstances the public served by the electric railway can well be told the cause of the delay, and this explanation should make them more patient.

The effect of this expansion of the manufacturing side of the electric railway industry should also enable the manufacturers promptly to supply peace equipment after the war is over. By that time, it is hoped, electric railway companies will have secured the right to charge an adequate fare and thus be in a position to rehabilitate and improve their properties. This will mean extensive orders for new equipment of all kinds, but with the enlarged facilities which the manufacturers have provided for war material they should be in a good position to supply the equipment needed for a revived electric railway industry.

ROLLING STOCK

Enid (Okla.) City Railway is reported building two new cars in its own shops.

Valdosta (Ga.) Street Railway has purchased two cars from the Waycross Street & Suburban Railway, Waycross, Ga.

Fort Worth (Tex.) Southern Traction Company has placed fourteen of the twenty new one-man cars in operation on its lines. The cars are light, and as they make fast time improved schedules will be put into effect. The cars, as noted in the ELECTRIC RAILWAY JOURNAL of July 7, were made by the American Car Company.

Chicago, Milwaukee & St. Paul Railway, Milwaukee, Wis., on Oct. 29 placed orders for the equipment for the Othello, Seattle and Tacoma division, 216.9 (route) miles; also for seventeen locomotives, to be used on either the first or second electrification, as detailed on page 819 of the present issue of the ELECTRIC RAILWAY JOURNAL. To hasten delivery on account of the high cost of fuel oil, the orders have been divided between the Westinghouse Electric & Manufacturing Company and the General Electric Company. Of the seven General Electric locomotives two are switching locomotives of the steeple-cab type; the others are of special design for the passenger service. The ten Westinghouse locomotives are for passenger purposes. Both types of the new passenger locomotives must not only provide for heating equipment, but must also be capable of operating at the highest speeds, irrespective of weather conditions.

TRADE NOTES

Hamilton & Hansell have removed their office from the Whitehall Building to the Park Row Building, 21 Park Row, New York City. The change was made on Oct. 31.

Youngstown Sheet & Tube Company, Youngstown, Ohio, has opened a branch in the Munsey Building, Washington, D. C. The office will be in charge of W. B. Blowers, district sales agent, assisted by H. E. Richardson, who has been transferred from the Philadelphia office.

Multi-Refillable Fuse Company announces that its office and salesrooms after Nov. 1 will be located at 803 West Madison street, Chicago. This location is in the central part of the west side business district and will give the company added facilities to take care of its growing business.

Edison Storage Battery Company, Orange, N. J., on Oct. 1, removed the New York City sales office, long located at 206 West Seventy-sixth Street, into larger quarters at 209 West Seventy-sixth Street, across the street from the old headquarters. At the new location additional facilities have been installed.

R. J. Morgan, who resigned from the Midvale Steel & Ordnance Company, Midvale, Pa., has been appointed supervisor of sales of the American Steel Export Company, New York, N. Y. Prior to his connection with the Midvale Company Mr. Morgan was for thirteen years with the Carnegie Steel Company, Pittsburgh, Pa.

National Pneumatic Company, New York and Chicago, has supplied for the new 100 Peter Witt cars of the International Railway, Buffalo, N. Y., its pneumatic door and step control, including the 2⅝ x 6GM engine for the center doors, and the 2⅝ x 4½GM engine for the front doors; also the National interlocking safety door control and National motorman's signal light system.

Goldschmidt Thermit Company, New York, N. Y., has opened a new office, repair shop and storeroom at 1427-1429 Western Avenue, Pittsburgh, Pa. H. D. Kelley, who has represented the company in the Pittsburgh district for a number of years, is the manager. It will also be the headquarters of H. G. Spilsbury, metallurgical engineer, and Edwin B. Bloom, who has represented the Thermit department for some time in Ohio and western Pennsylvania.

NEW ADVERTISING LITERATURE

Walter A. Zelnicker Supply Company, St. Louis, Mo.: Bulletin 226, just off the press, lists and describes a "few of the best" in its line.

Pennsylvania Railroad Company, Philadelphia, Pa.: "Loss and Damage Bulletin No. 7" is a call for co-operation to save waste. The company states that shippers over its system can aid in avoiding the waste and distribution of more than $2,000,000 worth of freight every year. The purpose of the bulletin is to urge shippers to pack their goods properly.

Guaranty Trust Company, New York, N. Y.—Two books have been prepared by the company containing "Trading With the Enemy" act and "The War Tax Law," accompanied by illuminating chapter headings, suitable commentary, etc., for easy and comprehensive reference to these important subjects of federal legislation. Copies of each or both may be had, free of charge, by applying to the company, 140 Broadway.

NEW YORK METAL MARKET PRICES

	Oct 24	Oct. 31
Prime Lake, cents per lb	23½	23½
Electrolytic, cents per lb	23½	23½
Copper wire base, cents per lb	32	31
Lead, cents per lb	6¼	5¾
Nickel, cents per lb	52	50
Spelter, cents per lb	8¼	8
Tin, Straits, cents per lb	62½	66
Aluminum, 98 to 99 per cent, cents per lb	37	34

OLD METAL PRICES—NEW YORK

	Oct. 24	Oct. 31
Heavy copper, cents per lb	23½	23½
Light copper, cents per lb	20½	20½
Red brass, cents per lb	19	18
Yellow brass, cents per lb	16¼	16
Lead, heavy, cents per lb	5¾	7
Zinc, cents per lb	5¾	6
Steel car axles, Chicago, per net ton	$41.00	$41.00
Old car wheels, Chicago, per gross ton	$27.00	$27.00
Steel rails (scrap), Chicago, per gross ton	$33.00	$35.00
Steel rails (relaying), Chicago, per gross ton	$55.00	$55.00
Machine shop turnings, Chicago, per net ton	$15.50	$15.50

RAILWAY MATERIALS

	Oct. 24	Oct. 31
Rubber-covered wire base, New York, cents per lb.	34-35	34-35
Rails, heavy, Bessemer, Pittsburgh	$38.00	$38.00
Rails, heavy, O. H. Pittsburgh, per gross ton	$40.00	$40.00
Wire nails, Pittsburgh, per 100 lb	$4.00	$4.00
Railroad spikes, 9/16 in., Pittsburgh, per 100 lb	$5.50	$5.50
Steel bars, Pittsburgh, per 100 lb	$5.00	$5.00
Sheet iron, black (24 gage), Pittsburgh, per 100 lb.	$9.55	$7.55
Sheet iron, galvanized (24 gage), Pittsburgh, per 100 lb.	$8.85	$5.85
Galvanized barbed wire, Pittsburgh, cents per lb.	4.85	4.85
Galvanized wire, ordinary, Pittsburgh, cents per lb.	4.65	4.65
Cement (carload lots), New York, per bbl	$2.22	$2.22
Cement (carload lots), Chicago, per bbl	$2.31	$2.31
Cement (carload lots), Seattle, per bbl	$2.65	$2.65
Linseed oil (raw, 5 bbl. lots), New York, per gal.	$1.17	$1.17
Linseed oil (boiled, 5 bbl. lots), New York, per gal.	$1.18	$1.19
White lead (100 lb. keg), New York, cents per gal.	12	11
Turpentine (bbl. lots), New York, cents per gal.	51	54

Electric Railway Journal

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Consolidation of STREET RAILWAY JOURNAL and ELECTRIC RAILWAY REVIEW

Volume 50 NEW YORK, SATURDAY, NOVEMBER 10, 1917 Number 19

The Proposed War Board Should Begin Work Promptly

THE unanimous approval by the executive committee of the American Electric Railway Association of the recommendation of the committee on military transportation that a war board of five should be appointed promptly to take up important matters at Washington is significant. We explained last week how the electric railways of the country could help the nation in these periods of national stress by hauling freight. To promote this class of traffic would be one of the main functions of the board. It could co-operate with the committee on transportation of the Council of National Defense in a way similar to that followed by the corresponding committee of the American Railway Association, it could determine where electric transportation would be more economical and more expeditious than haulage by steam railroads or motor trucks, it could make easily available and expand for the War Department the statistics already compiled of the electric railway freight facilities of the country, it could take up individual cases by advising the authorities as to the facilities which the companies have at their disposal and by advising the companies as to the facilities which the authorities need, and from its knowledge of the conditions it might be able in some cases to remove municipal restrictions where they stand in the way of greater national service on the part of the companies.

The Duty of Every Industry Is to Help Win the War

THIS is a time when the energies of every industry as well as of every individual should be devoted to helping win the war. There is no question of the final result, but the greater the effort now, the more quickly and with less loss of life will the end be gained. One of the greatest needs of the country now is for more transportation, but if the electric railway industry expects the government to use its transportation facilities to any considerable extent it should have a representative at Washington to be ready to explain what service individual roads can supply and to arrange any details with the least possible delay. The board selected for this work is a strong one and should be the best evidence to both the government and the industry at large that the undertaking is in competent hands. We earnestly hope that the plan for Washington representation will receive the approval of member-companies of the association when the whole plan is explained to them by the executive committee.

American Railways Important in Peace as Well as in War

DURING the past year this country has learned many lessons, but perhaps none more important than the necessity for preparedness. The present activity to put the country on a war footing and make up in one year what our opponents have taken fifty years to accomplish is evidence of the necessity of being prepared for war, but it is equally important to be prepared for peace when peace comes. Whatever the commercial conditions then, there is no reason to suppose that the needs for urban transportation will be less. Indeed, if we are to maintain our industrial efficiency to compete in the markets of the world, our urban transportation systems should be in a far better physical condition than they are now. We have learned the benefits of the co-ordination of all of our resources—natural, manufacturing and financial—during the past strenuous six months. The railways will be the arteries of the nation's life, as the President has expressed it, in the coming period of peace as they now are in war, and this fact should be kept in mind in the fare hearings now being conducted by state commissions in different parts of the country.

Low-Grade Fuel Can Be Burned Successfully

ALTHOUGH a great deal has been said from time to time about boiler room efficiencies, the present problem of electric railways operating steam power plants is to find out what grades of fuel can be obtained in regular deliveries and then to investigate their boiler grates to ascertain which of the obtainable grades can be burned successfully without too costly changes in existing equipment. Many kinds of low-grade fuel are being burned with satisfactory results. Among these are the soft coals with high ash content, culm, bone coal, lignites, coke breeze, anthracite screening and practically every form of mine refuse. However, companies that cannot afford to reduce materially their boiler capacities must remember that the low-grade fuel, even though of the same size as the high grade formerly used, will not produce the same kilowatt-hour output. Too great a reduction in output has been avoided in many instances by mixing a large percentage of coke breeze and hard coal screening with the regular fuel, thus reducing the consumption of the latter.

Many of the low-grade fuels which are coming into use have ash contents of 25 to 30 per cent and even higher. This increase in the amount of ash over usual values of course tends to increase clinker troubles, but these have been successfully overcome in most cases without radical changes in stoker equipment. For example, Iowa coal with an ash content of 30 per cent and a heating value of about 9000 B.t.u. per pound is practically the only grade of coal being burned by the Iowa Railway & Light Company. In this case the stoker equipment is standard except for a lower ram extension which helps to maintain a uniform speed of the coal while being burned. An even lower grade of Iowa coal is being used successfully by the Fort Dodge, Des Moines & Southern Railroad at Boone, Iowa. Another example of low-grade fuel burning is furnished by the United Light & Railways Company, Moline, Ill., which is burning Illinois coal having a heating value of 9500 B.t.u., and containing 16 to 20 per cent moisture and 15 per cent ash.

One method of reducing clinker troubles is to keep the grate in continuous motion so that there will be a shearing action which will break up the clinker mass before it has had a chance to grow large. This shearing action can also be carried to the bridge wall, where large accumulations of clinkers are liable to occur. Another scheme is to use steel water boxes placed along the fire line. Exhaust steam can also be used to break up the clinkers, but when low-grade fuels are used, the amount of steam required is often excessive. In addition to clinkering, firebrick troubles are worse with low-grade than with high-grade fuels on account of the sulphur and the large ash content. This may necessitate more frequent renewals, but the use of the highest grade of properly selected firebrick will reduce this trouble. The best method here is to consult the brick manufacturers as to the type of brick most suitable for the grade of coal being used.

Coal Situation Improving but More Effective Measures Needed

The two outstanding causes contributing to the coal shortage—labor and cars—have both been dealt with by the government during the past ten days in a manner which would seem to warrant the expectation of some increase in the supply of coal in the near future. The present rate of production is 660,000,000 tons per annum as compared with 600,000,000 tons last year, so that with transportation and production well synchronized there should be no serious shortage, especially after the Great Lakes trade has been taken care of for the winter. Authorities predict a great improvement in the sitaution during the next six weeks.

The increased allowance of 45 cents a ton for bituminous coal makes possible a substantial wage increase, and this is coupled with a penalty for failure to work. The higher wage and the penalty provision went into effect on Nov. 1 in most of the coal fields and should, theoretically at least, induce a further increase in the supply of coal. In a statement made by Fuel Administrator Garfield in his letter to the President recommending the 45 cents per ton increase, he stated that "if the miners now at work would labor in the mines eight hours a day during even five days of the week, there would be no shortage of coal." Of course, the penalty feature has existed before, but the difficulty has been in enforcing it, and even under the present condition it will be difficult to force the miners to work if they do not wish to. However, every little helps and it is to be hoped that operators will be able to keep the miners working a reasonable number of hours per week.

The other step taken by the government to remedy the situation was the issuing of priority order No. 2 reserving the open-top cars for the transportation of coal, coke, ore, and a few other commodities considered necessary to national defense and security. This order should increase somewhat the number of cars available for coal haulage purposes, say of the order of 1 per cent. It will not, however, in our opinion, fully bring about the desired result because the order reads that "priority *should* be accorded" coal, coke, etc., thus leaving it to the volition of the railways to carry out the wishes of the administration. The railways have unquestionably and repeatedly shown their earnest desire to co-operate in every way possible to assist in the great national crisis, but in the absence of command in the order, the use of the cars is in a measure beyond the control of the railways. It would seem that the order might have carried with it some provision that a railway should know for what purpose an open-top car is to be used before it is set on an industry track, and when loaded with other than the scheduled commodities, that the shipper should then be required to unload it and then haul it out empty. Then the requirement of a weekly or monthly statement showing just what percentage of the open-top cars had been used for coal, what percentage for ore, etc., would have brought about a more nearly 100 per cent use of these cars for the necessaries.

The railways will undoubtedly do all they can to carry out the priority order but theirs is not the entire responsibility. In other words, the order lacks the force of federal law to carry it out. Presumably the administration has the power to make it a matter of law breaking to use these cars for other than the necessaries, but it has chosen instead to make this simply directional rather than mandatory. It would seem to us that the element of requirement should be injected into the order if a supply of cars sufficient for the needs of the situation is to be insured.

There undoubtedly needs to be a concentration of car supply for a short time for the benefit of the coal industry, which is so essential to the prosecution of the war. This is particularly true in those sections where the situation is acute. It is questionable if the present priority order will bring about the desired concentration. We must realize, however, that the whole matter is a most complicated one because it is desirable to keep down dead mileage, and coal is not always available for transportation in certain directions. There is reason also to look forward to an early improvement in the whole situation.

Chicago's "I Will" Should Be Exemplified in Traction Improvements

THERE is both encouragement and portending disappointment in the recent action of the local transportation committee, Chicago City Council, in ordering its special counsel to draw up two separate traction ordinances as a basis for the committee to work upon. One of these is to embody specifically the recommendations contained in the report of the Chicago Traction and Subway Commission made last year. The other is to embody these recommendations but only in so far as the city now has the power without enabling legislation to carry them into execution.

There is encouragement for the people of Chicago and the elevated and surface line companies in the fact that despite the scant consideration which the enabling legislation received in the Lower House of the State Assembly last spring, there is to be another attempt to bring about an acceptable solution of the transportation situation. The plan to frame an ordinance and secure its approval by the people of Chicago before seeking the enabling legislation puts the proposition on a much more certain footing than existed on the previous attempt, when the legislation was sought before it was really known what the city proposed to do with the new powers if granted. In this respect, at least, there is better reason to anticipate a successful end to negotiations and an opportunity not only to make use of the extension report of the Traction and Subway Commission but also to realize in due time the magnificent transportation service which would result from putting the plan of that report in operation.

In the order for the drawing of an ordinance of scope no greater than the present powers of the city lies the cause for anticipating dismal failure to reach any material accomplishment in the local transit situation for long periods ahead. The ordinance itself could mean nothing except the extension of the present agreement between the city and surface lines for a period of another twenty years. It cannot embody any particular recommendations of the subway commission, for the fundamental idea of that body's report was the assumption that all the traction facilities would be unified, and such unification cannot be brought about without enabling legislation. Subways cannot be built and a longer than twenty-year franchise deemed necessary in order to finance any project of moment cannot be granted. What the drawing of this ordinance does mean is that it may be the forerunner of an effort which, as in previous agitation, will be manifest in the committee, and more strenuously in the Council, to becloud the issue and keep the whole traction problem in politics. This ordinance is favored by the municipal ownership advocates, but their motive in attempting to keep within the present powers of the city is uncertain, for not even could municipal ownership be brought about without enabling legislation to extend the city's ability to raise money with which to purchase the traction systems. It is to be hoped that the real interest of the people of Chicago may be served by a prompt adoption of at least the principal recommendations of the Traction and Subway Commission. The improvements are badly needed, and nothing should be allowed seriously to delay the formulation and beginning of an early construction program.

Reducing the Drop in the Return Circuit

RAILWAY operators are interested in any plan that will bring about reduction in power losses in distribution, for in addition to the direct saving a reduction in distribution losses is accompanied by better voltage at the cars. When the saving occurs in the return circuit there is in general also a reduction in the difference of potential between parts of the track and neighboring pipes and cable coverings, and hence less liability of dispute as to the effects of stray currents from the rails. One of the schemes for reducing distribution losses, particularly in the return part of the circuit, is known as the three-wire system, embodying the principle which Mr. Edison early found to be so effective in the distribution of current for light and power purposes. In this system the voltage is doubled by connecting two generators in series, a common or neutral conductor being connected to the junction of the machines. Until comparatively recently electric railway engineers have taken little interest in applying the three-wire principle to their work on account of the complications involved. In fact, in the report of the American Committee on Electrolysis published last year only two examples of three-wire installations in this country were cited, and one of these was in an experimental stage. For this reason special importance attaches to an article in this week's issue of the ELECTRIC RAILWAY JOURNAL in which the results of the operation of the three-wire system in Omaha, Neb., are outlined by the superintendent of electric lines of the local railway. The report which he gives indicates that no serious difficulties have been encountered and that the complication of the distribution is not seriously increased.

In its report the American committee listed as some of the inherent disadvantages of the three-wire system the complications in machinery, the difficulty of successfully insulating trolleys of different polarities, the difficulty of equalizing the load between different sections, and the necessity for the installation of larger generator units than are required in a single trolley balance system to compensate for the difficulty in balancing. This list should be kept in mind in reading the article referred to in order that the reader may appreciate the ways in which these objections have been overcome in Omaha. It is difficult to say at this time just how far the three-wire system will go in assisting in the solving of the problems of electric railway power distribution, but the railway fraternity as a whole cannot but be grateful to every company which adds a contribution to our knowledge of the subject as the Omaha & Council Bluffs Street Railway has done.

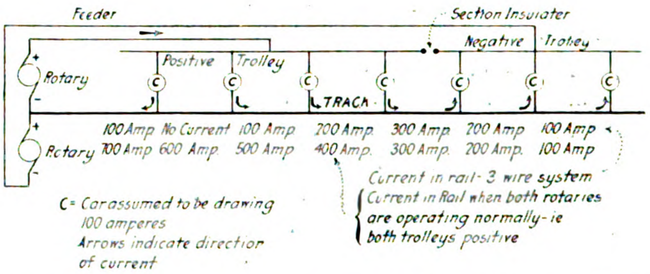
Line Drops and Rail Potentials Reduced by Three-Wire System

Installation of Three-Wire Principle in One Substation District in Omaha, Neb., Has Materially Improved Conditions—Changes in Substation and Overhead Necessary to Comply with Bureau of Standards Recommendations Are Described

By E. H. HAGENSICK
Superintendent of Electric Lines Omaha & Council Bluffs Street Railway, Omaha, Neb.

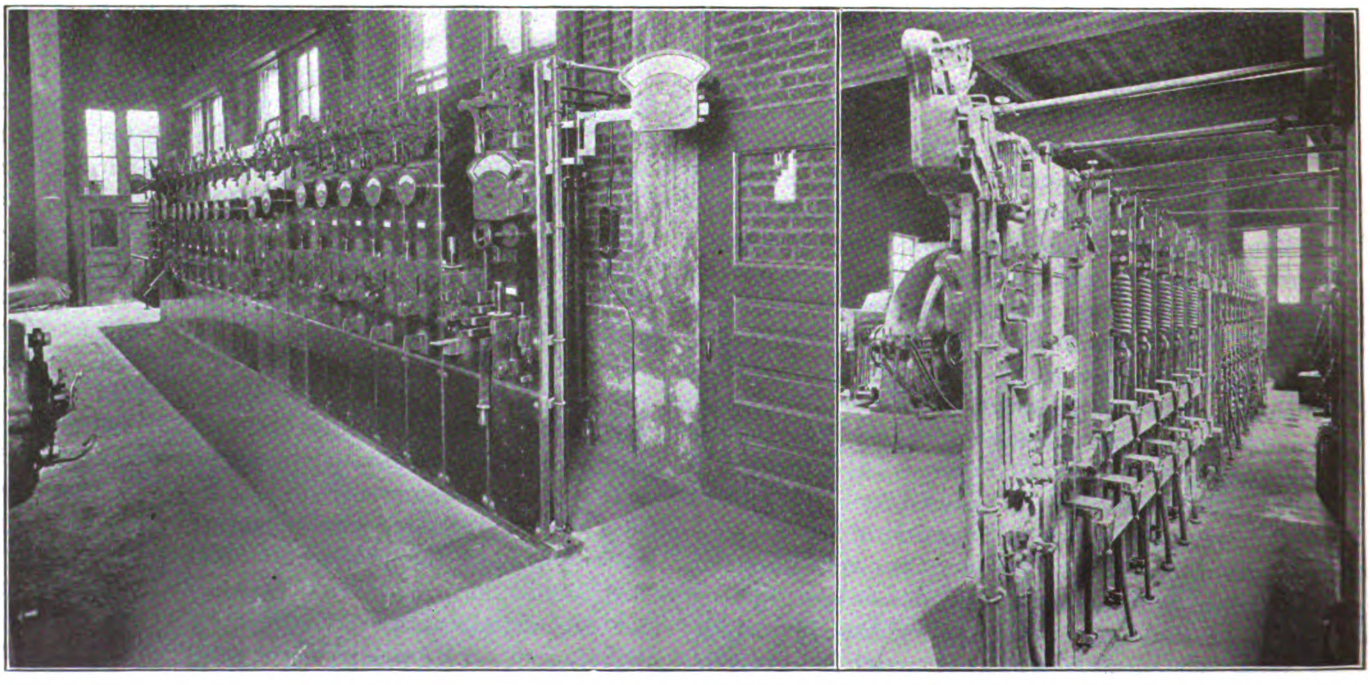
IN THE fall of 1916 the United States Bureau of Standards made an electrolysis survey in Omaha and Council Bluffs at the joint request of the local utility companies. Among the recommendations for mitigating electrolysis was one to instal the three-wire principle of distribution in one of the substation districts of the Omaha & Council Bluffs Street Railway.

Our Lake Street substation serves quite a large territory, and four of the outlying lines supplied by it showed over-all potentials of considerable magnitude. The load on this station is quite large, so that fairly high potential gradients were encountered in its vicinity. With the prevailing high prices of materials, the cost of installing new substations or additional insulated negative return cables to reduce the gradients to a safe value would have been prohibitive. Reversing the polarity of the trolley in the outlying sections gives the same effect, so far as the return circuit is concerned, as a substation located in the reversed trolley section. The cars in this section draw their current through the track in adjacent positive trolley sections, so that the current in the return circuit in the vicinity of the substation is reduced by an amount equal to twice the current used in the reversed trolley section. This is clearly brought out by the sketch, Fig. 1, in preparing which it was assumed that seven cars are operating, each drawing 100 amp. Three are assumed to be in the reversed trolley section. It will be noted that the two rotaries are operating in series and that six of the cars—two sets of three in multiple—are in series. The current of only one car would return to the substation over the rail in this theoretical case. The upper set of figures (Fig. 1) shows the current in each section of track with the three-wire system in operation and the lower figures indicate the values that would obtain if both trolley sections were operating positive.

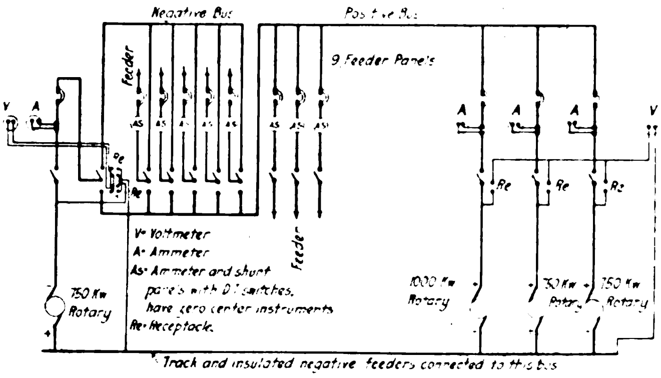

Feeder
Section Insulater
Negative
Trolley
Positive
Trolley
Rotary
+
-
C
TRACK
Rotary
+
-
100 Amp
700 Amp
No Current
600 Amp
100 Amp
500 Amp
200 Amp
400 Amp
300 Amp
300 Amp
200 Amp
200 Amp
100 Amp
100 Amp
Current in rail - 3 wire system
Current in Rail when both rotaries are operating normally - ie both trolleys positive
C = Car assumed to be drawing 100 amperes
Arrows indicate direction of current

OMAHA THREE-WIRE SYSTEM—FIG. 1—DIAGRAM OF SYSTEM SHOWING THEORETICAL CURRENT FLOW IN RAILS

The three-wire principle of distribution has been in operation for a number of years at Los Angeles, Cal.



OMAHA THREE-WIRE SYSTEM—FRONT OF SWITCHBOARD CONTROLLING REVERSED TROLLEY SECTIONS. AT RIGHT, REAR OF SWITCHBOARD SHOWING POSITIVE AND NEGATIVE TROLLEY BUSES (as described in the ELECTRIC RAILWAY JOURNAL for Feb. 26, 1916, page 395), and experiments along this line were carried on at West Springfield, Mass., last winter under the supervision of the Bureau of Standards. The Omaha Street Railway, after a thorough investigation, decided to carry out the recommendations of the bureau, and early this spring the system was put in operation in the Lake Street substation district. This substation is equipped with one 1000-kw. and three 750-kw. rotary converters. It was decided to utilize one of the 750-kw. rotaries as a negative machine. The direct-current panel for this machine was removed from the other three rotary panels and placed at the opposite end of the switchboard in order to reduce the danger of short-circuit between two machines working in series, and to simplify the bus construction.


Negative Bus
Positive Bus
Feeder
9 Feeder Panels
V
A
AS
Re
V- Voltmeter
A- Ammeter
AS- Ammeter and shunt panels with D.T. switches, have zero center instruments
Re- Receptacle.
Feeder
750 Kw Rotary
1000 Kw Rotary
750 Kw Rotary
750 Kw Rotary
Track and insulated negative feeders connected to this bus

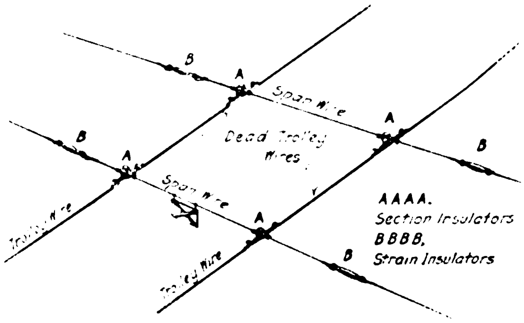
OMAHA THREE-WIRE SYSTEM—FIG. 2—DIAGRAM OF CONNECTIONS IN LAKE STREET SUBSTATION, OMAHA

ALTERATIONS AND ELECTRICAL CONNECTIONS FOR THREE-WIRE SYSTEM

One side of the rotary is permanently connected to the track circuit (Fig. 2) and the other side to the direct-current rotary panel, and connection made thence to the middle point of a single-pole double-throw switch, which can be thrown to either the positive or the negative bus. The voltmeter for this machine is a single-scale instrument, and is connected to two receptacles located to the left of the large double-throw switch. When the switch is thrown up the potential plug is placed in the upper receptacle and when down in the lower receptable. The substation operator then simply brings the machine up at the polarity which gives an indication on the voltmeter and he has the machine on the line for either positive or negative operation. When the machine is run negative the equalizer switch is left open.

The panels for all feeders supplied by the negative machine are provided with double-throw switches, so that, in case of emergency or overload, the feeder can be thrown to the positive bus. The double-throw switch in the rotary circuit is supplied for use only in case of emergency. In the event that one of the rotaries became disabled at a time when the load on the station was excessive, it would be possible, by means of this double-throw switch, to shut down the reversed machine and quickly place it back on the line in parallel with the other machines. Connected in this way a much better diversity factor would prevail on all the machines and they would be able to carry the load with one machine out, where they might not be able to with one or two rotaries running with reversed polarity. This double-throw switch is normally left closed on the negative bus and the possibility of ever having to use it is remote.

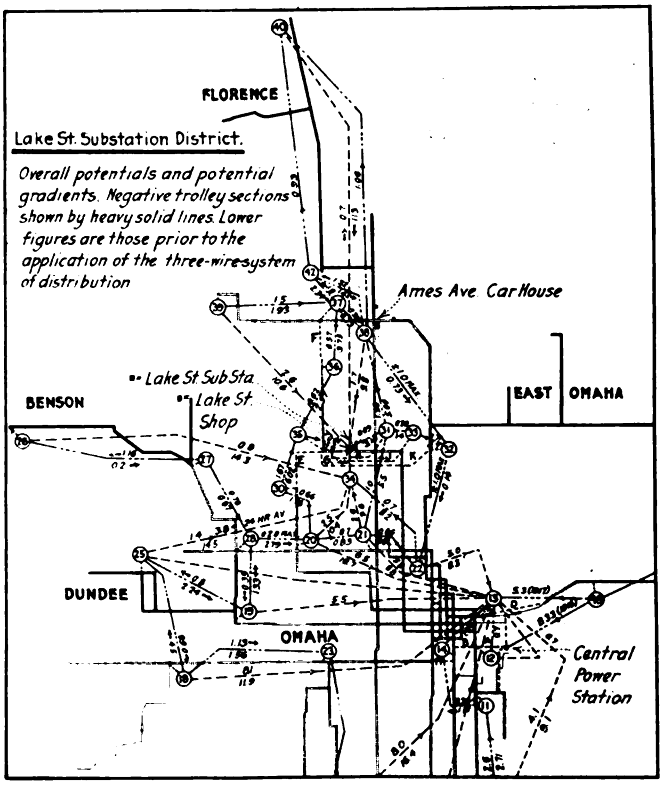
In the distribution system no change was made other than providing additional insulation between the positive and negative trolley sections. Two section breakers were used with 6 ft. of trolley between them, as shown in the sketch (Fig. 3).


B
A
Span Wire
A
B
B
A
Dead Trolley Wires
Span Wire
Trolley Wire
A
Trolley Wire
B
AAAA.
Section Insulators
BBBB.
Strain Insulators

OMAHA THREE-WIRE SYSTEM—FIG. 3—INSULATING SECTION IN TROLLEY BETWEEN POSITIVE AND NEGATIVE OVERHEAD DISTRICTS

DISADVANTAGES OF THREE-WIRE SYSTEM

In the operation of cars no objection has presented itself on this system on account of the reversal of polarity on a number of trolley sections. The motormen throw off their power and drift across the dead sections of trolley. No auxiliary equipment such as coasting recorders, wattmeters, arc headlights, etc., are in use. Coasting recorders and wattmeters, however, would not be affected in any way. Arc headlights to operate properly should be provided with a double-pole double-throw switch for reversing when running on negative sections. Ampere-hour meters would run backward when the cars were on negative sections.


FLORENCE
Lake St. Substation District.
Overall potentials and potential gradients. Negative trolley sections shown by heavy solid lines. Lower figures are those prior to the application of the three-wire system of distribution
Ames Ave Car House
Lake St SubSta.
Lake St. Shop
BENSON
EAST
OMAHA
DUNDEE
OMAHA
Central Power Station

OMAHA THREE-WIRE SYSTEM—FIG. 4—MAP OF OMAHA SHOWING NEGATIVE TROLLEY SECTIONS AND OVER-ALL TRACK POTENTIALS

Multiple-unit control would operate satisfactorily where only one trolley is used; where more than one trolley is used it would be necessary to provide an exceptionally long break between positive and negative trolley sections, which would be a very objectionable arrangement.

The objection to the three-wire system from a substation operating standpoint is the resultant lowering of the diversity factor since the negative machine does not run in parallel with the rest of the machines in the station. It works out very nicely on our system, however, due to the fact that we are able to load the machine with five trolley sections that have been reversed, five being carried in the valley of the load and only four during the peak. In laying out a new substation with the three-wire system in view, machines of proper sizes could be provided so that this objection would be eliminated.

TABLE I—OVER-ALL TRACK POTENTIAL MEASUREMENT REFERRED TO RAIL AT LAKE STREET SUBSTATION—READING STATION NO. 34

Reading Station Number	Location	Before Three-Wire System Was Installed, Volts	After Three-Wire System Was Installed, Volts
20	Thirty-third and Cuming	10.4	2.5
21	Twenty-fifth Avenue and Cuming	9.6	2.6
22	Seventeenth and Burt	8.2	0.7
25	Fiftieth and Underwood	14.5	1.4
26	Benson Avenue	14.3	0.8
38	Twenty-fourth and Ames Avenue	9.8	1.7
39	Forty-second and Grand Avenue	10.6	2.6
40	Florence Avenue	11.3	0.7

The objection to the system from an electrolysis standpoint is the slightly positive area set up in the reversed sections. As mentioned before, the effect of the reversed trolley potential on the return circuit is the same as that of a substation located on the section which creates a positive area. This condition can be taken care of by suitable drainage of the underground structure.

ADVANTAGES OF SYSTEM AND RESULTS OBTAINED IN OMAHA

The benefits derived are several, namely, a considerable reduction of the line losses in the return circuit resulting in an increased voltage at the cars; a reduction in over-all potentials and potential gradients with corresponding reduction of current on all pipes and underground structures; and a reduction of potential differences throughout the entire district served. The accompanying map shows the territory served by the Lake Street substation and the sections of track over which the trolley has been reversed. It also shows the over-all and potential gradients. In Table I are shown over-all potentials and potential gradients. Table II shows the current flow on water mains. These two tables jointly give a graphic picture of the results accomplished in Omaha. On the map the locations and serial numbers of reading stations are indicated by small circles surrounding the figures.

TABLE II—CURRENT FLOW IN WATER PIPES. LAKE STREET DISTRICT

Location	Size Main, Inches	Before Three-Wire System Was Installed, Amp.	After Three-Wire System Was Installed, Amp.
Twenty-seventh and Ohio	48	113.0	13.6
Twenty-seventh and Grant	36	29.6	5.0
Lake St. E. of Twenty-seventh	36	17.1	11.4
Twenty-fourth and Miami	36	35.3	9.5
Lake St. east of Twentieth	36	28.5	4.4
Twentieth St. north of Lake	20	7.8	1.2
Thirtieth St. north of Spencer	8	0.8	0.3
Twenty-eighth St. N. of Spenc'r	48	101.0	15.3

Steam Railroad Statistics for 1916

The Interstate Commerce Commission has issued an abstract based upon its compilation of steam railroad statistics for the year ended June 30, 1916. The total capital actually outstanding for all operating railroads and their non-operating subsidiaries was $19,681,493,082, consisting of $8,743,406,639 of stock and $10,938,086,453 of funded debt. The total amount of capital, including securities held by the companies as well as the public, was $21,092,372,245, divided $9,058,982,733 for stock and $12,033,389,512 for funded debt. Of the total capital stock actually outstanding, $3,581,434,810, or 40.96 per cent, paid no dividends. The amount of dividends declared during the year by both operating and non-operating companies was $411,975,955 or 7.98 per cent on dividend-paying stock. The average dividend paid on all stock actually outstanding was 4.71 per cent. The investment in road and equipment increased by $258,457,485 to a total of $17,525,576,908 on June 30, 1916.

The operating revenues for the year amounted to $3,472,641,941, or $13,461 per mile of line operated. The operating expenses totaled $2,277,202,278, or $8,827 per mile of line operated. For companies having annual revenues of more than $100,000 the number of passengers carried in 1916 was 1,005,683,174, as compared to 976,303,602 in 1915, while the number of tons of revenue freight carried was 2,225,943,388, as compared to 1,802,018,177. The operating ratio in 1916 for such carriers was 65.44 per cent, as compared to 70.52 per cent in 1915.

"Camouflage and the Nickel"

E. J. Cooney, executive assistant Rhode Island Company, Providence, R. I., has just issued a striking booklet under the above-stated title for use in his company's campaign for higher revenue. The booklet, fifteen pages in length, contains a statement signed by A. E. Potter, president, showing in simple form the situation confronting the company.

The word "camouflage," it is said, may be used in the electric railway field to denote a deceptive appearance of the value of the nickel. In an effort to give better service, in spite of higher costs, the company has installed better cars, made faster trips, issued more and more transfers, given longer rides, etc., with the result that the nickel has been strained and stretched until it is unable to recognize its former self.

After discussing the various burdens of present-day operation, the statement says that investors will no longer put capital into electric railways. The reason is succintly stated thus:

"The street car business is unlike any other business, because:

"The company sells only one thing—SERVICE.

"And sells it to only one customer—THE PUBLIC.

"But the customer not only dictates the amount and the quality of the service—IT SETS ITS OWN PRICE."

But, it is said, investors cannot be coerced, and if the price paid for electric railway service does not make the business attractive, the investor will go into something else, and both the service and the public will suffer. The Rhode Island Company needs more revenue, and the only way to get it is in increased fares.

Business as Unusual

By M. W. GLOVER

Auditor Mobile Light & Railroad Company, Mobile, Ala.

The writer takes the position that the "business as usual" slogan is wrong, and that business cannot be conducted "as usual" when the times are most unusual. He believes that the electric railway business is in danger of serious trouble unless something is done to relieve the companies of the burden caused by increased prices for materials and their inability up to the present time to obtain increased rates of fare, except in a few cases. He argues in favor of united action if relief is to be obtained.

WHEN the war started, some Englishman coined the slogan, "Business as Usual," and it was taken up generally by business men in England as the proper attitude to assume in the conduct of business, although it was contrary to the advice given by government officials and bankers generally.

When the United States entered the war a number of business men proclaimed the same slogan for this country, and some of them still hold it to be the proper method of dealing with the conditions arising from our participation in the war, notwithstanding the fact that our government officials and bankers advise us to practice economy and not to try to continue conducting business as we have been for the past few years. Much has been written on both sides of this question, but it must be admitted, first of all, that we cannot carry on business as usual when conditions are most unusual. The experience of England should be a lesson to us, and it is now generally admitted there that business during the war cannot be conducted as usual. The volume of business may equal or exceed that done during the period immediately preceding, but the kind of business is different. Where $100,000 was expended for building ships before the war, $100,000,000 will be expended now, and while some of the same men who received the $100,000 will receive the $100,000,000, more will share it with them.

On a basis of the prices prevailing four years ago, the wheat crop this year will bring nearly three times as much as then and the cotton crop twice as much; the prices of other crops have increased proportionately. All manufactured articles, as well as raw materials, have increased enormously in price, and somebody is getting the difference between the old and the new prices. It is not difficult to determine who is profiting by the increases, but it is not possible just yet to say who is unduly profiting by them. No one objects to the farmer, the coal operator or the manufacturer making a reasonable profit on his commodities, but there is serious objection to anyone getting exorbitant and unjust prices for the necessities of life because of conditions created by the war. There is a difference between a reasonable and an unreasonable profit on commodities, particularly on those which are admitted to be necessities. The profit on luxuries may be permitted to take care of itself. One of our leading financiers, Otto H. Kahn, has admirably expressed it:

> It is, of course, absurd to preach—as is being preached in some quarters—that no one should be allowed to make more money during a war than his bare living expenses. * * * But it is entirely right to preach * * * that no one should be permitted to use the urgent necessities caused by war to exact extortionate prices.

The problem of the electric railways, which is the same as that of their employees, is how to make both ends meet when prices of everything necessary for the carrying on of business have increased 25 to 300 per cent, yet rates of fare, which in many cases are limited by franchises or regulatory commissions, are not permitted to be increased. If the war continues several years longer, and at present, owing to the situation in Russia and Italy, this is not improbable, conditions will get worse instead of better. Therefore something must be done sooner or later, and the longer we wait the harder it will be to correct the trouble. At the present time many are working in their own way, endeavoring to correct the trouble so far as it affects them personally, but through co-operation much more good could be accomplished. There may be differences as to the proper remedy to be applied as well as regarding the methods to be employed, but there should be no difference of opinion among electric railways as to the necessity of something being done to relieve the situation.

Co-operation among electric railway owners, more than among operators, is what is needed. The operators of electric railways must necessarily be guided in their actions by the wishes of the owners. Therefore it is necessary, before any good can be accomplished, for the owners to get together and discuss the problem from every angle, to call in expert advice and then decide upon their course of action. Unless this is done many lines will face receiverships in the near future. Some lines of business and some sections of the country are most prosperous now. Persons in these lines of business or from those parts of the country do not seem to realize that there are others not sharing in their prosperity, and when they proclaim "Business better than usual" they overlook their unfortunate neighbors who do not share in their good fortune and whose very existence is threatened unless some relief is obtained.

THE RAILWAYS NEED RELIEF

Business cannot be as usual when you have to pay double, and even more, for everything, and yet receive the same for your services as formerly. Why should the coal dealer be permitted to charge $3 or more per ton for coal which he was anxious to sell for $1 per ton three years ago. Granting that he may pay the miner a few cents more per ton than formerly, there is no good reason why he should be allowed to charge an exorbitant price simply because coal in Paris or Berlin is selling for more than $50 a ton. Suppose electric railways should increase their rates of fare 100 per cent or more, in line with the increases they are required to pay for material, you would hear objections from all sides, yet they have just as much right morally to increase the price of the commodity which they offer for sale, namely, transportation, as any other business has to increase the price of the commodity sold, and when it is suggested that an increase of only 15 to 20 per cent in fares be permitted, there is objection made. Permission has been refused to the steam railroads to raise freight rates 15 per cent, yet other commodities, which are just as necessary as the commodity of transportation, have increased in price 50 to 100 per cent. Is this not discrimination and should not something be done to remedy it? "Business as usual" under present conditions is impossible. "Business as unusual" requires that certain readjustments be made, and if they are not made serious trouble will ensue.

President Wilson has many things to contend with at this time, and necessarily he must, to a great extent, depend upon the advice of those associated with him. And while the Council of National Defense, which is composed of able representatives and leaders in business, is bending its energies to adjust conditions to meet the present needs of the country, is it not true that the needs of electric and steam railways are not being given proper attention, while other lines of business are being adjusted to meet present conditions? Under the authority recently given, the President has taken up the question of exorbitant prices and will no doubt succeed in reducing some of the prices charged for supplies. There should be allowed a good margin of profit, more than normal, because of the greater risks during war times, but this should not mean exorbitant profits in one line of business and less than normal profits or even losses in other lines, whose prices (or rates of fare) are not permitted to be increased even proportionately with the increases they are required to pay for material.

The Secretary of the Treasury estimates that the government will require during the coming year for our own needs more than $4,000,000,000, practically all of which will be spent in the United States. In addition, we will loan about the same amount to our Allies, all of which will be spent in this country. When we consider this enormous expenditure of money in our midst, how can we expect business to be as usual? With the enormous subscriptions for Liberty Loan bonds where will the money come from for the expansion of electric and steam railways? If this expansion is retarded, how can the additional business be handled? Many lines are overtaxed in handling their present business, and relief must be obtained from some source.

One of the best articles on the subject of economy appeared in the *Saturday Evening Post* from the pen of Secretary of Agriculture David F. Houston, entitled "Big Crops versus Big Guns." Those who know Secretary Houston are not surprised at the remarkable record he has made at the head of the Department of Agriculture. He was always noted for being absolutely sure of his facts before passing judgment on anything. I think the expression "safe and sane" applies most appropriately to him. You may be sure that what he advises is the result of his mature judgment, and if you follow his advice you will not go far wrong. While his advice is given particularly to farmers, what he says applies to every line of business, and his suggestions to consumers should be carefully noted. Among other things he says:

> There is a food shortage in the United States but it is not sufficient to cause hysteria. No nation that can raise 2,900,000,000 bushels of corn in a year is in danger of starvation. We shall not starve, and we shall not have to go on short rations, but we shall need for ourselves and our Allies abroad more food than we have ever needed to produce before. There is no apparent economic justification for the present extremely high prices of many foodstuffs.

We might add that neither is there any apparent justification for the high prices now prevailing for many other commodities.

When 1,000,000 or 2,000,000 men are withdrawn from their normal business pursuits and changed from producers to consumers overnight, a condition is bound to be created which demands the greatest efficiency to overcome. Efficiency more than economy should be the watchword of these times. The fact is, both words mean practically the same thing—you cannot be efficient without practicing economy, and you cannot practice economy without becoming efficient. While enormous amounts of money will be spent for war supplies in this country, electric railways must realize that a very small proportion will come into their hands, and unusual business will require unusual methods of handling. Efficient methods must be adopted to prevent the serious trouble which is now confronting electric railways, trouble which should not be lost sight of because a few lines are temporarily handling an abnormal business brought about by the war. Capital is necessary to build new cars, new tracks and new power houses. Where this capital is coming from, unless relief is granted, is a serious question, and deserves the careful thought and study of all interested in the future of the electric railway industry. Short-time notes and other temporary methods of raising money only postpone the day of reckoning. We should face the situation squarely and demand the necessary and just relief to which we are entitled.

The Shortest Railroad in the World?

Filing of a court action in Missoula, Mont., disclosed the fact that the Missoula Belt Line Railway is probably the shortest railway in the world. F. J. Bischoff and E. D. Mulroney, attorneys for the company owning the 100-ft. railroad line, filed suit in the district court against the Missoula Gas Company, George T. Smith and Ella A. Smith, for $8,000 said to have been collected by the defendants in their capacity as agents for the railway. The line connects the Northern Pacific and the Chicago, Milwaukee & St. Paul line in South Missoula, where the tracks of the former pass over the latter. The line has no equipment, no employees, and no stations, but gets its earnings by renting its tracks to the Milwaukee for transfer privileges. The Milwaukee has agreed, the complaint says, to pay 50 cents for every car taken over the line, and it is estimated that 16,000 cars have been so transferred.

Kobe, one of the most interesting cities of Japan, is to have an elevated railway. It will connect Fukiai and Takatori with the centre of the ancient city.

Use the Backs of Transfers

The Backs of Transfers Furnish Excellent Space for Advertisements, but if It Is Valuable to Outside Commercial Concerns It Is Even More So to the Company for Its Own Announcements—The Kind of Notices Which Should Be Printed

By DWIGHT BURROUGHS
Publicity Agent United Railways & Electric Company, Baltimore, Md.

"THE thing that first impressed me when I reached Baltimore was that the reverse side of the electric railway transfers was used for safety talks instead of being occupied by advertisements of Jigger Oil and other commodities, as is the case in every other city I have visited."

This was the opening sentence of an address by a gentleman from a large Eastern city who was attending the annual convention of the American Safety Federation in this city last December.

And it is true that advertisements grace the backs of transfers in many large cities, the sum paid for the use of the space being considerable, regulated by the number of transfers upon which the advertisements appear.

The United Railways & Electric Company of Baltimore has always felt that if this space was of value to the general advertiser, it must be valuable to the company itself, and as long as the company had something to advertise it was the part of wisdom to avail itself of this great medium.

If Jones & Jones could attract people to their store and sell them goods through advertising on transfers, there was no reason why the electric railway company could not sell its commodities or its service by using the same advertising agency.

Every business man to whom an advertising proposition is presented has to consider several features of that proposition, including:

1. Quantity of circulation; how many people will it reach?
2. Quality of circulation; will it reach the people who will be interested in what I have to sell?
3. Position of the advertisement, or place it will occupy in relation to other advertisements or reading matter.
4. Cost.

There are other details that may be taken into account, but these four must invariably turn the scales in favor of or against signing the contract.

THE TRANSFER FITS THESE REQUIREMENTS

As far as the quantity of circulation is concerned there is no question that the electric railway transfer reaches a multitude of readers. The newspapers of Baltimore, in their announcements of daily "press runs," say they print an aggregate of about 310,000 papers. The "press run" of the Baltimore transfers, or the number printed for each day's use, is something like 350,000, or 125,000,000 a year. All of the transfers do not get into actual circulation, of course, but neither do all the newspapers printed. So, without any intention of disparaging newspaper advertising, it is a pretty good illustration of the extensiveness of the circulation of the transfer to compare it as about equal that of all the daily papers of the city combined.

That the transfer advertisement reaches the class of people who are interested in what we have for sale there is no question. They are car riders, and it is to car riders that we have to preach a very goodly portion of our message or messages. And it is for this reason that an electric railway advertisement is more valuable on a transfer than would be any other advertisement. Every man who rides on an electric car is not interested in Jigger Oil, or the Tombs Tooth Paste, or Streams of Wheat, but every man who rides is interested in riding, and we may rightly presume that he is more apt to read an advertisement of car rides than he is to peruse one concerning the merits of something in which maybe he has no special concern.

Do Not Hold an Umbrella in Front of Your Face
While Crossing the Street.

IT IS BETTER TO GET WET THAN BE RUN OVER

29

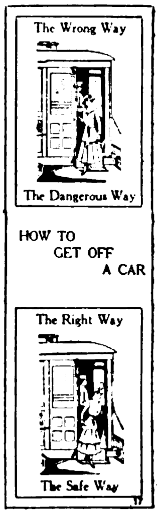
Two Triple Alliances

Carefulness	Carelessness
Safety	Injury
Happiness	Gloom

On Which Side are You?

THINK
of yourself and SAFETY, and you will not have to think of the doctor and his bills.

18



THE BACKS OF BALTIMORE TRANSFERS CARRY COMPANY ANNOUNCEMENTS

There is also no question concerning the prominence of the place occupied by the advertisement. There is no danger of it being swallowed up in a mass of irrelevant advertising, or placed in an obscure position where it is not likely to be seen by a large proportion of those into whose hands the medium falls. Men who study the science of advertising do so with a view not only of learning the quantity and quality of circulation and the position of the advertisement in a given medium, but with regard to the percentage of persons procuring that medium who will actually see the advertisement. A newspaper advertising manager will tell you that if you place an advertisement of a certain size on a certain page of his paper it will reach the eyes of such and such a percentage of the readers of the paper. A magazine man will give you another figure. The billboard man claims such and such a percentage.

The man who advocates advertising on the screens of moving picture houses affirms that such advertisements must be read by 100 per cent of the patrons of the places where they are shown. He is doubtless very nearly correct. The figures given by other agencies cannot be supported by quite as convincing argument.

And the percentage of persons who get transfers who read the advertisements on them is also a matter that must be determined largely by guesswork. But it certainly seems to be a pretty fair guess that as many transfer owners read the advertisements on the little slips of paper as do the purchasers of a periodical. Granted that a great many persons fold their transfers when they receive them and hold them in their hands until they are turned over to the conductor of the next car. But that tens of thousands, or hundreds of thousands, scan these rectangular strips of paper daily is easy to believe when we find that advertisers are always ready to pay well for the use of the space.

Baltimore believes that a very large proportion of riders read the transfer backs, and one of the reasons for this is that an effort is made to make the reading matter thereon of an attractive character. If John Jones knows that the back of every transfer bears the advertisement of Jigger Oil, he is not likely to take the trouble to read it. But if he understands that there is a variety of catchy phrases and reading matter on the transfers, he, out of curiosity, if for no other reason, turns the slip of paper over and scans it.

The folding of transfers, which railway operators strive to discourage, probably possesses one virtue—that of helping to bring the attention of the owner of the transfer to the matter printed on the reverse side.

The cost of printing the back of the transfer is insignificant when considered in connection with the advantages to be derived. Transfers are produced on specially designed cylinder presses which print both sides at one operation, and the difference in cost of a slip printed on one side only and that of one printed on both sides, whether the printing is done in the company's own print shop or by one of the big ticket-making concerns, is relatively small. Certainly the additional cost of back printing is inconsiderable if regarded in comparison with the cost of any similar advertisement produced in any other conceivable manner.

WHAT MAY A COMPANY ADVERTISE?

What may an electric railway company advertise on its transfers? Whatever it may advertise through any other medium—car rides, good-will and safety. Much money is expended by the companies throughout the country annually in presenting these matters to the public. Surely they could in no way be more effectively presented than through this medium, the quantity and quality of whose circulation is the most advantageous that could possibly be conceived.

The backs of the transfers of the United Railways are used to tell of the delights of trolley riding in the suburbs and of the advantage of chartered cars for special occasions, but a very large proportion of them are now devoted to the dissemination of the doctrine of safety.

The selection of the subject matter of a transfer advertisement and the text of the advertisement should be carefully considered with a view to employing only those that are appropriate, attractive and effective. A funeral car is not the thing to advertise on the back of a transfer. A person riding on a car, or standing on the corner waiting for the car to which he is to transfer, does not care particularly to be regaled with a very graphic description of the advantages and home comforts of some special means of getting him or his near and dear ones to the graveyard. Very few persons who ride on the cars have any immediate need for a hearse. Those recently bereaved have left the details of the funeral to their favorite undertaker. He is the man to whom the funeral car should be advertised by means of circulars, etc.

The use of transfers for advertising "Special Cars for Twilight Trolley Trips," "Special Cars for Sunday School Excursions," "Chartered Cars for Lodges and Other Organizations," is especially proper, and should prove a means of selling transportation.

The advertising of resorts, bathing beaches, "Ride to Keep Cool," etc., on transfers is likewise advertising that is generally recognized as the paying kind.

These things are looked to to produce revenue for the company, and they doubtless do. Safety advertising is designed to prevent the revenue slipping away, as well as for a humane purpose. Safety advertising on transfers catches the reader's eye at the time when it should impress the normal person most forcibly. He is either on a car or on a street traversed by cars. It is the time when he should have his wits about him to guard against danger. He may not be, and generally is not, in a position of danger, but a false step or a thoughtless moment may throw him into a position of danger. A word of caution to him at this instant may save him from accident, and here it is on the back of the transfer in his hand.

Will he read it?

It is the business of the advertising writer to make him read it. That can be done by teaching him that the little messages on the transfers are terse, interesting and worth reading. There should be variety and, while the same transfer safety lesson may be used over and over for months, new ones should be introduced frequently enough to sustain the interest of the car riders.

There may be different ideas as to what constitutes the best sort of safety advertisement, but it should be borne in mind that anything that preaches safety, that will attract the eye and tersely drive the lesson home, comes in the category of good work.

Some attention should always be given typographical appearance. Neatness and refinement appeal here as elsewhere. It is better suited to the needs of your advertisement that it be set forth in a smiling, light-faced type than that it should be a bunch of heavy, somber gothic. Exceptions may be found to this general rule in presenting some features, but they are not numerous.

The Cleveland (Ohio) Railway subscribed for $250,000 of Liberty bonds and the employees invested a very considerable sum in the bonds, having conducted a campaign of their own. The train of two cars, covered with Liberty bond banners, mentioned in the ELECTRIC RAILWAY JOURNAL some time ago, was kept in constant operation over the different routes. The company also aided the bond campaign in various other ways.

War Board for Electric Railways to Be Organized

At Conference Held on Nov. 2 Recommendations Were Passed Favoring Board of Five Members with Headquarters at Washington to Co-operate with the Government in Electric Railway Affairs—President Stanley Appoints A. W. Brady, P. H. Gadsden, Britton I. Budd, L. S. Storrs and T. N. McCarter to Board

DEFINITE action was taken on Nov. 2 by the executive committee of the American Electric Railway Association authorizing the appointment by President Stanley of a war board to represent electric railway interests at Washington. The meeting on Nov. 2 was a joint meeting of the executive committee with the members of the committee on military traffic, with a few others who had been especially invited, and its purpose was to consider the recommendations of the committee on military traffic that the association should be represented at Washington along lines somewhat similar to those of the war board of the steam railroads. In introducing the subject, President Stanley said:

"The purpose of this meeting is to consider whether the association will provide a means whereby the electric lines may fulfill their duty to the government, which is to see that every facility they possess is made readily available for use in the solution of the great problem of transportation which the country faces, and to make sure that the proper authorities in Washington and elsewhere are acquainted with the facilities. It is our duty to show the government that not only are the electric lines anxious to do their duty, but to indicate how and where they can help in this emergency."

The national situation was then described by members of the committee on military transportation who had attended the meeting in Washington of that committee on Oct. 23 and 24, including A. W. Brady, L. S. Storrs, C. Loomis Allen and Britton I. Budd. They explained that at present, under an arrangement between the War Department and the American Railway Association, all military transportation matters in the Central District are handled through the Central Passenger Association, but there are many places where electric railway transportation could be more effectively used. Reference was also made to the proposed storage warehouses for war supplies under consideration by a sub-committee of the Council of National Defense, of which Morris L. Cooke of Philadelphia is chairman, as described on page 774 of the issue of this paper for Oct. 27, and to the suggestion that motor trucks could be used extensively for transportation in connection with these storage warehouses. The speakers pointed out that the use of motor trucks would require, in many cases, extensive expenditures on highway improvement, which, in the aggregate, would amount to much more than would be required to put the electric railways in such condition that they could handle this traffic.

Important as this question of transportation was, however, the speakers explained it was not the only matter in connection with administration affairs at Washington in which electric railways are interested. There is the priority board and the fuel board, in both of which the electric railways are vitally concerned. Then there is a board making a survey of the industries of the country, with the idea of determining which are non-essential, and one working on a plan to supply industries with housing facilities; and there may be a board similar to one in England, the man-power distribution board, controlling the distribution of industrial operatives, through which the industries may appeal for additional labor.

It was most important, in the opinion of these speakers, that the electric railways get together so as to have some one speak authoritatively for them as a unit, and also to take up with the proper authorities at Washington cases where any individual railway companies might require assistance to relieve them of municipal or engineering restrictions which at present prevent them from assisting the government as much as they otherwise could. It is also important, in the opinion of these speakers, that whatever policy should be adopted by the government should apply to all properties. Individual action cannot secure this.

P. H. Gadsden of Charleston, in speaking in favor of the plan, explained that it would not relieve the companies from the necessity of sending representatives to Washington at times. He suggested a composite board, made up of representatives of all of the public-utility interests.

P. F. Sullivan, M. C. Brush and others, however, expressed the belief that a purely electric railway board would accomplish better results. T. N. McCarter and C. M. Clark agreed with this latter view. J. D. Mortimer, H. G. Bradlee, H. L. Doherty, James H. McGraw, and Charles L. Henry also spoke in favor of the appointment of a separate board.

The meeting then adopted a set of resolutions in favor of such a board, to consist of five members, with headquarters at Washington, D. C., and the president announced that he would shortly send a letter to the members explaining the situation.

After the passage of this resolution Mr. Gadsden suggested that the American Association, with the associations representing the other public utilities of the country, such as gas, electric light, etc., ask the United States Chamber of Commerce to consider the whole question of the situation of public utilities to-day, somewhat in the same way as the chamber had studied and reported on the steam railroad situation. This suggestion was seconded by Mr. Brush, who thought it would be of great help with the local chambers of commerce.

At the close of the meeting the president announced that he had appointed the following gentlemen to compose the board: Arthur W. Brady, president Union Traction Company of Indiana, Anderson, Ind.; Thomas N. McCarter, president Public Service Railway Company. Newark, N. J.; Britton I. Budd, president Chicago, North Shore & Milwaukee Electric Railroad, Chicago, Ill.; L. S. Storrs, president Connecticut Company, New Haven, Conn.; P. H. Gadsden, president Charleston Consolidated Railway & Lighting Company, Charleston, S. C.

Revenue Secured from Advertising Space in Stations

THE necessity of obtaining additional revenue to offset the increased cost of operation has induced the British Columbia Electric Railway, Vancouver, B. C., to sell space in its interurban stations for advertising purposes. The company has 139 stations, twenty-five of which are at important traffic centers. The advertising has taken two forms, namely, showcases on the pillars and walls of the three main interurban stations, and 3-ft. x 5-ft. signs on the walls of these stations and on the railings of the smaller station platforms. The photograph reproduced herewith shows the Carrall Street station in the company's office building, which is entered by about 15,000 persons daily.

The advertising is handled by a separate company which pays the railway company a percentage of its gross earnings or a minimum annual amount. The advertising company caters only to the best classes of business houses and accepts advertising from only one firm in each line. The showcases have undoubtedly developed business, as advertisers receive daily inquiries about goods displayed.

DISPLAY ADVERTISEMENTS IN INTERURBAN STATION OF BRITISH COLUMBIA ELECTRIC RAILWAY

Accidents on Interstate Roads

Accident bulletin No. 62, just published by the Interstate Commerce Commission, contains the statistics of accidents on interstate electric railways during 1916. The two principal tables are reproduced below:

TABLE I—CASUALTIES TO PERSONS—ELECTRIC RAILWAYS—YEAR ENDED DEC. 31, 1916

Cause	Number of Accidents	Passengers and Persons Carried Under Contract		Employees on Duty		Employees not on Duty		Other Persons not Trespassing		Trespassers		Total Persons	
		Killed	Injured	Killed	Injured	Killed	Injured	Killed	Injured	Killed	Injured	Killed	Injured
TRAIN ACCIDENTS:													
Collisions	139	6	517	4	57	...	...	1	...	...	...	11	574
Derailments	53	2	163	2	22	...	...	...	...	...	...	4	185
Accidents to trains or cars, except collisions and derailments, and boiler explosions	24	...	26	1	5	...	...	...	1	...	...	1	32
Total	216	8	706	7	84	...	...	1	1	...	...	16	791
TRAIN-SERVICE ACCIDENTS													
Coupling or uncoupling cars, excluding accidents with air or steam hose	•••	...	....	7	23	...	...	...	...	...	...	7	23
While doing other work about Trains (not in shops or engine houses) or while attending switches	•••	...	....	10	144	...	...	...	...	...	...	10	144
Coming in contact, while riding on cars, with overhead bridges, tunnels, or any signal apparatus, or any fixed structure above or at side of track	•••	...	15	2	22	...	...	...	...	...	9	2	46
Falling from cars	•••	6	47	4	43	...	...	...	1	...	4	10	95
Getting on or off cars	•••	6	776	...	64	...	1	...	5	3	11	9	857
Other accidents on or around trains not here named	•••	...	290	3	22	2	1	5	34	1	3	11	350
Being struck or run over by cars at stations or yards	•••	10	15	3	5	1	...	15	19	14	14	43	53
Being struck or run over by cars at highway grade crossings	•••	...	...	...	...	...	1	177	647	5	4	182	652
Being struck or run over by cars at other places	•••	4	2	8	10	3	...	50	207	112	63	177	282
Total	•••	26	1145	37	333	6	3	247	913	135	108	451	2502
Grand total, exclusive of non-train accidents	•••	34	1851	44	417	6	3	248	914	135	108	467	3293
Non-train accidents	•••	•••	•••	•••	•••	•••	•••	•••	•••	•••	•••	[1]51	[1]1313
Grand total	•••	•••	•••	•••	•••	•••	•••	•••	•••	•••	•••	[2]518	[2]4606

[1]Not distributed by class of person. [2]See corresponding note under Table II.

TABLE II—SUMMARY OF CASUALTIES TO PERSONS—ELECTRIC RAILWAYS—YEAR ENDED DEC. 31, 1916

Item	YEAR ENDED DEC. 31, 1916		YEAR ENDED JUNE 30, 1916		YEAR ENDED JUNE 30, 1915	
	Killed	Injured	Killed	Injured	Killed	Injured
Passengers:[1]						
In train accidents	8	706	4	708	9	769
Other causes	26	1145	21	1208	26	1696
Total	34	1851	25	1916	35	2465
Employees on duty:						
In train accidents	7	84	10	97	9	111
In coupling accidents	7	23	4	22	....	14
Overhead obstructions, etc.	2	22	1	20	....	21
Falling from cars, etc	4	107	4	106	7	134
Other causes	24	181	18	214	8	221
Total	44	417	37	459	24	501
Total passengers and employees on duty	78	2268	62	2375	59	2966
Employees not on duty:						
In train accidents	....	....	....	....	....	4
In coupling accidents	....	....	....	....	....	....
Overhead obstructions, etc.	....	....	....	....	....	....
Falling from cars, etc	....	1	1	1	....	16
Other causes	6	2	....	2	3	5
Total	6	3	1	3	3	25
Other persons, not trespassing:						
In train accidents	1	1	....	7	1	25
Other causes	247	913	216	926	190	1093
Total	248	914	216	933	191	1118
Trespassers:						
In train accidents	....	....	1	....	....	....
Other causes	135	108	130	103	103	106
Total	135	108	131	103	103	106
Total in accidents involving train operation	467	3293	410	3414	356	4215
Non-train accidents[2]	51	1313	36	1160	16	932
Grand total	518	4606	446	4574	372	5147

[1]Includes persons carried under contract.

[2]Figures for the years ended Dec. 31, 1916, and June 30, 1916, include certain classes of casualties that for the year ended June 30, 1915, were included in the items "Other causes," under the various classes of persons shown in the table. Figures for the year 1915 cover only industrial accidents to employees not involving train operation. The corresponding figures for the year ended Dec. 31, 1916, are thirty employees killed and 1133 injured; for the year ended June 30, 1916, fifteen employees killed and 974 injured.

Commission Regulation of Utilities Is Itself on Trial

The Responsibility for Prosperous Public Utilities and Good Service Is with the Commissions—If They Fail in This Duty, the Public Will Suffer Far More than It Would Through Such Slight Increase in Rates as Would Be Required to Keep Them in Good Condition

By IVY LEE

IT is about thirty years since the railroad commissions of New York and Massachusetts were established, but it is only since 1907, the year of the establishment of the New York Public Service Commissions that the era of commission regulation of public utilities may be said to have really begun. And while the Interstate Commerce Commission, governing the steam railroads, had been sitting in Washington for three decades, the Hepburn law of 1907 was the first railroad legislation that really had teeth in it. So with the steam railroads as with local utilities the period of regulation began in the last decade.

This scheme of regulation was undertaken frankly as an escape from the alternative of public ownership. It was realized that the unrestricted private control of public utilities was not a success.

The object sought through the public service commissions is the establishment and maintenance of good public service at reasonable rates. That is what the public considers "success."

The definition seems fair. How has the system panned out?

It is doubtful if even members of public service commissions would contend that commission regulation has entirely fulfilled the hopes of its sponsors. It has accomplished much good. At any rate, we know where power is and therefore where the responsibility is. The machinery for doing the work needed to provide good service at reasonable rates is there. If it has not brought forth the product expected it is not due to lack of ways and means. And some big, stubborn facts are these:

1. The results are not yet satisfactory.
2. The fault is either with the system of commission regulation or with the commissioners.
3. The public's judgment is about to be passed on the system of commission regulation.

When once it has made up its mind that it has waited long enough and spent enough money, the public is not likely to accept excuses, no matter how well founded they are. The public wants results. If it doesn't get them from this system it will try another. It is up to those who believe in public regulation to make that system "make good" and to find out why it hasn't.

SOME THINGS COMMISSIONS HAVE NOT DONE

Its critics hold that public regulation is not a success—yet. They point to the fact that commissioners are quick to see that rates or fares are unreasonably high, but slow to see that they are unreasonably low. *Commission regulation is not going to be a success until it will regulate rates up to a reasonable level as quickly as it will regulate them down to a reasonable level.*

Some commissions hold to the mistaken idea that the public is on one side and the utility on the other and that any benefit that the utility gets is at the expense of the public when the true view is that the utility can serve the public well only when it is prosperous. Anything that harms the utility injures its power to give good service. The public and the utility are partners, and they must co-operate. "An impecunious company is a bad public servant, and often an unsafe one," as the Massachusetts Commission has well said.

With this view of things a bankrupt company is a reflection upon the commission. Yet, in Massachusetts, where the Public Service Commission has exercised its power for three decades, where no capital has been put into electric railways except with the approval of the commission, receiverships are by no means rare, Only a few days ago the Providence & Fall River Railway was sold by the receiver to the junk man. The latter had stopped the service and sold some of the cars, when the townspeople hastily got together and bought out the junk man at a handsome advance and now hope to operate the line at a profit. If this line was a necessity, commission control over it had not preserved it to the public.

CONDITIONS IN NEW YORK STATE AND ELSEWHERE

Electric railway affairs in New York State, indeed in the whole country, have grown steadily worse in the last ten years. In August testimony before the up-state commission showed that not only are about one-half of the up-state companies in New York not earning even their fixed charges, but that twice as many failed to earn these charges in 1916 as in 1908.

Not a single up-state company in ten years has paid regular dividends to the amount judicially held justifiable, namely, 8 per cent.

Not a dollar's worth of stock has been issued by up-state companies since 1911, for investors have washed their hands of the business. Money can be borrowed by only a few of the strongest companies and by them only at ruinous rates.

New building is impossible and has ceased. In 1909 there were put into operation 150 miles of new electric lines; in 1910, 64 miles; in 1911, 37 miles; in 1914 there was no increase, and in 1916 not only was no new mileage built, but 10 miles of line were actually torn up.

In August last the Hornell Traction Company asked the upstate commission for the right to raise its fares. There was no charge of over-capitalization. The city authorities made no objection to the advance. The line had once paid some small dividends, but advancing costs of materials and wages, together with a fixed fare, had brought the inevitable result. The service this company performed for Hornell and Canisteo may or may not have been worth while, but public service regulation in this State has initiated no steps to preserve it. If the reply be that the commission did all it could, the rejoinder is that either a way must be found by which the commissions can do better or the system will be rejected.

If the present tide of rising costs and fixed fares threatens serious curtailment of the public's service—and this is what the companies, very properly, are warning the public is the fact—the public will hold the commissions and commission system responsible.

It will take some good old-fashioned moral courage in the commissioners to tell the demagogic politician and the demagogic press the solid truth about this matter and to rise to their official duty in preserving the public service.

The steam railroads of this country failed to get their freight rates increased as they asked, although they pointed out that it meant inability to increase facilities. Some freight bills were a few cents lower, but now, because, in part, for lack of shipping facilities, the price of coal to householders on millions of tons is dollars per ton higher.

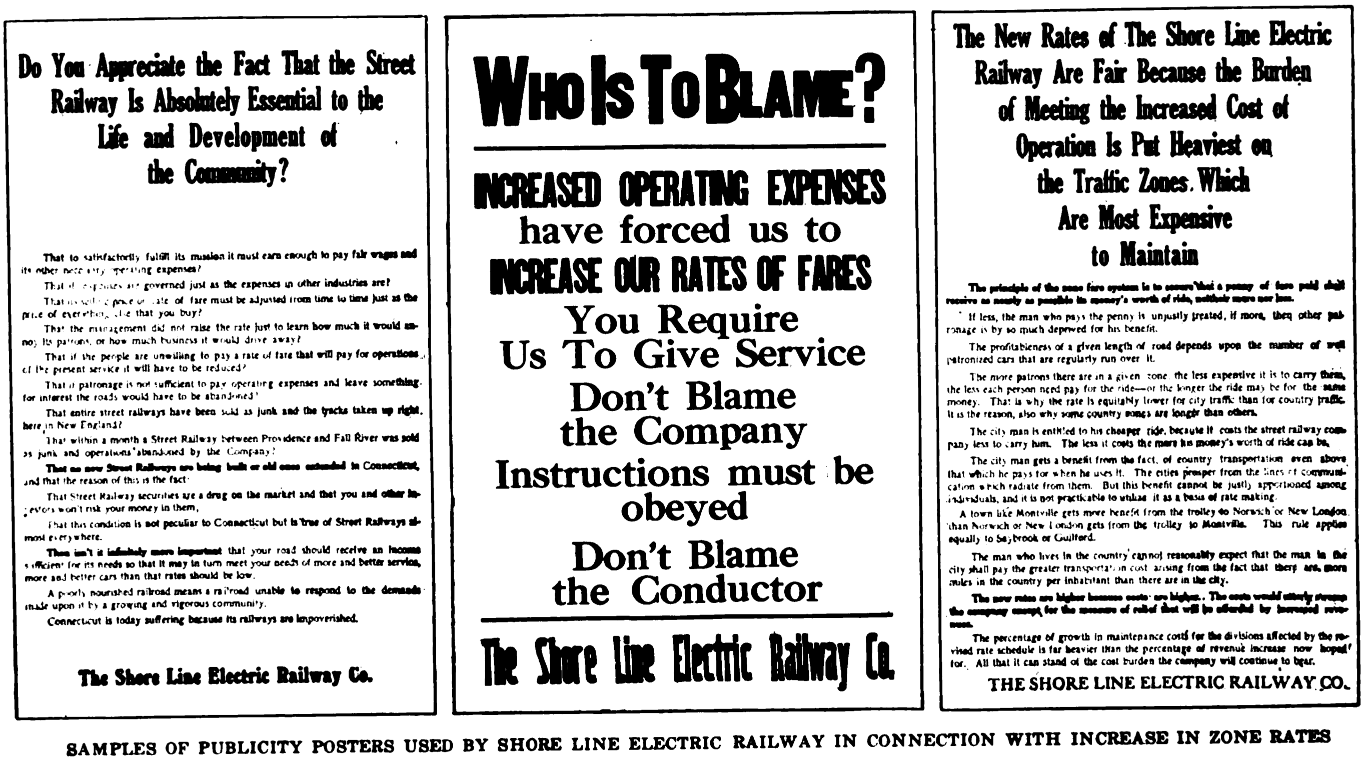
SUPPOSE THE LINES SHOULD STOP

Suppose the electric service in any town to be stopped—as, for instance, along the line of the Providence & Fall River Railway above cited—what is the loss on values of suburban homes, to business property of the town, and to farmers who can no longer get to that market?

The great point is that the public authorities get their relative values properly estimated and their perspectives correct. Service is the prime requisite. No haggling over fares will ever excuse losing a once-established service. No one can imagine the ruin that would follow if all the public utilities of this country—or even in one city like New York, for instance—were absolutely to cease for even one week. Modern ways of life, present-day civilization in fact, are founded upon them. You cannot push the oak back into the acorn; you cannot discard the trolley car and go back to the stage coach, nor exchange the Mazda lamp for the old-fashioned candle. The next step will be not backward to the old but forward to a new system, from regulated private ownership to complete public ownership, if commission regulation fails.

Shore Line Publicity Material

When the Shore Line Electric Railway, Norwich, Conn., recently increased its zone rates, as noted in the ELECTRIC RAILWAY JOURNAL of Oct. 20, page 738, it placed posters in its cars and ran a series of notices in the daily newspapers. Some of these are reproduced in the accompanying illustration. The publicity material used explained the general burdens confronting the company and the electric railway industry, the importance of electric railway service to the community, the exacting demands of public service, the fairness of the new rates in putting the increased burden on the most expensive traffic zones, and the like. One advertisement summed up the situation as follows: "The old rate of fare will not pay the company's bills and return even savings bank interest on its investment. Talk about electric railway 'profiteering' is sheer idiotic bunk. Napoleon Bonaparte, Alexander Hamilton, Benjamin Franklin, Andrew Carnegie and Shylock all taken together would not have brains enough to provide electric railway 'profiteering' at the present price of materials and supplies and the present intake for rides per mile."



Do You Appreciate the Fact That the Street Railway Is Absolutely Essential to the Life and Development of the Community?

That to satisfactorily fulfill its mission it must earn enough to pay fair wages and its other necessary operating expenses?

That its expenses are governed just as the expenses in other industries are?

That its selling price or rate of fare must be adjusted from time to time just as the price of everything else that you buy?

That the management did not raise the rate just to learn how much it would annoy its patrons, or how much business it would drive away?

That if the people are unwilling to pay a rate of fare that will pay for operations of the present service it will have to be reduced?

That if patronage is not sufficient to pay operating expenses and leave something for interest the roads would have to be abandoned?

That entire street railways have been sold as junk and the tracks taken up right here in New England?

That within a month a Street Railway between Providence and Fall River was sold as junk and operations abandoned by the Company?

That no new Street Railways are being built or old ones extended in Connecticut, and that the reason of this is the fact:

That Street Railway securities are a drug on the market and that you and other investors won't risk your money in them,

That this condition is not peculiar to Connecticut but is true of Street Railways almost everywhere.

Then isn't it infinitely more important that your road should receive an income sufficient for its needs so that it may in turn meet your needs of more and better service, more and better cars than that rates should be low.

A poorly nourished railroad means a railroad unable to respond to the demands made upon it by a growing and vigorous community.

Connecticut is today suffering because its railways are impoverished.

The Shore Line Electric Railway Co.

WHO IS TO BLAME?

INCREASED OPERATING EXPENSES
have forced us to
INCREASE OUR RATES OF FARES

You Require
Us To Give Service

Don't Blame
the Company

Instructions must be
obeyed

Don't Blame
the Conductor

The Shore Line Electric Railway Co.

The New Rates of The Shore Line Electric Railway Are Fair Because the Burden of Meeting the Increased Cost of Operation Is Put Heaviest on the Traffic Zones, Which Are Most Expensive to Maintain

The principle of the zone fare system is to secure that a penny of fare paid shall receive as nearly as possible its money's worth of ride, neither more nor less.

If less, the man who pays the penny is unjustly treated, if more, then other patronage is by so much deprived for his benefit.

The profitableness of a given length of road depends upon the number of well patronized cars that are regularly run over it.

The more patrons there are in a given zone, the less expensive it is to carry them, the less each person need pay for the ride—or the longer the ride may be for the same money. That is why the rate is equitably lower for city traffic than for country traffic. It is the reason, also why some country zones are longer than others.

The city man is entitled to his cheaper ride, because it costs the street railway company less to carry him. The less it costs the more his money's worth of ride can be.

The city man gets a benefit from the fact, of country transportation even above that which he pays for when he uses it. The cities prosper from the lines of communication which radiate from them. But this benefit cannot be justly apportioned among individuals, and it is not practicable to utilize it as a basis of rate making.

A town like Montville gets more benefit from the trolley to Norwich or New London than Norwich or New London gets from the trolley to Montville. This rule applies equally to Saybrook or Guilford.

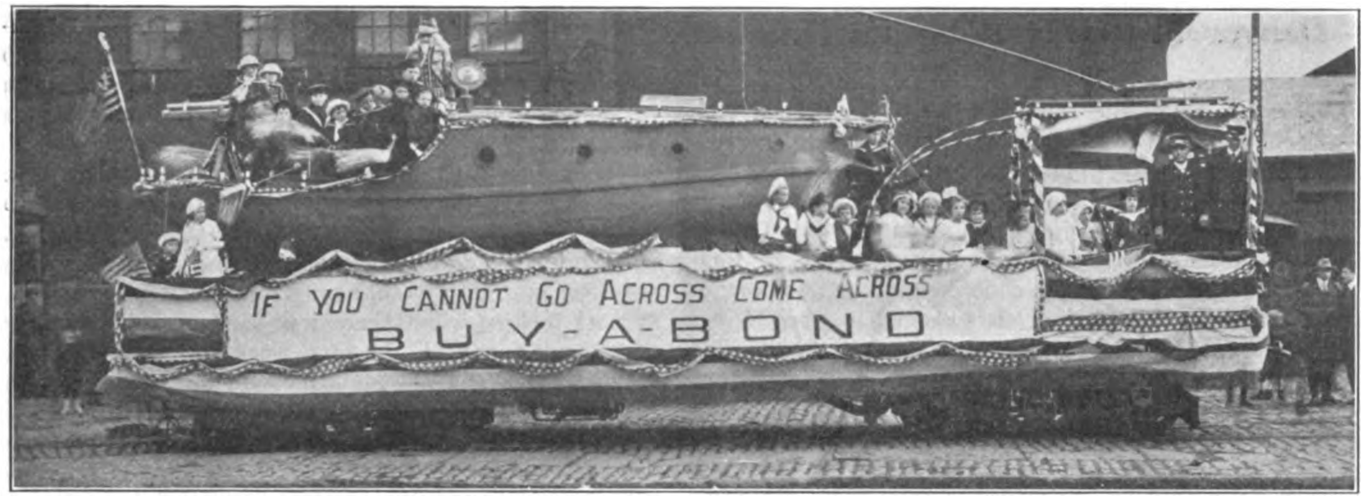
The man who lives in the country cannot reasonably expect that the man in the city shall pay the greater transportation cost arising from the fact that there are more miles in the country per inhabitant than there are in the city.

The new rates are higher because costs are higher. The costs would utterly swamp the company except for the measure of relief that will be afforded by increased revenues.

The percentage of growth in maintenance costs for the divisions affected by the revised rate schedule is far heavier than the percentage of revenue increase now hoped for. All that it can stand of the cost burden the company will continue to bear.

THE SHORE LINE ELECTRIC RAILWAY CO.

SAMPLES OF PUBLICITY POSTERS USED BY SHORE LINE ELECTRIC RAILWAY IN CONNECTION WITH INCREASE IN ZONE RATES



ALBANY PARADE—ONE FLOAT CARRIED A REPLICA OF A SUBMARINE CHASER

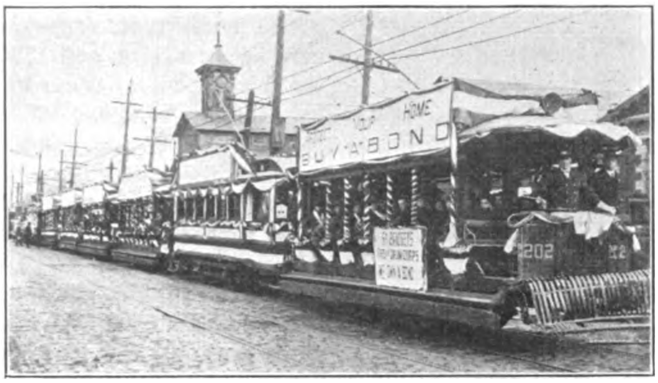
Liberty Bond Parade at Albany

Car Floats Advertise the Issue—Bonds Purchased by More than 93 per Cent of the Traction Employees

THE United Traction Company of Albany, N. Y., through the co-operation of its officials and employees, took a leading part in the recent drive which was made by the cities of Albany, Troy, Cohoes, Rensselaer and Watervliet in securing subscriptions to the second Liberty Loan of 1917.

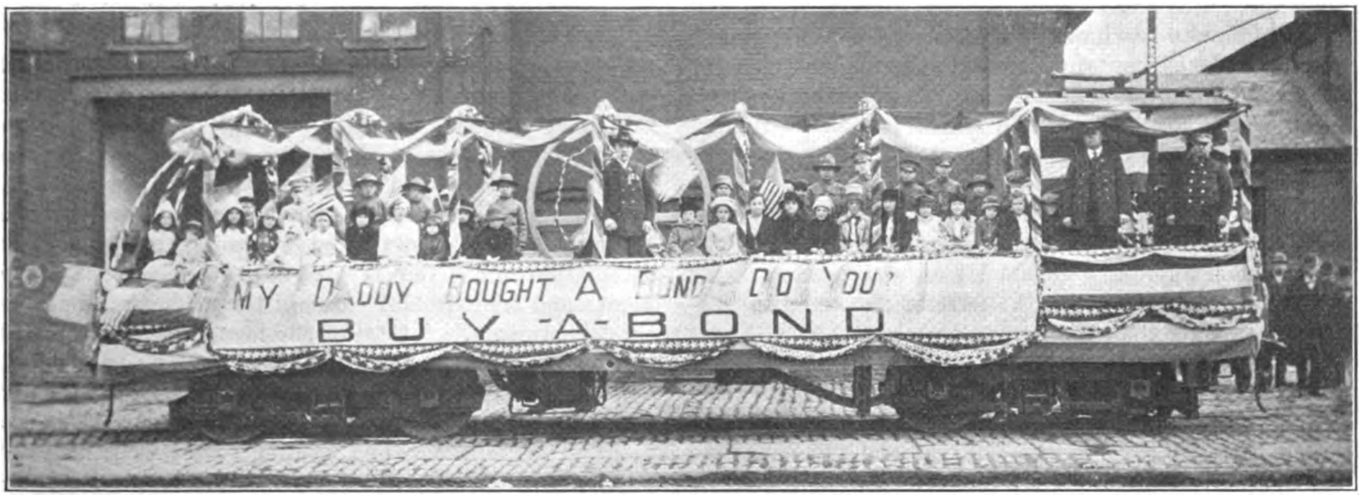
The executive officers of the company extended to the employees every assistance in the payment for bonds by arranging for deductions from wages on easy installments and by appointed committees consisting of officers and employees from the various departments for the purpose of securing at least one subscription from every person connected with the company. As a result 1483, or 93.86 per cent, of the employees subscribed for $50 bonds, the total of these subscriptions amounting to $74,150.

In addition to this work, the committee arranged for a special demonstration by the company in the form of an electric car parade as one of the features of the Liberty Day celebration conducted by the cities through which the company operates. The parade consisted of eight gayly decorated cars carrying banners urging the purchase of Liberty Bonds, and two special floats. One of these bore a huge Liberty bell which was rung during the entire parade. On the other car was mounted a replica of the government's new submarine chaser, with a regulation United States Navy gun protruding from the stern. Both floats were manned by children in sailor costumes and Red Cross nurses. They are shown in the accompanying engravings.



ALBANY PARADE—EIGHT DECORATED CARS ADVERTISING LIBERTY BONDS

During the evening all of the cars were illuminated with red, white and blue lights and presented a very spectacular appearance as they toured over the lines of the United Traction system.

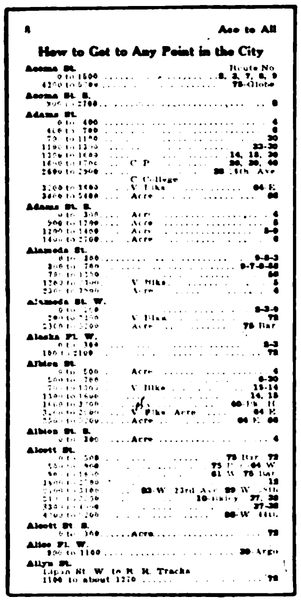


ALBANY PARADE—A LIBERTY BELL CARRIED ON ONE FLOAT WAS RUNG DURING THE PARADE

Denver Tramway Publishes Unique Street Guide

"Where Is Such and Such a Place?" and "How Can I Get There?" Are Questions Quickly and Clearly Answered in This Guide—20,000 Sold by Trainmen in Three Days

J. C. DAVIDSON, publicity manager the Denver Tramway, has compiled a new street guide for Denver which has a very unique method of answering the questions "Where is such and such a place?" and "How can I get to such and such an address?" The book, of course, is intended to stimulate transportation on the street cars, but it nevertheless serves a very good purpose in directing accurately to any street and any number on any street. For instance, if it is desired to go to 1137 Adams Street, one turns in the directory to the alphabetical index of streets and under Adams Street notes that, for numbers between 1100 and 1300, the place could be reached by taking route No. 33 or No. 30. Then at another place in the booklet a table shows at what point cars on these routes can be boarded. Wherever possible all the car lines running near a given address have been given because it was thought that most people would rather walk an extra block and take the first car that came along rather than wait ten or fifteen minutes for a car that would save them only one or two blocks' walk.



8 Aco to All

How to Get to Any Point in the City

SAMPLE PAGE FROM DENVER TRAMWAY STREET GUIDE

An important feature is that all named apartment houses and flats are listed, and also parks, clubs, banks and trust companies, location of freight depots and repair shops, telephone and telegraph companies, newspapers, hospitals, asylums and sanitariums, homes for boys and girls and the aged and the tubercular, railroad passenger, freight and general offices, theaters, associations, etc., etc., and in each case the directions are given as to how to reach any particular one of these places. The booklet also contains a compilation of the routes of street car lines and a list of the special transfer privileges which are granted. Another important tabulation shows where the different route tramway cars may be boarded in the downtown district.

One of the most interesting features about the street guide is the manner in which it was distributed. The first edition numbered 20,000 copies, and it was printed with some misgivings on the part of the company officials regarding their ability to dispose of them. About a week of preliminary advertising was given the guide before it was put out, by running cards in the cars. At the same time a scheme was devised for selling the guide through a committee of trainmen who enlisted the services of all other trainmen in selling them. It was arranged to sell the guide for 10 cents a copy and to give the largest part of the profit to the trainmen, the remainder going to the Associated Tramway Trainmen's Clubs. The company itself not only made no profit on the guide, but spent several hundred dollars in its compilation and financially backed the trainmen's association in publishing it.

The guide went on sale on Saturday morning, Oct. 13, each conductor being required by the committee to take ten copies and pay 70 cents for them in advance. Although considerable grumbling was caused by this requirement, within an hour from the time the conductors took cars out there was a general demand for more copies, and all the men were enthusiastic about the scheme. The more alert conductors bought from fifty to 100 more copies as promptly as the company's distributers on the streets could give them out and collect the money. One of the company's automobiles was kept busy in the downtown district throughout that day keeping the distributers on the streets supplied with sufficient copies. These street distributers were so located that they could board each car as it came through the downtown district.

Almost the entire edition was sold the first day and by Monday night, Oct. 15, there were only about 1000 copies of the book unsold on the system. Since then the demand has continued and a second edition is being printed. After it was once started, the scheme proved very popular and very profitable to the trainmen, who netted in some cases as much as $5 and $6 a day from the sale of the book, in addition to their wages. The associated clubs reaped between $600 and $700. The Tramway Company purchased 2000 specially bound books and distributed them free to the trainmen for their personal use.

As Mr. Davidson realized that it is impossible to publish such a street guide without having some errors either in typography or information, he put a note on the inside cover commenting on this fact and requesting anyone who found an error to let the company know. This made proofreaders of all those who purchased guides. Many very complimentary references to the new guide have been made, but the manner in which the public bought it was of course the most significant compliment, and the character of the guide is sure to stimulate car riding as well as to be of great service to patrons.

Employees' Association Report

The Third Avenue Railway (New York) Employees' Association on June 30, 1917, had a membership of 3412 and had to its credit on that date New York City bonds valued at $79,833 and cash on deposit amounting to $13,283, or total assets of $93,116. During the year the association collected in dues from the members $15,561, and the various companies comprising the Third Avenue Railway System contributed a similar amount. The association physician treated 572 members at their homes and treated 8987 cases in the medical and surgical departments. A total of 826 members were relieved by the payment of sick benefits amounting to $16,312, and families of thirty-four members who died during the year received $1,000 each under the group insurance plan. The clubrooms and reading rooms were liberally patronized throughout the year and the surgical department was enlarged to provide additional facilities for the treatment of injured employees.

Practical Hints from the "Em-an-Ess"

How This Ohio System Maintains Cordial Relations with Newspapers and Reporters—How It Handles Accident Publicity and Complaints from Patrons

THERE are kinks in all trades, and public relations work has its full share. In such work local conditions exert a large influence, and the way in which efforts to improve public relations are adapted to the community is a real test of the wisdom and the ingenuity of the responsible corporation official.

As a necessary corollary to the above proposition it follows that, with fundamentals omitted, some of the ideas or methods that have proved effective in one locality may not be at all advisable for another. Nevertheless, similar conditions are not infrequently found to exist in different communities, and then it is the case of like begetting like.

With such a statement of the general situation, the public relations manager of the Mahoning & Shenango Railway & Light Company, Frank Wert, has mentioned to a representative of the ELECTRIC RAILWAY JOURNAL a few points that have proved important in his work and may be helpful to others. These supplement the general descriptive article by Mr. Wert in the issue of this paper for Jan. 6, 1917, page 23.

GETTING PUBLICITY

The public relations work of the "Em-an-Ess" system in and around Youngstown, while concerned with commercial advertising, complaints and a house organ, is based primarily on newspaper publicity. It is felt that the railway is too vital a force in the life of the communities to have nothing from it but silence, and the facts of any occurrence are always placed at the disposal of the public through the press.

Mr. Wert freely answers requests for information, prepares memoranda regarding earnings, service changes and the like, and co-operates with the newspapers by telephoning late news. He firmly believes that publicity which originates in the brain of the newspaper man is the really valuable kind. A total avoidance of press-agency methods, therefore, but a maintenance of willing and frank service to the editors have made matter concerning the company acceptable to the local papers. On a controversial matter the public relations department may issue an official statement, to be handled in quotation marks, but this has been done only a few times.

In general, the editors are made to feel that company information is at their disposal to be used as they see fit, the only limitation being that of truthful presentation. In case a correction has to be made, it is presumed that it was the result of a mistake and the error is tactfully pointed out to the reporter when a convenient occasion arises. Very rarely is it necessary to issue a formal corrective statement.

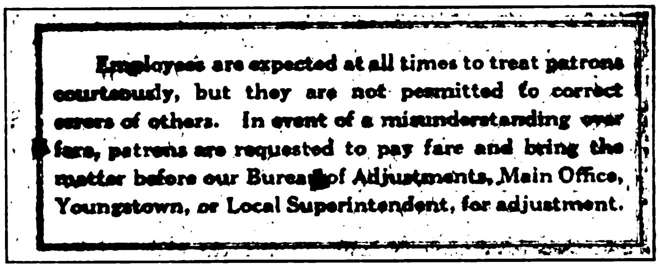
Publicity is also secured through the use of advertising—commercial advertising for the lighting division and "good-will" advertising for the railway. The latter class covers notices of such things as schedule changes, new fare-collection methods and other important operating modifications. Such advertising, the company feels, serves to remove the element of surprise from any change and at the same time permits the company to point out the advantages thereof. It thus tends to prevent the hostile editorial comments that are sometimes poured out before the reasons for an operating change are thoroughly understood.

DEALING WITH REPORTERS

The company does not raise any barrier against a reporter talking with a responsible official if he wishes to do so. Nor is there any objection to the superintendents in the company's scattered towns talking on purely local matters.

In the main, however, it is felt that Mr. Wert can secure the desired information with the minimum loss of time to the reporter. Furthermore, it is believed that the more the publicity work is concentrated, the more dependence the reporter will place on the information secured and the more influential the public relations department will be. Hence in actual practice it is preferred to have as much information as possible pass through Mr. Wert's hands.

The question has often arisen as to whether it would be advisable to take reporters on trips to the company's new power-house installations, etc. Occasionally this has been done, but owing to the scattered locations of the company's properties it is believed that the drain upon the reporters' time might in most cases be too great. Better results are secured by giving the newspapermen a story with pictures and telling them that the company would be most happy to have them inspect the plant if their time permits. Such a combination of service and the open-door inspires confidence on the part of the reporters, even if no visit is made.



Employees are expected at all times to treat patrons courteously, but they are not permitted to correct errors of others. In event of a misunderstanding over fare, patrons are requested to pay fare and bring the matter before our Bureau of Adjustments, Main Office, Youngstown, or Local Superintendent, for adjustment.

OUTLINING ON THE BACK OF TRANSFERS THE PROPER COMPLAINT PROCEDURE

COMPETING WITH THE NEWSPAPERS

The ten daily and several weekly papers in the company's territory are large in size, several running from twenty to thirty-six pages, but they are by no means so crowded with news as the big metropolitan dailies. In the large cities, if a railway wishes to reach the public on matters not of livest news value, it must use its own car bulletin. In the smaller city, however, Mr. Wert avers, the use of a car bulletin when a reasonable amount of newspaper space is available is considered an affront to the local papers.

For this reason the "Em-an-Ess" system depends upon the press for its appeal to the public. If there were in the cities served a paper persistently and unjustly rabid in its opposition, there might be an excuse for entering the local publishing field. Even then, it is felt, the work should be undertaken only as a defensive measure. The public looks upon the press as unbiased, upon car bulletins as *ex parte*. Hence the defense, to succeed, would have to be conducted in a dispassionate and dignified manner, with strict observance of all rules of fair debate.

Through its bureau of adjustments, operated as an adjunct to the public relations department, the company seeks to meet individuals who feel that they have been unfairly used and to right speedily any wrong that exists. To let the public know of the existence of this bureau the company attaches postscripts to its advertising, prints a reminder on its post-card electric bills and outlines the proper complaint procedure on the back of transfers. The wording in the last case is shown in the illustration on page 863.

The company does not, however, advertise directly for complaints, for in its opinion this would not be entirely fair to employees. The conductors know the rules and try to enforce them fairly, and they would be justly aggrieved if the company went "fishing" for complaints against them. As it is, the transfer notice helps the conductors by minimizing the possibility of argument with passengers, for the proper source of satisfaction can be indicated with courtesy but with finality. The conductors know that in most cases when a point in dispute is taken to the bureau, the passenger's misconception will be removed, more readily than they could do it, and they appreciate how the company combines consideration for them with its public relations work.

PUBLICITY ABOUT ACCIDENTS

In Mr. Wert's opinion, there may be a clash of interest between the claim department and the public relations department in the matter of publicity about accidents. A news account of a street railway accident may give a valuable tip to an ambulance chaser. Yet this fact, it is believed, argues for prompt work on the part of the claim department rather than for suppression of facts by the publicity official.

In the case of all accidents that are not so trivial as to have no news value, the papers are certain to secure a story, and no good-will is created for the company if it withholds the facts. Not long ago, when the company met with a fairly serious accident, Mr. Wert gave out a full list of the injured. A reporter who had direct knowledge of the occurrence and was watching developments, confessed himself quite surprised to find more names on Mr. Wert's list than he had secured.

Needless to say, this sort of occurrence has put the company in solid with the reporters. They know that they can depend upon the veracity of the public relations department. Hence, when a careless automobile driver is to blame for a collision, and the company so states, the story is not taken with a grain of salt but is published as the truth. This has a very beneficial effect in cutting down absurd claims in such instances.

PERSEVERANCE IS NECESSARY

Turning away from his own work, Mr. Wert in conclusion called attention to what he considers a most important maxim in publicity. This is that the mere telling of facts does not always create the impression that facts are being told. In other words, some communities are more obdurate than others in accepting facts as the truth.

Thus, while a publicity agent must believe in the fairness of the public, he should not sometimes expect a reception immediately free from suspicion. In such cases perseverance is what counts.

The beautiful edifice of better public relations cannot be raised in a day. If the work of a company in the past has been destructive rather than constructive, the case is doubly difficult. The least that the company then can do is to give its public relations official time and view with patience his persistent efforts to overcome the past.

St. Louis Bonus System in Operation

In view of the fact that in the first month of operation a large majority of employees earned a bonus through the elimination of accidents, the care of mechanical equipment, the building up of passenger earnings and in general a greater interest in company affairs, it is believed by Bruce Cameron, superintendent of transportation of the United Railways of St. Louis, Mo., that the company's efforts in regard to the new bonus system have not been in vain. The preparation for the use of this system was described in the ELECTRIC RAILWAY JOURNAL of Oct. 6, page 622.

The result of the bonus system in September, for motormen and conductors, was that 2804 men have drawn a bonus. A total of 2053 had a perfect score, and men numbering 846 were demerited. Of these 751 were demerited but not to the extent of 250 points and did, therefore, receive some bonus. Ninety-five were demerited 250 points or more, causing them to lose their bonus. In the class of carhouse clerks, foremen, supervisors, superintendents, etc., 140 made a perfect score, while six men had imperfect ones and six lost out entirely on participation in the bonus award. Thirty-nine miscellaneous employees (car hostlers, curve cleaners, flagmen and switchmen) had perfect scores; four, imperfect ones, and two, excessive demerits. Approximately $9,100 has been divided.

Of the different headings under which employees were demerited, "missing" took the lead, with 702 men demerited. "Schedule time" with 113 men demerited was second. Other causes follow: "Collisions," ninety-eight men; "reliefs," fifty-nine men; "visiting," forty-nine men; "accidents," forty-four men; "speeding," twenty-seven men; "brakes," twenty-one men, and "cardoors," twenty men. The violation of the rule on "switches" was very expensive and took considerable money out of the bonus pot.

Possession of Explosives Regulated

Any person in the United States found with explosives in his possession after Nov. 15, and who does not have a license issued by the federal government showing the purpose for what the explosives are to be used, is liable to a $5,000 fine or imprisonment for one year or both. In each state there will be appointed a state explosive inspector, who will represent the federal government in the administration of the law within the state. Only citizens of the United States or of countries friendly to the United States and the Allies may so obtain licenses. Contractors, mining companies, quarrymen and others using large quantities of explosives, which are handled by employees, may issue explosives to their employees only through those employees holding a license, called a foreman's license. The purchaser of dynamite, in obtaining a license, must state definitely what the explosive is to be used for and will be held accountable for its use as stated and the return of any explosive that may be unused.

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American Association News

Work to Be Accomplished Is the Topic at Toledo Joint Section Meetings—Biographical Notes About Section Officers, the Capital Traction Company Section Being Mentioned in This Issue

Section Meeting Precipitates Liberty Loan Campaign

A total of 209 employees of the Capital Traction Company, Washington, D. C., subscribed to the second Liberty Loan as a result of a campaign initiated at a meeting of the company section held on Oct. 11. The campaign followed an appeal by a representative of the Washington Liberty Loan Committee. Several company officials addressed separate meetings in the interest of the loan on a day set apart for the big drive.

Facts About Company-Section Officers

Following the custom of giving some biographical notes regarding the officers of the several company sections, the following is presented concerning those in charge of the work of the Capital Traction Company section this year. Mention will be made later of the new officers of other sections.

Elon von Culin, president of Section No. 8, was its vice-president last year. He has been in the service of the Capital Traction Company, Washington, D. C., since December, 1898, for several years in the engineering department and since in the operating department. He is now superintendent of traffic. Mr. von Culin's business career has been devoted entirely to railway work. From 1890 to 1895 he was in the office of the chief engineer, and later in the office of the president of the Baltimore (Md.) Traction Company. For the next two years he was associated with Edmond Saxton, who built the cable railway systems in Washington and part of the underground electric railways in that city. His next connection was with the Nassau Construction Company, New York, after which he was engaged for a short time on the construction of the Huntington (L. I.) Railroad.

ELON VON CULIN
President Capital Traction Company Section

Photo by Clinedinst Studio

J. E. HEBERLE
Secretary Capital Traction Company Section

J. E. Heberle enters upon another term as secretary of the Capital Traction Company section, having held the office during the past year. He has been chief clerk of the company since January, 1916, following four years as chief clerk of the engineering department in charge of records of the department, cost-keeping system, etc. His service with the company dates from 1907. Mr. Heberle was born in Olean, N. Y. He received his education in the parochial and public schools of that city and in Westbrook's Commercial College.

Toledo Section Begins Year's Work

The Toledo Railways & Light Company section held its first meeting of the season on Sept. 26 with about 375 members and guests present. President T. J. Nolan first outlined the program to be followed during the coming year. He said that besides the monthly meetings class work would be conducted along lines similar to those of last year, and that the educational work would be supplemented by outside courses in which meritorious work would be rewarded. Those present manifested unusual interest and enthusiasm to get started in the year's work. It is hoped that the section membership will be materially increased and a campaign has been started for that purpose.

Moving pictures featuring Doherty properties in different parts of the country were shown to acquaint the employees with the parent organization. The Rail-Light orchestra also gave a delightful concert.

The second meeting was held on Oct. 24 with approximately 175 in attendance. Reports from committees were received bearing upon the general program of the year, which will consist of educational work the first and third weeks of each month, departmental meetings the second week and general monthly meetings the fourth week. The publicity committee will issue an interesting bulletin on the first of each month beginning with November. The program committee announced the following speakers for the next three monthly meetings: November meeting, M. Luckiesh of Nela Park Laboratory of the National Lamp Works; January meeting, Marcus A. Dow, chief supervisor of safety, New York Central System; February meeting, E. E. F. Creighton of the General Electric Company. No meeting will be held in December.

Moving pictures were shown of the company's Water Street Power station, the Overland automobile factory and the construction of the Acme Power Company's Front Street plant. L. P. Beaver, one of the company's men in the service, gave a very interesting talk on life at Camp Sherman. The Rail-Light orchestra again furnished music. At the close of the meeting a buffet luncheon was served.

At the October meeting of the Connecticut Company section Frank Jewell Raymond of East Orange, N. J., spoke on "Business Mastery." A nominating committee was appointed preparatory to the election of officers at the annual meeting. The results of the election will be announced later.

COMMUNICATION

It's Time for Action on the Transfer Problem

Nov. 1, 1917.

To the Editors:

At the recent New York conference of the American Electric Railway Association, President Brush of the Boston Elevated Railway struck the keynote of war-time efficiency when he advocated action instead of talk on the broad policies of the railway industry. One has only to look back over a number of years of association meetings to realize how numerous have been the discussions and how few the results following presentation of many important committee reports. As an example, one has but to consider the present agitation for higher fares and a charge for transfers. This growing transfer problem has been discussed time and again. The attention of the industry has been called to the diminishing "average fare per passenger" and the importance of a closer check on transfers. Yet years have passed with little or no change in the methods of companies whose transfer practice was clearly in need of improvement. Happily there have been some progressive operators willing to "take a chance." This alone is responsible for the present day extensive use of prepayment cars. This, too, accounts for the growing demand for fare boxes of one type or another. If all managers were "stand-patters" we would still be ringing up our fares on the old-fashioned "brothers-in-law" with their possibilities for petty thievery and inaccurate accounting.

The New York companies now have pending before the Public Service Commission an application for a 2-cent charge for transfers to help defray the constantly increasing cost of carrying passengers. Twenty of the largest railways in the United States last year carried 2,193,983,240 transfer passengers. If each of these passengers had paid 2 cents for a transfer there would have been added $43,879,664 to the revenues of these twenty companies. It is not likely, of course, that so many transfers would have been requested if they were not free. Many would have walked the short distance covered by their transfer ride. Nevertheless it is undoubtedly true that most transfer passengers travel greater distances than the passengers who do not use transfers, and therefore they are adding to the cost of transportation.

At the 1912 convention some figures on the growth of transfer traffic were presented by a committee which had secured data from a limited number of companies. This showed that in the previous ten-year period the revenue passengers per car-mile operated had increased 16 per cent, whereas the transfer passengers per car-mile operated had increased 40 per cent. The average fare per passenger for these same companies had decreased nearly 6 per cent. These figures are probably conservative. At least they give an indication of unusual growth in a class of passengers which was not known for many years after the railway business began.

Recent increases in the cost of paper and printing for transfers should arouse electric railway managers to a study of means by which waste can be minimized. This may mean a change from the dated to the undated transfer, a reduction in size of the transfer or a cheaper quality of paper. It may lead to the development of a transfer issuing or printing machine with a view to preventing waste. It should at least bring about a closer check on the distribution of these troublesome bits of paper.

Take the case of a company which uses dated transfers. They are ordered from the printer in such quantity as to guard against possible shortage on any day and are then distributed among the various operating stations. Each station foreman gives out a certain number to his conductors, but keeps a reserve for emergency during that day. The conductor issues some to his passengers, in many cases without waiting to be requested to do so. A certain percentage of these passengers do not use the transfers which they have received. Others give them away or sell them so that the company is deprived of fares to which it is entitled. To discover the margin of waste, one need only figure the difference between the number of transfer passengers carried and the number of transfers printed. In some instances this is said to be more than 50 per cent. The 1913 committee on fares and transfers reported that the proportion of transfers given to conductors and not issued was in some cases as high as 80 per cent. These, of course, may have been undated transfers, which were not thereby wasted. The committee also reported that the percentage of transfers collected to those issued varied from 46 to 97, and it would be a safe guess to say that the higher figure belonged to the company where a refund was made for transfers not used.

The company which gives only one transfer with a 5-cent fare has a simple job of checking up conditions compared with the company which issues transfers on transfers without limit. It has been found, however, that many companies, regardless of their size, keep absolutely no record of transfers issued, destroyed or given away. Even if these bits of paper did not have a potential value of 5 cents each it would appear to be a part of efficient management to discover whether or not there is any waste. Having that potential value, it might almost be called criminal negligence for a railway operator to continue in ignorance of actual conditions.

This leads again to the plea made by Mr. Brush at the New York conference for action. Soon the utility commissions of many states will have under consideration various appeals for financial relief for suffering railway utilities. In addition to whatever relief may be granted by these authorities, the prudent manager can demonstrate his own efficiency by looking carefully into such problems as the one outlined above.

SUPERINTENDENT.

Passengers on electric railway cars and pedestrians and drivers of vehicles taken as a whole and combined, have an excellent opportunity of escaping injury from the operation of the Municipal Railway, San Francisco. City Attorney George Lull, who has to deal with all injury claims, has figured out the exact percentage of risk. A person has about 29,999 chances of escaping injury to one of being hurt, according to the city official's reckoning. Or, in other words, the percentage of accidents to passengers, etc., is 0.0033 of total passengers carried.—*Journal of Commerce.*

EQUIPMENT and MAINTENANCE

HAVE YOU A GOOD WAY OF DOING A JOB?
—Pass It Along

These Articles Have Been Selected to Provoke Thought and Stimulate Discussion. All of the Technical Departments Are Represented

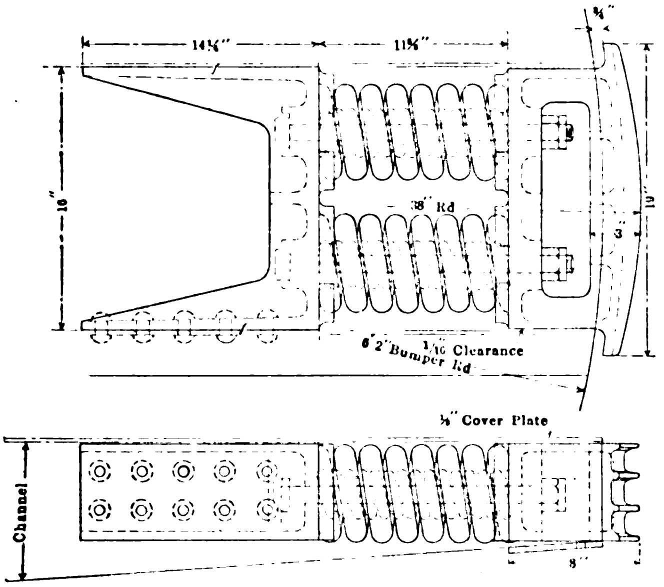
A Spring Shock Absorber for Interurban Cars

Canadian Railway Company Develops Device to Reduce Damage by Collisions

BY G. J. MEYER
Chief Engineer and General Superintendent Montreal & Southern Counties Railway, Montreal, Canada

In order to reduce the damage by collisions of its heavy interurban cars this company has found it desirable to install spring bumpers or shock absorbers on its cars. These are of a very simple design and were constructed and applied by the Ottawa Car & Manufacturing Company.

The shock absorber consists of a corrugated bumper block of malleable iron, a pair of double helical springs and a malleable iron stop block. These parts are shown in the drawing reproduced herewith.



SPRING SHOCK ABSORBER USED ON CARS OF CANADIAN ELECTRIC RAILWAY

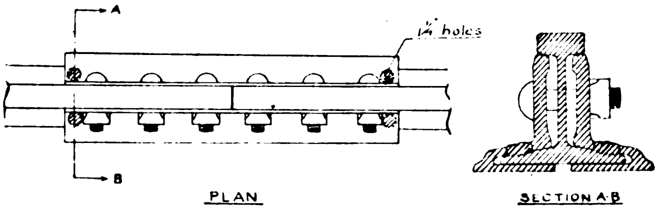
The stop block is securely riveted between two of the channel-iron platform knees, the casting being shaped so as to provide room for a number of rivets sufficient to give a total shearing strength in excess of the total force which can be imposed upon them by the springs, namely, about 40,000 lb. To relieve the rivets, however, the surfaces in contact are finished so as to introduce considerable friction. The side of the stop block in contact with the springs is furnished with bosses which act as sockets for the spring ends, and similar bosses are cast on the inside surface of the bumper block. The play of the bumper block is limited by means of two 1-in. bolts passing from the stop block to the bumper block. These bolts are provided with lock nuts.

As stated above, the helical springs are double. The outer, heavier one is made of 1⅜-in. rod bent so as to have an outside coil diameter of 6 in. When set solid its length is 11 in. and when free it is 13 in. The inner spring is made of 11/16-in. rod, the outside diameter being 3 in. Its solid and free lengths are 11 in. and 13 in. respectively. To compress the heavy spring solid requires 17,636 lb. and the light spring 4414 lb. In actual use these bumpers have proved very satisfactory and, we believe, will greatly reduce maintenance costs.

Brazilian Railway Uses Substitute for Copper Bonds

BY FELIX FERRÁS
Chief Engineer Track and Roadway Department, Sao Paulo Tramway, Light & Power Company, Ltd., Sao Paulo, Brazil

Owing to the high price of copper and the difficulty in getting deliveries the writer has devised a method of welding continuous joint plates to the rail. After a year's trial in old and new track work this has proved an effective substitute for copper bonding. Of course, it is only used in paved streets where rails are not subject to expansion and contraction.



SPOT-WELDED BOND USED IN PAVED STREETS

Before putting the joint plates in place 1¼-in. holes are drilled at each end, as shown in the drawing. The joint plates are then put on and the base of the rail under the holes and the sides of the holes are carefully cleaned with a file or drill. Then by the use of an Indianapolis welder steel is melted into the holes, thus forming a weld between the plates and the rail. The cost of the joint made by this process is about one-fifth the cost of the copper-bonded joints without taking into consideration the time and expense of placing the joint plates temporarily for aligning and levelling the track and then taking them off again to install the copper bond inside the joint plates.

Special Work Repairs Made by Standardized Procedure

Foreman in Charge of Work Receives Work Order Stating the Order in Which Each Operation Is to Be Done

BY W. L. WHITLOCK.
Office Engineer Denver (Col.) Tramway

In the maintenance of special work in Denver it has been practical to develop a standard plan of procedure for the repair of square crossings in paved streets. We have a large number of these crossings of identical design and construction, about the only variation at the different locations being the amount of traffic. One of the illustrations shows the condition of part of a crossing just previous to repair. This is typical of the crossings on which work is required from time to time to place them in good shape.

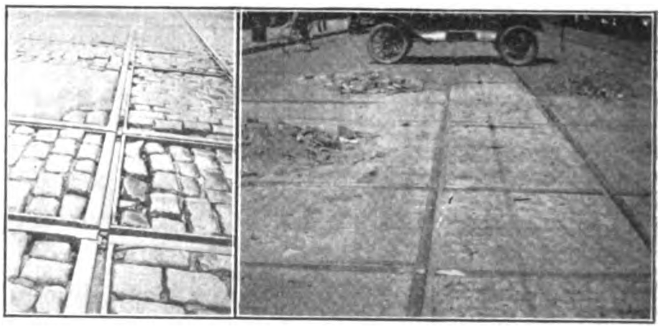
For such work as this the regular routine of the Denver Tramway engineering department, as described in the ELECTRIC RAILWAY JOURNAL of July 28, 1917, is followed. The track inspector or office engineer reports the kind and amount of repairs necessary, and a work order is made out to cover this. This is approved by the superintendent of track and the chief engineer, and the expenditure is authorized by the general manager. All materials and the instructions and order of work for the track foreman are listed on this work order. For the standardized repair routine on these square double-track crossings the foreman's instruction sheet reads as follows:

Remove paving.
Re-bolt crossing.
Change out rails (if on order).
Adze ties
Place steel shims under each corner of crossing.
Weld shims to base of rail.
Weld knee iron to rail.
Weld all machine bolts, nuts and heads of bolts to knee iron.
Build up low places on rail (surface welding).
Grind the rail.
Place oak shims on intermediate ties between steel shims.
Repave street opening.
Clean up job.

The average material used in connection with one of these standard crossing repair jobs and the total labor, cartage and material costs are given in the following tabulation:

128 ⅞-in. x 3½-in. machine bolts		$12.77
Sixteen steel plates as per drawing "x"		4.00
10 gal. coal oil		1.10
Two 5-gal. cans		.96
Twenty-one sacks cement		12.39
4½ cu. yd. paving sand		7.90
One pair 72-lb. angle bars		.75
One pair 72-lb. angle bars offset ⅛ in		.75
Twelve ¼-in. oak shims		.15
Twenty-four ⅝-in. oak shims		.30
Twelve ½-in. oak shims		.15
Twelve ⅜-in. oak shims		.12
⅜ keg 1 in. x 3¾-in. track bolts		2.76
100 second-hand 5-in. square paving blocks		10.00
¼ keg second-hand track spikes		.75
Water		.09
Use of welder twenty hours at 75 cents an hour (including power and operator's wages)		15.00
Welding metal (varying with amount of head wear on rails)		5.00
Salvage		$74.94
Twenty-one empty cement sacks	$2.10	
100 lb. scrap bolts and spikes	.45	
		2.55
	$2.55	
Net total material		$72.39
Labor and Cartage Cost		
Removing paving		$9.42
Replacing paving		23.70
Repairing crossing		39.57
Cartage		13.22
Total		$85.91
Total cost of standard crossing repair		$158.30

The cost chargeable to the rail grinder, used to smooth off the work of the welder, does not amount to much and it is included in the general labor item above for repairing the crossing. The item of expense for the welder use and material is estimated, as the cost department has kept records on the welders only since Sept. 1 and no actual average cost is yet available for this item.



TYPICAL CONDITION OF STANDARD CROSSING BEFORE REPAIR, AND SAME CROSSING REPAIRED UNDER STANDARD PLAN

Effects of Storage on the Heating Value of Coal

Authoritative Tests Show that Bituminous Coal Does Not Lose Heating Value Materially While in Storage

The results of tests covering a period of five years to determine the deterioration in the heating value of coal during storage are given in Bulletin No. 136 just issued by the Bureau of Mines, Department of the Interior, Washington, D. C. The tests were confined to determination of loss in heating value and also the degradation of lumps by weathering. No examination was made into the resulting deadening effect or decrease in original ease of burning. In general the tests showed that the decrease in heating value has commonly been overestimated.

The tests of New River (W. Va.) and Pittsburgh coals were made to determine the effect of storage under water, particularly under salt water. It was found that submergence storage of the former effectively prevents deterioration of heat value and that storage in the air under severe weather conditions causes a loss of only 1 per cent in one year's exposure and about 2 per cent in two years. After two years the loss is continuous but slow, increasing from 2.5 to 3 per cent in five years. Salt water possesses no advantage over fresh water. The deterioration of Pittsburgh coal during one year's storage in open air was practically negligible. During the remaining four years the deterioration proceeded very slowly and did not exceed 1.1 per cent. The submerged portions suffered practically no loss measurable by the methods used. With these coals it is felt that the expense of under-water storage equipment is not justified except as a preventive of fires from spontaneous combustion.

The effect of storage in air only was determined for Pocahontas (Va.) and Sheridan (Wyo.) coal. The former, a semi-bituminous coal, deteriorated in heating value less than 1 per cent during two years of exposure. The Sheridan sub-bituminous coal, known also as "black lignite," is commonly supposed to deteriorate rapidly, especially by "slacking" or crumbling. This coal lost from 3 to 5.5 per cent of its heat value during about three years' storage, the greater part of this loss being in the first nine months. In general, the lumps became badly cracked, but they changed their form sufficiently to permit greater oxidation, due to a better access of air. However, they were weakened so that they broke up badly in handling. By the use of bins with air-tight bottoms and sides and a protective layer of fine slack on the surface, the loss in heat value of Sheridan coal can probably be kept less than 3 per cent in one year and the physical deterioration in the lower layers can also be greatly prevented.

The Engineering Experiment Station, University of Illinois, Urbana, has also made studies of the effect of storage upon the properties of coal, the results of which have just been reported in Bulletin 97, published by the University. These investigations show also that the loss of heat value is small. The report states that freshly mined coal is chemically very active and certain constituents will combine with oxygen at ordinary temperatures. The extent of this reaction depends on the variety of the coal and the amount of the active constituents, an important factor being fineness of division and the accessibility of the oxygen. This chemical process is accompanied by generation of heat, the amount of which is insignificant compared with the total heat available in the coal. It is questioned whether the heat losses are not more apparent than real, since the increase in weight due to the absorption of oxygen lowers the indicated heat value per pound of coal. Moreover, the increase in slack which results from storage, together with the saturation with oxygen of the free burning constituents, slows up the fire as if heat value were lacking. However, this can be largely offset by increased draft and correct combustion conditions.

Other facts established by these studies are that bituminous coal can be stocked without appreciable loss in heat value provided the temperature is not allowed to rise above 180 deg. Fahr. Under-water storage prevents loss of heat value and is not accompanied by physical deterioration. The water retained by the coal upon removal is substantially only that held by adhesion or capillarity. The safety of dry storage can be increased by screening out the fine material and stocking only the lumps.

How Electrified Steam Railroads Save Coal

In connection with our present patriotic duty to conserve the coal supply, W. D. Bearce of the General Electric Company has made some interesting calculations showing the amount of coal which the present electrified railroads save each year by burning coal economically in large generating stations instead of wastefully in locomotive boilers. He assumes a coal consumption of 2½ lb. of coal per kilowatt-hour for the up-to-date power house and 7 lb. for the steam locomotives. Hence a road using steam-generated power saves approximately two-thirds the coal which would be necessary for steam locomotives. Of course where water power is used for generating purposes the coal saving is 100 per cent. The summary below shows the amount of coal saved. In the case of roads using oil, the coal equivalent of the oil has been used.

COAL SAVING DUE TO ELECTRIFICATION (BEARCE)

	Source of Electric Power		
	Steam	Water	Total
Miles of electrified track in United States	1,485	873	2,358
Kilowatt-hour consumption per year at power station	440,617,006	191,627,930	632,244,936
Coal equivalent in tons (if steam engines had been used) based on 7 lb. per kilowatt-hour	1,542,898	670,552	2,213,450
Coal saved per year in tons	1,029,460	670,552	1,700,012

Insulator Problems Affected by Kind of Poles Used

In discussing transmission line insulation problems recently, A. O. Austin, chief engineer Ohio Insulator Company, said that it is advisable to remember that the relative cost of the insulator as compared with the remainder of the system is often under 3 or 4 per cent, and that there are only a few systems which could not afford to use more insulation, simply as a matter of good business investment in safeguarding their systems.

As the investment dependent upon the transmission line increases, greater expense will be warranted in the transmission line, and it is usually the best policy to use steel construction with ample insulation for the largest lines. It must be remembered, however, that a large expenditure in the line does not necessarily mean reliability, for if steel towers or structures are used in place of wood, the insulator must be very much larger to give the same reliability.

Unless the insulator is sufficiently large, a large investment might readily warrant the use of a wood pole line to gain greater reliability, as the greater reliability would more than offset the increased depreciation of the wood over steel construction.

Air Rectifier for Preventing Freezing of Brakes Adopted by Many Lines

The air rectifier, a device for preventing the freezing of air brakes, was described in the ELECTRIC RAILWAY JOURNAL for Jan. 1, 1916, page 50. Since that time a considerable number of railways in different parts of the country have used the device and the reports as to its effectiveness are sufficient to indicate that it provides a most satisfactory means of preventing freezing.

The device operates on the well-known principle that mixing a small amount of alcohol with water will greatly reduce the freezing point. The apparatus consists of a casting 12½ in. high by 4 in. in diameter, which is connected in the air-brake system, between the air reservoirs and the conductor's valve. This casting is filled with alcohol, and when the pressure in the air pipe is reduced a small amount of alcohol flows out into the air-pipe system. The device is particularly applicable to old cars on which there is insufficient space underneath the car to install a second air-storage tank to prevent freezing. When used instead of a second air tank, there is also a considerable saving in weight.

It is further reported that the small amount of alcohol which is injected into pipes upon each application of the brakes tends to cut any gummy formation in the valves, thus keeping them clean for a much longer period and necessitating less frequent inspection. The amount of alcohol, however, is not sufficient to affect the lubrication of the valves, as was suggested as a possibility by railway men at the time the device was brought out.

Some thirty companies are at present using one or more of these devices, among which are the Union Traction Company of Indiana; the Chicago & Joliet Electric Railway; the Chicago & Oak Park and the South Side Elevated lines in Chicago; the Aurora, Elgin & Chicago Railway; the Milwaukee Northern Railway; the Chicago, South Bend & Northern Indiana Railway, and the Twin City Rapid Transit Company. It is said that the Chicago Surface Lines have been licensed by the National Safety Device & Manufacturing Company to build the device in their own shops and that a large number will be used this winter.

Taking Care of Copper Busbar Expansion

To facilitate the determination of the amount that copper busbars and such structures will expand or contract due to temperature changes, the accompanying chart can be used. The chart is based on the varying coefficient of expansion for copper which has been established by the Bureau of Standards. The horizontal lines show the change in the length of a 100-ft. copper bus in tenths of an inch, while the vertical lines represent degrees either Centigrade or Fahrenheit according to which of the temperature lines is used.

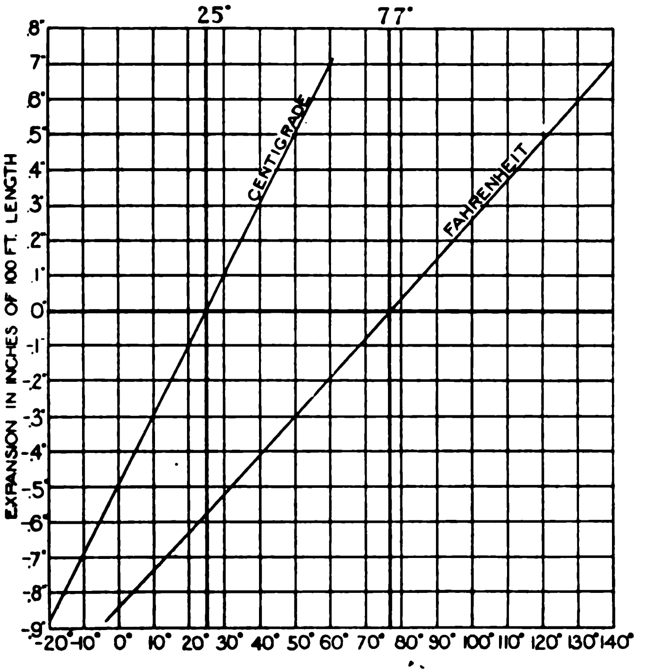
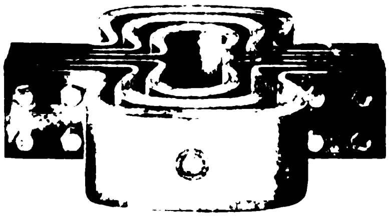


CHART FOR DETERMINING EXPANSION AND CONTRACTION OF COPPER BUSBARS

An example in the use of the chart follows: If the busbar is installed at 77 deg. Fahr. and the lowest temperature to which it will be subjected is 50 deg. Fahr., it will contract a maximum of 0.3 in. per 100 ft. of length. If the temperature increases to 130 deg. Fahr. the busbar will expand 0.6 in. per 100 ft. above its installation length. The total change in length for the 80 deg. change in temperature is 0.9 in. It should be added that the expansion determined from this chart is the actual change in the length of the copper and that this change is a little greater than the change relative to the structure on which the busbar is mounted. The supporting structure, of course, also expands and contracts with changes in temperature, but it is generally less affected by such changes and also responds much more slowly to variations in temperature than does the copper busbar.



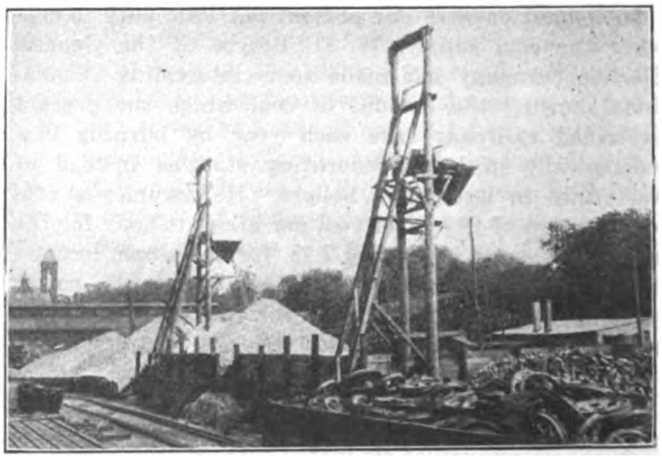
BUSBAR EXPANSION JOINT

The use of this chart has been suggested by the General Devices & Fittings Company, Chicago, Ill. This company has also developed the expansion joint shown above to take up the changes in busbar length. These joints can be bolted into the bus stack and cause no reduction in the conductance.

Hopper and Conveyor Facilitate Unloading Cars of Ballast

For unloading and piling ballast delivered in cars the Pittsburgh Railways have a rig consisting of a bucket running up an incline which leads from beneath the unloading track to a hopper at the top of a framework made of telephone poles. The ballast is dumped into the hopper and distributed through steel chutes, not shown in the picture, which can be moved properly to pile the ballast.

The cars of ballast dump into a specially built steel hopper underneath the track, where there is a chute which feeds the elevator bucket. This is raised and dumped automatically by a motor-driven hoist. The most difficult part of constructing this ballast-distributing apparatus was the necessary excavation underneath the track. This had to be large enough for both the steel hopper and the bucket, and the track had to be supported over them.



BALLAST-DISTRIBUTING RIG AT PITTSBURGH RAILWAYS' STORAGE YARD

Cost Data on Special Work Renewals—VI

By M. BERNARD

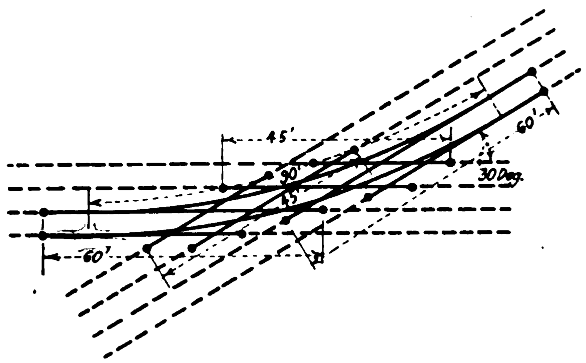
Assistant Engineer Way & Structures Department,
Brooklyn (N. Y.) Rapid Transit System

This is the sixth plate of the series of Cost Data on Special Work Renewals. The previous plates were published in the issues for July 21, page 108; Aug. 18, page 279; Sept. 8, page 406; Sept. 29, page 588, and Oct. 27, page 781.

Fig. 19—Single Track Outer Connecting Curve (30 Deg.)

Length—300 ft. single track

Construction removed—9-in. girder rail*—8-in. granite on sand.
New construction—9-in. girder rail*—8-in. granite on concrete.

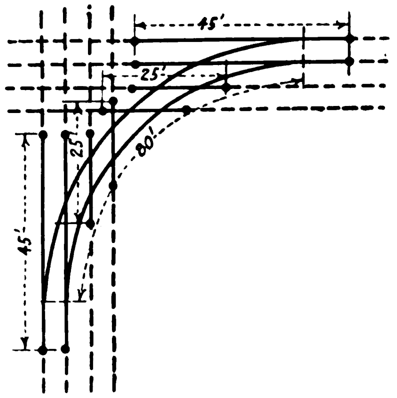


	Light Traffic	Average Traffic	Heavy Traffic
Labor	$550.00	$680.00	$820.00
Handling	220.00	245.00	285.00
Miscellaneous	130.00	155.00	185.00
Total (except materials)	$900.00	$1080.00	$1290.00
Cost per single track foot	3.00	3.60	4.30

Fig. 20—Single Track Outer Connecting Curve (90 Deg.)

Length—220 ft. single track

Construction removed—9-in. girder rail*—8-in. granite on sand.
New construction—9-in. girder rail*—8-in. granite on concrete.

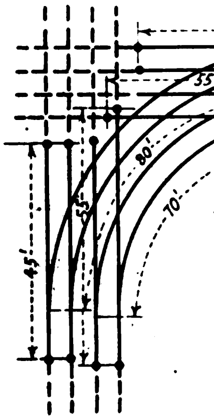


	Light Traffic	Average Traffic	Heavy Traffic
Labor	$380.00	$465.00	$560.00
Handling	150.00	160.00	175.00
Miscellaneous	75.00	90.00	110.00
Total (except materials)	$605.00	$715.00	$845.00
Cost per single track foot	2.75	3.25	3.84

Fig. 21—Double Track Connecting Curve (90 Deg.)

Length—350 ft. single track

Construction removed—9-in. girder rail*—8-in. granite on sand.
New construction—9-in. girder rail*—8-in. granite on concrete.

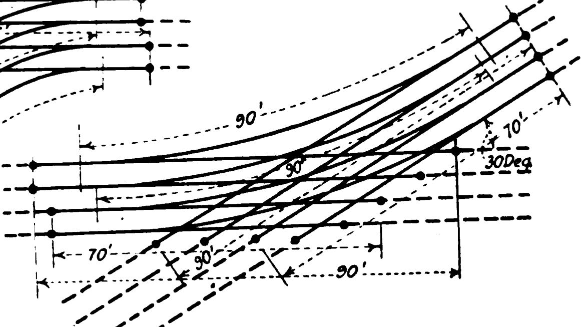


	Light Traffic	Average Traffic	Heavy Traffic
Labor	$600.00	$740.00	$890.00
Handling	215.00	240.00	265.00
Miscellaneous	105.00	130.00	155.00
Total (except materials)	$920.00	$1110.00	$1310.00
Cost per single track foot	2.63	3.17	3.74

Fig. 22—Double Track Connecting Curves and Crossing (30 Deg.)

Length—500 ft. single track

Construction removed—9-in. girder rail*—8-in. granite on sand.
New construction—9-in. girder rail*—8-in. granite on concrete.

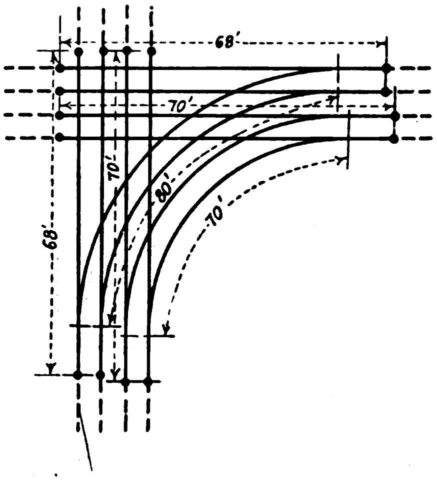


	Light Traffic	Average Traffic	Heavy Traffic
Labor	$930.00	$1160.00	$1390.00
Handling	370.00	400.00	430.00
Miscellaneous	200.00	250.00	300.00
Total (except materials)	$1500.00	$1810.00	$2120.00
Cost per single track foot	3.00	3.62	4.30

Fig. 23—Double Track Connecting Curves and Crossing (90 Deg.)

Length—426 ft. single track

Construction removed—9-in. girder rail*—8-in. granite on sand.
New construction—9-in. girder rail*—8-in. granite on concrete.

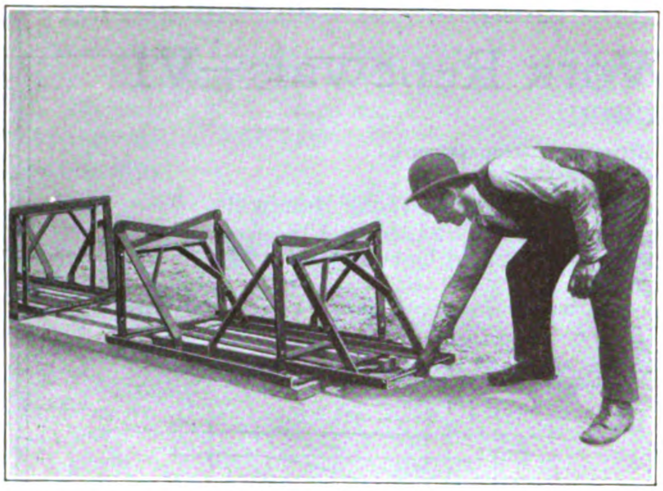


	Light Traffic	Average Traffic	Heavy Traffic
Labor	$830.00	$1040.00	$1250.00
Handling	275.00	305.00	335.00
Miscellaneous	140.00	175.00	210.00
Total (except materials)	$1245.00	$1520.00	$1795.00
Cost per single track foot	2.92	3.59	4.21

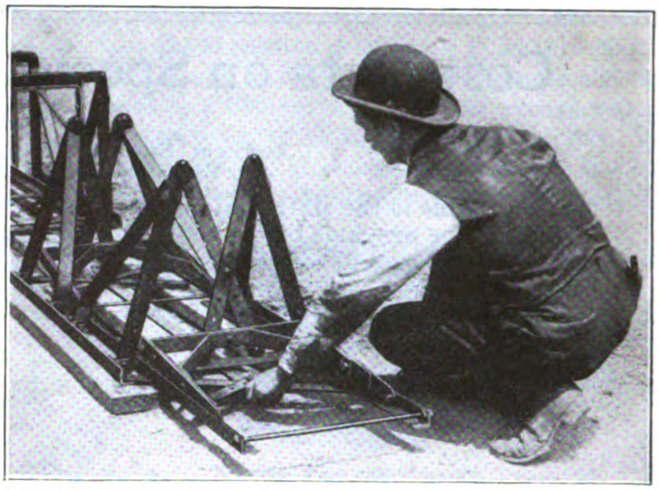
*Hard-center construction. *Explanation:* By "light traffic" is meant either the divergence of cars during progress of work, or a traffic of not more than 150 cars per day of twenty-four hours. "Average traffic" denotes the passage of about 325 cars per day of twenty-four hours, and "heavy traffic" that of 750 or more.

By "labor" is meant the labor cost of tearing out the old paving and special work and installing the new at the location where the work is done. "Handling" signifies the cost of loading the necessary materials at the various storage yards as well as the unloading of same at the place of renewal. It also includes the cost of transportation and the cost of removal of old or left-over material. Since the transportation is done by a subsidiary company, which adds profit and overhead expense to the net cost, this item may differ considerably from that obtained on other railways. Under "miscellaneous" are included the expense of city inspectors, expense incurred when portable crossovers are used for divergence of cars during renewal, watchmen's wages, and incidental engineering expense. The total of these three items—labor, handling and miscellaneous—therefore includes everything except the cost of materials.

On account of the unsettled labor conditions prevailing since the beginning of the war, the costs given are based on pre-war wages, the average track labor on which these costs are based is 20 cents per hour, including the foreman's wages.



PULLING BOTTOM BAR COLLAPSES FORM FROM THE TOP

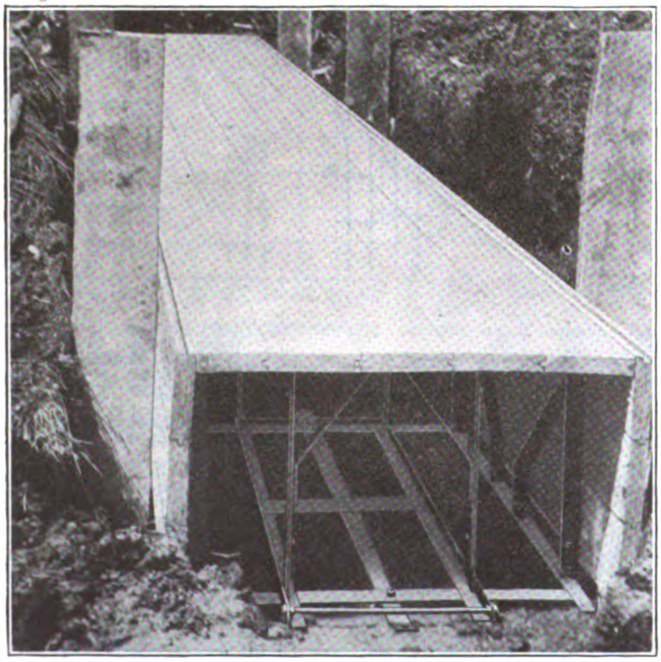


PULLING CENTER BAR DRAWS IN BOTTOM SIDE PIECES OF FORM

New Collapsible Culvert Form of Wide Utility

A new type of a collapsible form which by using two sizes will serve to build thirty-nine different culvert openings has just been brought out by the Storms Manufacturing Company, Chicago, Ill. This new form is constructed in sections 4 ft. long which may readily be handled by a single workman. By having a set of four sections culverts of any length from 4 ft. to 30 ft. can be built. By means of the smaller form culverts can be built with cross-sections ranging from 14 in. x 16 in. to one 22 in. x 28 in., while the larger size will make culverts ranging from 24 in. x 26 in. to 36 in. x 46 in. in cross-section. The length of the culvert to be built determines the number of the collapsible units and the spacing between them. The practice recommended by the manufacturer is a spacing of 4 ft. between forms, which may be varied somewhat to suit conditions.

One of the particular requirements for a culvert form is that it be rigid and strong, and in this respect it is claimed that these forms will bear up a thickness of fully 2 ft. of concrete mixture for the entire length of the culvert without sagging. This feature makes it perfectly safe to fill in over the concrete before it has set.



COLLAPSIBLE FORM IN PLACE WITH CASING BOARDS READY FOR CONCRETE

One of the particular features of the form is the ease with which it can be withdrawn after setting of the concrete. By simply pulling on the horizontal bar at the base of the form the framework is caused to collapse at the top, thus giving the necessary vertical clearance. Then by pulling the center bar extending through the bottom of the form, the cross pieces holding the bottom side members in position hinge at their central point and draw the side pieces toward each other. The form is thus completely released from contact with the sides and roof of the culvert, and may be readily pulled out of the opening.

In building a culvert of the box type the excavation is made and then the concrete base is laid. If this is allowed to harden before constructing the remainder of the culvert, the form may be placed directly on the concrete, otherwise this must be covered with lumber to prevent the form from becoming embedded and stuck in the base. The form is then adjusted for the size of the opening desired and it is set in place with the bracing legs which hold the form in rigid position and are pulled forward at the bottom in the direction in which the form will be removed just enough to bring them off center, so that the forms will easily trip when the time to remove comes. The forms are so constructed that they can be tripped from either end. By using a layer of light-weight building paper on the outside of the lumber casing the boards will remain perfectly free and clean when the form is removed and can thereby be more readily removed and kept in shape for reuse.

The Hutchinson (Kan.) Inter-Urban Railway is remodeling cars with the prospect of using them eventually in one-man car service. The right-hand front entrance and exit plan is being used and National Pneumatic door and step mechanisms are being installed. For the present the cars are manned by a motorman and conductor, both standing in the front vestibule. On the remodeled cars the ½-in. wooden body covering is being replaced with No. 12 gage steel. This will increase the total weight of the car about 800 lb.

News of Electric Railways

Traffic and Transportation

Financial and Corporate Personal Mention Construction News

St. Paul's Contract for Power

W. A. White Explains Some of the Workings of the Award Made by the Railroad to the Washington Water Power Company for Juice

Last fall the Washington Water Power Company, Spokane, made contracts with the representatives of the Chicago, Milwaukee & St. Paul Railroad for electric power for the trains of that company to be operated on the western extension of the present electric system of the road over the Rocky Mountains. In respect to this contract W. A. White, chairman of the finance committee of the Washington Water Power Company, who has been in Spokane, says:

"The Chicago, Milwaukee & St. Paul Railway contract calls for payments to begin on the contract on Nov. 1, although the railroad has not completed the work necessary to use the power. It stopped the work on that part of the line south of Spokane to put the men on the electrification through the Cascades. The greatest saving in operating by electricity is through the mountains. At the present cost of copper and other materials, as well as labor, the railroad can well afford to lose the interest on the payments its contract calls for if it saves the extra cost of construction under present conditions. When the electrification of the railroad through the Northwest has been completed the company will require more power than it has contracted for, and we expect the railroad to increase the amount it now has under contract with us.

"The construction of our proposed power line to Chewellah, 45 miles north of Spokane, is something still to be decided. I believe that present labor and materials expense make construction cost 40 per cent more than it will be four years from now. The demand for electric power from us in the Coeur d'Alene mines country is, I estimate, about 25 per cent more than it was a year ago. We expected that our new power line through the Fourth of July Canyon would be completed this winter, but it will not be. Construction work, however, will go on through the winter. It is difficult to say just when it will be completed."

Agreement in St. Louis

Proposed New Ordinance Considered Burdensome to the Company, but Public Hearings Will Begin

Richard McCulloch, president of the United Railways, St. Louis, Mo., and the public utilities committee of the Board of Aldermen on Nov. 2 reached an agreement on the proposed ordinance looking toward a settlement of the mill tax and franchise problems of the company. Mr. McCulloch filed a protest against some of the clauses in the bill, but announced that if the ordinance was passed by the Aldermen he would recommend to the stockholders and bondholders that it be accepted. Mr. McCulloch declared that he regretted the aldermanic committee had made material changes in the original ordinance and said that if the negotiations failed the responsibility would not rest on the United Railways.

The amendments agreed upon on Nov. 2 follow:

1. Reduction of the franchise extension from fifty to thirty-one years.
2. Reduction of capitalization of the United Railways to $60,000,000.
3. Agreement to sell to the city for $60,000,000 as the initial purchase figure, with allowances for moneys expended from the present time.
4. Agreement to pay the city 25 per cent of net profits above 7 per cent on $60,000,000, and 50 per cent on surplus profits above 8 per cent. This is in addition to payment of 3 per cent on gross earnings, which the company had agreed to in the first bill.
5. Agreement to let the city select any citizen to act on the joint board of control, instead of a man "skilled and experienced in the operation of public utilities."
6. Agreement to forfeit the franchise for failure or neglect to live up to franchise agreements, without making the city prove that neglect or failure was "willful."

In a statement which he read Mr. McCulloch said in part:

"We regret that your committee has found it desirable to make material changes in ordinances which we believe we could have persuaded our security holders to accept.

"If we fail in this effort to bring about a better understanding between the city and the railway and to obtain a workable and feasible plan of reorganization predicated upon a municipal ordinance, the responsibility should not rest on the railways.

"This company has done and will do its utmost to save this situation, but we cannot be so assured of a successful reorganization under the drastic changes now proposed by the city as we would be under ordinance No. 1 or No. 2 as originally drafted."

Public hearings on the measure as redrafted were scheduled to begin on Nov. 6.

Coal Shortage in Kansas City

Railway Service Receives Preference Over Demand for Current for Light and Power

The citizens of Kansas City, Mo., demonstrated during the last few days by their cheerful acceptance of hardships with reference to electric lights and power, their conviction that electric railway service is a paramount and practically indispensable adjunct of city life. The Kansas City Railways was short of coal and for several days was unable to supply current sufficient to run its cars and also to meet the need for lighting through the Kansas City Light & Power Company. It maintained nearly its normal schedules of traffic during morning and evening for this period, but cut off lights from homes and from power users.

The Kansas City Railways has had difficulty several times during the past year in getting coal. The situation became acute late in October, when expected shipments from Illinois did not arrive. Coal could not be purchased in the open market in adequate quantities. It became absolutely necessary to conserve the supply in order to avoid a complete shutdown of electric railway transportation. The railway supplies much current to the Kansas City Light & Power Company. For several months now large power users had been co-operating to minimize the loads at the peaks of electric railway travel, in consideration of the necessity of getting people home safely and promptly at night. When the situation grew more critical during the week ended Nov. 2 some nineteen industries suspended operations entirely on Saturday. The light company had for several days previous been cutting out current to various sections for short periods during the evening, no one section being without light more than an hour. On Friday and Saturday many sections were without electricity in the homes during the railway peak load of evening. Many merchants darkened their display windows and their electric signs from 5 p. m. to 7.30 p. m. With many families lacking coal, with little gas for lighting or cooking, and with electricity for cooking cut off at the dinner hour, there was considerable hardship, but it was suffered generally with cheerfulness because the people could get home. The railway had 120 cars of coal tied up that should have arrived on Nov. 3. Thirty-five cars arrived on Sunday, and the industries started up Monday, though still on curtailed schedules.

New Chicago Traction Drafts

Chicago Transportation Committee Orders Two Tentative Ordinances Drawn—Also Passes Resolution for Forced Extension of Surface Line on Street Now Occupied by an Interurban Operating Into the City

As reported in the ELECTRIC RAILWAY JOURNAL for Oct. 27, the City Council of Chicago, Ill., recently directed the local transportation committee to draw up an ordinance embodying the best opinion of the committee in the solution of the local transportation situation. At its meeting on Oct. 31 the committee passed a resolution instructing Walter L. Fisher, special counsel for the committee, to draw up two separate ordinances which could be placed before the committee as a basis of discussion and development of the final committee recommendations to the Council. One of these ordinances is to embody specifically the recommendations of the Chicago Traction & Subway Commission made in its $250,000 report last year.

The drawing of the second ordinance was proposed as an amendment to the original resolution calling for the drawing of the above ordinance, by the municipal ownership advocates in the committee. In the ordinance it is intended to include the recommendations of the traction and subway commission in so far as they can be carried out with the powers which the city already has, or, in other words, without any enabling legislation. The possibility of submitting either one or both of these ordinances to the people for referendum vote was discussed.

Another interesting resolution passed by the committee was one for a 3-mile forced extension during 1918 of the Chicago Surface Lines on Archer Avenue from Cicero Avenue to the city limits, a distance of 3 miles. The Chicago & Joliet Electric Railway now has an interurban line operating along the sides of this street between these limits and extending beyond the city limits to Joliet. People living in this vicinity, although within the city limits, are therefore now required to pay a 10-cent fare to come further into the city than Cicero Avenue, which is 5200 ft. west. The Chicago Surface Lines has been unable to come to an agreement to purchase this 3-mile section of the interurban line and operate it as a portion of the city property. The local transportation committee now proposes a forced extension of the surface lines down the center of the street. With such a line in service no one would pay 10 cents to the interurban to ride beyond Cicero Avenue when the distance on the city lines could be traveled for one fare. The franchise of the interurban company on this street has about fifteen years to run.

This resolution of the committee will have to be passed upon by the corporation counsel, drafted in the form of an ordinance and then passed by the City Council before it becomes an effective order.

Wages Increased in Atlanta

Georgia Railway & Power Company Announces Voluntary Increase of Two Cents an Hour to Help Meet the Higher Cost of Living

An increase in pay of 2 cents an hour for all motormen and conductors in the service of the Georgia Railway & Power Company, Atlanta, Ga., was announced a few days ago, to become effective on Nov. 1. The increase was voluntary on the part of the company. It will amount to about $60,000 a year. The schedule of wages per hour for motormen and conductors will be as follows: first year, 22 cents; second year, 24 cents; third year, 26 cents; fourth year, 27 cents; fifth year, 28 cents; sixth year and thereafter, 29 cents.

In a statement which it issued the company said: "The increase is made notwithstanding the fact that the net earnings of the company show a decrease, due to the high cost of all materials which it purchases, and high taxes, without any increase in the rate of fares.

"The increase is made, however, because of the increased cost of living to the men, and for the purpose of assisting them in meeting such increased living expenses."

What Portland Arbitrators Found

Statement of Majority of Board at Portland, Ore., Presented Substantially in Full

O. R. Hartwig and Thomas Roberts represented the majority of the board of arbitration whose award in the matter of wages for the employees of the Portland Railway, Light & Power Company, Portland, Ore., was referred to briefly in the ELECTRIC RAILWAY JOURNAL of Oct. 27, page 784. The minority report was presented by J. P. Newell. The findings of Messrs. Hartwig and Roberts follow substantially in full:

"1. That the employees are entitled to a living wage.

"2. That we agree with the Public Service Commission that the present wage paid said employees is inadequate and insufficient to meet actual living expenses during this period of unusually high prices.

NEW WAGE SCHEDULE

"3. That the scale of wages presented by the employees and embodied in the tentative agreement submitted by the employees to the company is fair and reasonable and should be adopted. Said scale for car men being as follows: For car men in the service of the company less than one year, 38 cents an hour. For car men in the employ of the company more than one year and less than two years, 40 cents an hour. For car men in the employ of the company for more than two years, 45 cents an hour.

"4. We agree with the findings of the Public Service Commission that inasmuch as the welfare of most of our citizens is affected by the street railway service, the present long hours of street railway employees are neither good for the men nor for the best interest of the public.

"5. We agree that eight hours should constitute a working day as adopted by the federal, state and municipal governments now prescribed on all steam rialroads and in nearly all industrial occupations.

"6. That in street railway operation it is impossible that all platform men should have a day's work in consecutive hours of employment. That the rush hours of traffic in the morning and evening hours, with lighter movement between, makes it necessary that the hours of employment of many platform men be spread over a period of from twelve to fourteen hours of the day.

"7. That from and after Nov. 15, 1917, actual working time in excess of eight and one-half hours shall be deemed overtime and paid for at the rate of one and one-half times regular pay.

"8. That inasmuch as some readjustment of service will be required we find that the fixing of elapsed time within which regular runs shall be completed should be determined by agreement between the association and the company on or before Nov. 15, 1917, and thereafter become a fixed rule, but no regular runs shall require more than fourteen hours and nine minutes of elapsed time.

AUTOMOBILES REDUCE REVENUES

"9. Owing to the large number of private automobiles in the city of Portland, the higher prices for materials and labor, the increase in charges imposed by the public and many other causes beyond the control of the company, the present revenue of the company is not sufficient to permit it properly to maintain the property, provide for its necessary depreciation, meet the expenses of operation, pay living wages and grant proper hours to the employees and also provide interest on the bonds which form a mortgage on the railway to the extent of approximately two-thirds of the present investment in the railway, as determined by the Public Service Commission.

"10. That in the revision of rates ordered by the Public Service Commission on Oct. 5, 1917, sufficient provision has not been made to meet the elements of cost set forth in paragraph nine hereof, or to provide any return to the stockholders of the street railway or to meet the increased expenses resulting from the wage adjustment approved by this board.

INCREASED FARES NEEDED

"11. That the rates of fare, based upon the valuation of the railway fixed by the Public Service Commission, should be sufficient to enable the company to discharge the elements recited in paragraphs 9 and 10 of these findings, including the wages and conditions for its employees approved herein, and the present rates of fare are clearly insufficient for this purpose.

"12. The agreement to arbitrate provides that the award of this board as to hours and wages shall continue in effect until June 30, 1918, with the provision, however, that the company may annul the award on Jan. 1, 1918, and cause said question to be resubmitted to arbitration. It is the hope of this board that fare adjustment will be made prior to said Jan. 1, 1918, sufficient to avoid any annulment of this award."

Messrs. Hartwig and Roberts commended highly the spirit of moderation and fairness shown by the officials of the company and the officers of the union in the negotiations.

OPINION OF MINORITY ARBITRATOR

Mr. Newell in presenting his minority report also expressed his favorable opinion along the same lines. He said that with the greater part of the findings of the majority of the board he was in hearty agreement. He differed, however, from the members of the majority in one important particular. He said that the company received the privilege, if the burden added by the findings of the board should prove oppressive, of setting aside the order after Jan. 1 and submitting the whole matter again to arbitration. He feared that if the necessity for the reopening of the question should arise the same conciliatory spirit might not again prevail. The employees, feeling that their objects had been attained and that they were permanently established in the enjoyment of more desirable conditions, would naturally be very reluctant to submit to an arbitration which might deprive them of any of these advantages. Mr. Newell said that he was desirous of prescribing such conditions as would avoid the necessity of any appeal from the award, but would automatically provide the means of any relief which the company might require. He feared that the added revenues would be inadequate to meet the increased cost of operation by establishing the eight-hour day. If that condition should be found to exist at the end of the experimental period, he said the schedule of hours should be lengthened and the hourly wage should be reduced so that while maintaining the approved standard of daily wages the expenses of the company should be reduced to a point where they could be met. He was of the opinion that the board should prescribe such a method so that there might be no necessity for a further recourse to arbitration.

COMPANY ENTITLED TO AT LEAST 6 PER CENT

Mr. Newell believed that the company should be entitled to retain its earnings without further adjustment of wages and hours or reduction in fares until its net earnings had reached the minimum of 6 per cent upon the actual value of the railway as determined by the Public Service Commission. He ventured the suggestion that when the company reached a point where its revenues provided the full cost of transportation and a minimum return of 6 per cent upon the investment there should then be a division of the surplus profits in which the public, the employees and the company should all participate upon an equitable basis.

Hearing on Philadelphia Lease

Public Discussion of Lease Terms Continues, with Prospect That Amendments Will Be Ready Nov. 23

Sidney M. Earle, chairman of the transportation committee of the United Business Men's Association, was the first to address the joint committee on finance and street railways of Councils of Philadelphia at the hearing on Nov. 2 in regard to the terms of the proposed lease of the high-speed rapid transit lines to the Philadelphia Rapid Transit Company. Mr. Earle declared that the organization he represented was of the opinion that the proposed lease fell short of fully protecting the city and the citizens from the payment of large sums of money unjustly and predicted the necessity of raising fares and possibly increasing taxes. He said that any lease covering a period of forty years and involving an expenditure of more than $200,000,000 and the collection of and disbursement of more than $2,000,000,000 should be drafted in unmistakable terms and be drawn without resource or reference to the 1907 contract.

C. Oscar Beasley, the second speaker, declared that before any lease was negotiated the 1907 contract should be so amended that the city would be relieved of part at least of the street repair burden. He declared that the Twining lease would perpetuate the evils growing out of the 1907 contract. He said that increased fares would retard the natural progress of the city and re-create the slums, while it would be a public crime to make up any deficit from the city treasury.

Col. Sheldon Potter, a representative of the city on the board of directors of the company, declared that he had been informed by Ellis Ames Ballard, counsel for the Philadelphia Rapid Transit Company, that the company did not want the Twining lease, but that it did want the Taylor lease, which was rejected by Councils. Dr. William Draper Lewis, the Mayor's special adviser in transit matters, read a formal statement at the conclusion of the hearing in which he declared that if for any reason Counsels or the company was unwilling to perfect and execute the lease on the general lines of the Twining proposal, such an attitude would probably result in independent operation of the high-speed lines and that independent operation would mean changes in the construction plan and program.

At the meeting of the committee set for Nov. 23 it is expected that Dr. Lewis will present the amendments to the Twining lease offered during the course of the hearings before the committee and those which Dr. Lewis and Director of City Transit Twining may deem necessary.

Key Route Wages Increased

Arbitration Board Gives Increase to Men in Employ of the San Francisco-Oakland Terminal Railways

An increase in wages totaling approximately $140,000 a year was awarded by the arbitration board on Nov. 2 to the 1100 motormen, conductors nad brakemen of the San Francisco-Oakland Terminal Railways, Oakland, Cal. Previous references to the formation and purpose of the board appeared in ELECTRIC RAILWAY JOURNAL of Sept. 1, page 365; Sept. 29, page 594, and Oct. 20, page 734. The new wage schedule decided upon by the board is to prevail for one year, when the matter will automatically come up for readjustment.

The board decided upon a rate of pay between that now in force and that demanded by the men. The men have been averaging about $3.50 for a ten-hour day. Under the new rate they will receive approximately $4 a day. The old scale on the Oakland Traction division starts at 30 cents an hour and increases to 40 cents an hour after ten years of service. The new scale ranges from 32 to 42 cents an hour with the maximum attained in five years. On the Key Route division the scale ranges from 38 to 42 cents an hour. All of the 102 men in this division, however, have been drawing the maximum rate. The new scale is from 43 to 45 cents an hour and on this basis all of the men will be on the 45-cent rate. The ten-hour day prevails on both systems.

ABNORMAL CONDITION MADE INCREASE NECESSARY

The main basis of the board's award was the abnormal condition prevailing. This the investigation disclosed caused an increase in the cost of living, amounting to 20 to 30 per cent for clothing and 67 per cent for food. The board took the view, however, that the new wage was a concern of the community as well as the company and that the company, because of the extra burden imposed upon it, should have the privilege of a rearrangement of its charges. Decision on this point, however, will rest with the State Railroad Commission. The decision of the board will be presented by the company in its hearing before the Railroad Commission on

Nov. 12 as additional evidence that there must be an immediate increase in passenger revenue. The new wage scale is to go into effect on Dec. 1 and will be paid without further discussion, pending the settlement of the application for increased rates which the company had filed with the Railroad Commission.

The rates of pay under discussion are as follows:

Division	Present Rate	Demanded Rate	Arbitration Rate
Oakland Traction:			
First six months	30	40	30
Second six months	30	41	32
Second year:			
First six months	31	43	34
Second six months	31	43	36
Third year	32	45	38
Fourth year	33	45	40
Fifth year	34	45	42
Key route:			
First year	38	51	43
Second year	40	53	44
Third year	42	55	45

Lee F. Laytham, president of the local division of the Amalgamated Association of Street & Electric Railway Employees, announced that the men would stand by the decision of the board, although the decision was for a rate much lower than the men had expected.

Reports on United Railroads

California Commission Reports to San Francisco Supervisors on Condition of Local Railway

The Railroad Commission of California on Nov. 1 made a report to the Board of Supervisors of San Francisco, Cal., on the financial condition of the United Railroads in response to the request made by the city on Sept. 17 during the strike of the trainmen of the railway. The report makes no recommendations and does not include a valuation of the properties of the company. The commission experts are working on a valuation in connection with another proceeding.

Average Pay Increased from 30½ to 55 Cents

The report shows that platform men of the company are being paid from $8 to $24 a week and that the average pay rose from 30½ cents an hour in 1916 to 55 cents an hour during August this year when the strike was on. The report also shows that during August of this year expenses exceeded revenue by about $200,000. During July the road made a profit of $200,000, so that the falling off in August was more than $400,000. The strike began on Aug. 12. No estimate is filed for September.

The company's balance sheet for Dec. 31, 1916, is included among the exhibits. It shows that the corporation values its road and equipment at $81,000,000.

The report shows that during 1916 the company paid $1,682,525 for 5,484,384 hours of work by platform men or an average of 30½ cents an hour. During the first six months of 1917 the company paid $865,111 for 2,691,623 hours or an average of 32 cents. During July this year the average was 33 cents and during August, including the eighteen days of the strike, the total was $164,978 for about 300,000 hours or 55 cents. The report says that the platform men are paid only for the actual running time of the cars, and receive no pay for the time they are waiting at the carhouse.

Eleven exhibits accompany the report including an analysis of the payroll for general officers; another of the payroll for platform men; a comparative statement of revenue and expenses from 1912 to date; an analysis of tax accruals; a statement of funded indebtedness, etc.

Report Made at Request of Supervisors

The Supervisors asked the investigation for the purpose of deciding whether the United Railroads was right in its statement that its financial condition prevented it from granting the demand of the men for an increase in wages and also for the purpose of deciding whether the city would be justified in paying the United Railroads' employees the same wage as the Municipal Railway employees should the city take over the lines. The report gives no answer to these questions but submits the data obtained. The report covers 113 typewritten pages.

Danville Men Receive Two-Cent Raise

By the terms of an agreement entered into between the employees and representatives of the Danville Street Railway & Light Company, Danville, Ill., Nov. 3, all conductors, motormen and carhouse employees will receive a wage increase of 2 cents an hour, dating from Sept. 17 and effective for one year from that date. After the settlement of the recent strike on this property, all working conditions were decided upon except that of wages. This matter was left to the decision of a board of arbitrators. The two members of this board to represent the company and the men were appointed, but upon their meeting to select the third member, there appeared a disposition on the part of both sides to settle the question without resorting to arbitration. The conferences which followed resulted in the agreement calling for an increase of 2 cents an hour, or 18 cents a day. An increase of 20 cents a day was allowed the employees in May and 15 cents additional in July of this year. All of these increases also apply to other city lines in this territory operated by the Illinois Traction System.

Sixteen Employees Apprehended

As a result of an investigation covering a period of several weeks, sixteen employees of the Danville company have been discharged from service. Warrants charging petty larceny have been sworn out against these men and the hearing for the first case is set for Nov. 6. It is alleged that the fare boxes of the company have been tampered with in various ways, and statements confirming the accusation are said to have been signed by several of the employees concerned.

Increase in Wages in Bristol.—The Trenton, Bristol & Philadelphia Street Railway, Philadelphia, Pa., announced that, effective on Nov. 1, a raise of 2 cents per hour above the present rate of wages would be paid to all employees of the company until further notice.

Interborough Bonus Increased.—The Interborough Rapid Transit Company, New York, N. Y., has increased the bonus of all workers who receive less than $150 a month from $3 to $6 a month. The $3 bonus was adopted in August. The increase in the bonus dates from Oct. 15.

No Wage Demand in Cleveland Until Next May.—No increase in wages will be asked by the platform men of the Cleveland (Ohio) Railway until their two-year agreement expires on May 1, 1918. This was decided at a meeting of the local branch of the Amalgamated Association held on Oct 25.

Further Montana Power Developments.—According to reports, a hydroelectric power plant at the Kootenai Falls, between Libby and Troy, Mont., generating 68,000 hp., is planned by the Montana Power Company, the current generated to be used in the electrification of a portion of the Great Northern Railway system.

Short Electrification Goes Over.—It is reported that the failure of the Caldwell (Idaho) Traction Company to dispose of $100,000 of bonds to provide funds for the purpose of electrifying its Wilder branch, and to make some extensions, means that these improvements will not be made until after the war or until such time as the money market improves.

Engineers' Country Club House Burns.—The club house near Roslyn, Long Island, of the Engineers' Country Club of New York was destroyed by fire last week. Fortunately the club has a building now on the grounds which is well located for club purposes. This building will be fitted up this winter and will be ready for the use of members as a club house in the spring.

Wages Increased on Portland Interurban Lines.—The Portland Railway, Light & Power Company, Portland, Ore., has granted an advance in wages to the employees of the interurban lines. The new scale is 41½ cents an hour for the first year, 43½ cents an hour for the second year, and 48½ cents an hour after the second year. There are 140 employees affected by the new scale. The eight-hour basic day will also apply to interurban lines.

Gradual Restoration of Service in Chattanooga.—The Chattanooga Railway & Light Company, Chattanooga, Tenn., the employees of which repudiated their contracts with the company and went on strike a second time on Oct. 16, is gradually restoring service and gives promise of an early return to normal conditions on its railway lines. The efforts of the company along these lines have been attended up to the present with only sporadic attempts at disorder on the part of the strikers or their sympathizers.

Seattle Wage Arbitrators Proposed to Meet on Nov. 5.—The board of arbitration appointed to settle the questions that led up to the strike of the trainmen on the lines of Puget Sound Traction, Light & Power Company, Seattle, Wash., and the Tacoma Railway & Power Company, Tacoma, planned to call a meeting on Nov. 5, following the return of Dr. Henry Suzzallo, chairman of the board, from the East, where he has been attending Eastern committee work connected with government war activities.

Chicago Council Invests Traction Fund in Liberty Bonds.—At its meeting on Oct. 22, the City Council of Chicago, Ill., approved a resolution presented by Alderman Henry D. Capitain, chairman of the local transportation committee, to purchase $2,000,000 of the Second Liberty Loan bonds from the moneys accumulated in the traction fund. This fund now amounts to more than $20,000,000. Mr. Capitain proposed a similar resolution at the time the first Liberty Loan was floated, but the finance committee did not report on it.

Increase in Wages in Trenton.—The Trenton & Mercer County Traction Corporation, Trenton, N. J., has announced an increase of 2 cents an hour in the wages of its motormen and conductors, dating from Nov. 8. Peter Hurley, general manager of the company, says the increase is due to the high cost of living and to encourage the men to help get all the company's cars into service every day. The men will now receive 31 cents an hour. Employees will now be required to present a doctor's certificate when they fail to report for work.

Police Employ Plain-Clothes Method.—Because the United Railroads, San Francisco, Cal., is now operating a non-union system, workers in union plants avoid using the cars as much as possible and have of late caused much disturbance by damaging company property. Anticipating the stoning of cars during the rush hour, a squad of twelve policemen in plain clothes recently mingled with the union workers returning from one of the shipyards and when a fusillade of rivets and bolts was directed toward a United Railroads car from the workers who had boarded a municipal car, twenty men were arrested upon the charge of disturbing the peace.

Increase in Wages of Southern Public Utilities Employees.—The Southern Public Utilities Company, Charlotte, N. C., has announced an increase of 9 per cent in the wages of its platform men, effective from Nov. 1. This is the third increase in the wages of the employees within the last twelve months, two others of about 5 per cent each having been made during that time. The new rate provides a wage of 18 cents for new men, to continue for the probationary period of three months instead of six months under the old scale. The rate for the second three months is 19 cents instead of 17 cents. The new scale reaches a maximum of 25 cents an hour for men who have been with the company five years as against 23 cents under the old schedule.

Increase for Illinois Traction Trainmen.—The Illinois Traction System, Peoria, Ill., has entered into a new one-year agreement with its interurban trainmen, who are members of the Brotherhood of Interurban Trainmen, which includes a wage increase of practically 7 cents an hour for trainmen on main lines and 6 cents an hour for trainmen on branch lines. The new scale will become effective on Dec. 1. Motormen and conductors on main line service will receive 40 cents an hour; on the Vermillion Heights line, 38 cents an hour, and on the Homer & Mechanicsburg line, 35 cents an hour. Brakemen on all lines will receive 30 cents an hour. The wages of the interurban trainmen were last increased about two years ago. The new agreement was reached without difficulty.

Liberty Loan Extra of Employees' Magazine.—The *Pacific Electric Magazine*, published by the Pacific Electric Company, Los Angeles, issued an extra number on Oct. 25 called the "Liberty Loan Extra." The issue contained eight pages devoted entirely to the second Liberty Loan. Among the articles contained in the issue were the following: "The Liberty Loan," by Paul Shoup, president of the Pacific Electric Railway; "War Taxes and the Second Liberty Loan," by S. A. Bishop, general claim agent; "Why I Am Buying Liberty Bonds," by F. L. Annable, superintendent; "Thrift and Liberty Bonds," by J. McMillan, general manager; "Our Duty," by Hon. William G. McAdoo; "Accrued Interest," "Liberty Bonds or Direct Taxes," "More Bonds and Less Blood," "A Short History of the First Liberty Loan" and "Resources of the United States."

Investigation of Strike Settlement Complaint.—Formal complaint made by members of the trainmen's union that the Twin City Rapid Transit Company, Minneapolis, Minn., is not executing the recent order of the Minnesota Public Safety Commission by which the trainmen's strike was ended has led to the appointment by the commission of an investigating committee. This committee is composed of the following: Rev. S. F. Kerfoot, president of Haline University, St. Paul; Mr. Norman, a St. Paul clerk, and Robert Jamison, former county judge in Minneapolis. Horace Lowry president of the company, welcomes a searching investigation and permanent settlement of the controversy. T. F. Shine, vice-president of the union, said he can see no reason for shifting the investigation to another body. The commission will not condone any violation of its order. The resolution read that all agitation ought to cease.

Agreement Reached on Seattle Bridge Operating Terms.—The Puget Sound Traction, Light & Power Company, Seattle, Wash., and the city of Seattle have come to an agreement by which the company may use the West Waterway bridge at West Spokane Avenue. The company has agreed to pay 6 per cent interest per annum on one-third the cost of construction of the span fully equipped, and to build its own approaches. A. H. Dimock, city engineer, estimates that the approaches will cost between $35,000 and $40,000. The company will also pay as its share of the depreciation one-third of the cost of the span in ten yearly installments. The company is to furnish power free for the operation of the bridge, and at 1 cent per kilowatt-hour for the operation of city-owned or other cars that may go over it. The city will condemn the west approach at the expense of the company. It is not expected that the railway will be in operation over the bridge before next spring.

Program of Association Meeting

Conferences on War Conditions

The Merchants' Association of New York has made arrangements for several conferences between the special commission from the British Ministry of Munitions now in this country and employers in New York City for the consideration of problems of employment caused by the war. In cities where similar conferences have already been held the questions and answers have brought out valuable information concerning changes in industrial processes made necessary by the utilization of underskilled in place of skilled labor, greater use of female labor in industries, methods of increasing the supply and efficiency of labor, differences arising between employer and employee, and similar problems. The conferences will be held at the offices of the Merchants' Association. Those of most interest to electric railway manufacturers and operators are scheduled as follows:

Tuesday, Nov. 13, 10 a. m.: Munitions, machinery, engines, boilers, motors, railway equipment and supplies.

Wednesday, Nov. 14, 10 a. m.: Traction companies, electric light, power and gas companies, steam railroads, express companies, telephone and telegraph companies.

The conferences are open to any manufacturer or other person interested.

The commission, two members of which will be in charge of each conference, consists of Sir Stephenson Kent, K. C. B., a member of the Council of the Ministry and director-general of the Labor Supply Department; H. W. Garrod, deputy assistant secretary of Labor Regulation Department; G. H. Baillie, chief technical dilution officer of the Labor Supply Department, and Captain Cyril Asquith, director of the Artificer's Allocation of the Labor Supply Department.

Financial and Corporate

Rate of Return Should Be Higher

Tightness of Money Market and Increased Operating Costs Justify Larger Returns on Utility Capital, Says Mr. Mortimer

In the opinion of James D. Mortimer, president North American Company, New York, N. Y., facts now justify a higher rate of return on utility capital than in the past. Mr. Mortimer's views on this subject were expressed at a recent hearing before the Missouri Public Service Commission in a St. Louis lighting subsidiary case.

When regulatory commissions some years ago announced that capital invested in public utilities was entitled to 7.5 per cent to 8 per cent per annum after providing for all ordinary operating expenses and future replacements, Mr. Mortimer said, the market for public utility securities rapidly expanded and strengthened. In arriving at a return of 7.5 to 8 per cent, it was reasoned that the bare interest cost of money was 6 per cent and that 1.5 to 2 per cent in addition should be allowed for profit. This return would probably have been sufficient in normal times for a utility enjoying a monopoly in a large city and with the equivalent of a guarantee that such return would be continued during both good and poor industrial conditions.

NEW MONEY COSTS MORE THAN UTILITIES EARN

The recent rise in the cost of labor and materials, however, has increased operating expenses at a rate much faster than any possible economies. To the utilities the purchasing power of money has decreased; their selling prices have been fixed, and they cannot procure increased returns except with the approval of the regulating commissions. This lack of stability in return and the hesitancy on the part of some commissions to authorize badly-needed increases in rates have made public utility investments far less attractive, and they have largely passed out, for the time being, from the conservative class. The inflation in values resulting from the enormous government borrowings is certain to remain during the war and is likely to continue for some years after its termination.

These facts, Mr. Mortimer believes, now place the junior securities of public utility corporations in the semi-hazardous class and justify the payment of a higher rate of return than has been the custom in the past. All interest rates are certain to attain and maintain themselves on a much higher level than during the period preceding the outbreak of the war. Permanent financing of public utility corporations is not possible at this time. Temporary financing by the sale of short-term notes secured by bonds in ample margin was possible up to a month or so ago, but the interest rate cost to the issuing company was 8 per cent or more. Thus new money cost a higher rate than the utilities were earning, and even then the amount of money that could be borrowed was very limited compared with the cost of the additions to physical property.

RETURN OF 10 TO 12 PER CENT NOT TOO HIGH NOW

At the present time, continued Mr. Mortimer, there is no market for short-term bond-secured notes even at high interest yields. The only method of financing now open is that of selling 7 per cent preferred stock to customers. The amount of money that can be obtained from this source is presumably limited. Mr. Mortimer added:

"A return of 10 per cent or 12 per cent would not be too high for public utilities during these times. Even these rates would not likely attract any large sum into the business during the continuation of the war, although they might be regarded as reasonable after the war's termination. The point to be emphasized is that pre-war standards are useless in estimating reasonable rates of return for public utility investments because the whole plane of interest rates and security yields has been very much elevated.

"In the long run, the utility jointly with the regulating commission should endeavor so to adjust rates that the actual rate of return earned on the utility capital will neither be higher nor lower than the cost of money to the utility. This we believe is the equitable viewpoint. It will assure the lowest rates consistent with fair cost and prevent speculation in securities of public utility corporations."

Annual Reports

Kentucky Securities Corporation

The combined income statement of the Kentucky Securities Corporation, Philadelphia, Pa., and its operating companies in Kentucky, exclusive of inter-company charges, follows for the fiscal years ended June 30, 1916 and 1917:

	1917	1916
Operating revenues	$912,540	$850,684
Operating expenses	480,265	438,162
Net operating revenue	$432,275	$412,522
Miscellaneous income	39,289	29,206
Gross income	$471,564	$441,728
Fixed charges	264,496	245,576
Surplus	$207,068	$196,152

The railway gross earnings of the subsidiary Kentucky Traction & Terminal Company in the last fiscal year reflected the generally satisfactory business conditions prevailing. The receipts showed an increase of 5.3 per cent. The number of passengers carried, including transfers, etc., were as follows for the last two fiscal years:

	1917	1916
Lexington city lines	4,507,286	4,389,905
Interurban lines	1,599,197	1,482,881
Other cities	438,324	497,054

The aggregate traffic, showing an increase of not far from 3 per cent, was secured without materially changing the number of car-hours or car-miles run. The present conditions indicate further improvements on account of prosperous local business conditions.

During the year just ended the operating companies spent $210,019 on new construction. Of this total $45,216 was for additions in the railway department and $20,878 for paving in this department. The new construction covered the necessary requirements of the increased business of the operating companies.

Under an agreement effective on July 1, 1915, 18.5 per cent of the total combined gross earnings derived from transportation of passengers and freight of all classes is applied, first, to motormen's and conductors' wages and, second, to the payment of damages, any remaining balance being divided among the trainmen. The balance so divided for the year ended June 30, 1917, was equivalent to approximately 1.5 cents an hour.

Melbourne Tramways

The traffic returns of the Melbourne (Australia) Tramways for the year ended June 30, 1917, are said to have been very satisfactory. There was a steady increase of both passengers carried and traffic receipts. The latter reached their maximum during March, when £77,274 were obtained, the greatest revenue earned in any month since the construction of the system. Notwithstanding the reduced fare paid per passenger, caused by the introduction of a cash fare of 2d. over most of the routes, the revenue per train-mile at 1.261d. exceeded that in any recent year.

During the last year the cost of operation rapidly increased, the expenditures being higher than ever before. The extra expenses were mainly caused by the increase of wages granted to employees and the enhanced cost of all material, stores, cables and fuel as a result of war and other conditions.

The traffic receipts during the last fiscal year were £841,784, and the total receipts £843,300. The working expenses amounted to £462,132, and after the transfer of £25,000 to renewal reserve and £100,000 to the reconstruction reserve, there remained a net surplus of £240,019. The number of passengers carried was 103,118,379, an increase of more than 7 per cent over the total for the preceding year. The operating ratio for the last year was 54.8 per cent. The average distance traveled per 1d. was 1.628 miles, and the rides per capita per year were 229. The average speed, including stops, was 9 m.p.h.

Service at Cost Proposed

At the hearing on Nov. 7 of the special Massachusetts legislative commission on street railway financial problems Homer Loring, representing the Association of Owners of Massachusetts Street Railway Securities, submitted a constructive plan for restoring the credit of the street railways of the State. He said that the present critical situation was inevitable, as a result of a fundamental weakness which started with the adoption of a 5-cent fare. The association proposes a service-at-cost plan which would give the public railway service at actual cost and insure invested money a reasonable return. An important feature of the plan as advanced is a reserve fund which would act as a barometer, and rise and fall as business varied. It is estimated that the owners of more than $60,000,000 of securities are included in the membership of the association which Mr. Loring represented.

Spokane Merger Apparently Off

No immediate plans are being made for the merger of the Washington Water Power Company and the Spokane Traction Company, as suggested by the Washington Public Service Commission early this year. This announcement was made at Spokane during the week ended Nov. 3 by W. A. White, New York, chairman of the finance committee of the Washington Water Power Company, who was in Spokane on his annual inspection of the company's Spokane property. Mr. White said:

"There is no question but that the plan would mean economy in operation and advantages for the public in more frequent service and universal transfers. I understand, however, that the Spokane Traction Company's status is such as to make it difficult for that company to work out a plan by which its lines might be consolidated with ours. When the time comes the Washington Water Power Company will probably form a separate corporation to take over the electric railway lines which it now operates and separate them from the light and power end of our business."

The railway lines of the Washington Water Power Company and the Spokane Traction Company, controlled by the Inland Empire Railroad, in Spokane, have been in competition for fourteen years. The first move toward their consolidation was made in January of the present year. Later a merger bill was passed by the Legislature and survived the time limit set for the Governor to accept or reject it. The merger negotiations were referred to in the ELECTRIC RAILWAY JOURNAL of Feb. 17, page 318, and April 7, page 664.

Removal of Railway Protested

Spurred by the Prospect of Losing Their Transportation Service Bowling Green Residents Act at Eleventh Hour

Men in the employ of Cal Hirsch & Sons, St. Louis, who bought the tangible property of the Southern Traction Company of Bowling Green, Ky., under foreclosure recently, have been stopped in their work of dismantling the system by injunction proceedings. These are directed against the several parties interested. It is pleaded that a public service corporation cannot at its option junk its property. The price realized at the sale is understood to have been sufficient to meet the payment on the bonds. Meanwhile citizens are agitating the project of obtaining by subscription a sum sufficient to purchase the property from the St. Louis house and keep their city railway. The manner in which Clarksville, Tenn., some time ago took over its property is being cited for Bowling Green's benefit.

Boise (Idaho) Railway.—Holders of the first mortgage 5 per cent sinking fund gold bonds of the Boise Railroad, Ltd., the predecessor of the Boise Railway, were ordered to present their bonds on or before Nov. 10 to H. E. Dalton, special master, for final cancellation, indorsement and pro rata payment of the amount distributed from the proceeds of the sale of the property under foreclosure recently.

Boston (Mass.) Elevated Railway.—At the meeting of the stockholders of the Boston Elevated Railway, on Nov. 5, Matthew C. Brush, president of the company, urged every stockholder to appear in person before the legislative committee investigating the railroad situation and give his moral support to the question of increasing the revenues of the company. The retiring directors of the company were re-elected. The stockholders authorized the issue of $2,000,000 of bonds to run for fifteen years at such rate of interest as may be determined by the board.

Chambersburg & Gettysburg Electric Railway, Chambersburg, Pa.—The Borough Council of Chambersburg, through the solicitor, presented a petition in Argument Court on Oct. 23, asking that Judge Gillan name a receiver for the Chambersburg & Gettysburg Electric Railway. The company has advised Council that it is unable to pay for its share of paving the streets of the town in which its tracks run, and this refusal, it is contended, forfeits the franchise rights in town and perhaps in the county. Twenty days' time was given to answer the petition. The protest of the company against the paving charges and the plans which it advanced for the settlement of the problem were referred to in the issue of the ELECTRIC RAILWAY JOURNAL of Oct. 13, page 695.

Lincoln (Neb.) Traction Company.—The Lincoln Traction Company has applied to the Nebraska State Railway Commission to issue $176,000 of additional 6 per cent preferred stock. The total authorized issue of preferred is $1,500,000. At the present time there has been issued and sold $1,186,700 of this amount. The new stock is to be sold to reimburse the company for extensions and betterments already made.

Northern Ohio Traction & Light Company, Akron, Ohio.—The Northern Ohio Traction & Light Company has applied to the Ohio Public Utilities Commission for authority to issue $1,532,000 of first mortgage 5 per cent bonds, to be sold at 85, and $500,000 of preferred stock, to be sold at par. The proceeds of these issues are to be used in paying for improvements made in 1916 and 1917.

Philadelphia (Pa.) Rapid Transit Company.—The Market Street Elevated Passenger Railway, the Union Traction Company and the Philadelphia Traction Company, constituent companies in the Philadelphia Rapid Transit system, appealed to the United States District Court on Oct. 22 for restitution of $73,768 and interest collected by William McCoach, former collector of internal revenue, under the excise tax law of 1909. The companies assert they are leased to the Philadelphia Rapid Transit Company, but maintain a corporate existence for the collection of rents and income for distribution among their stockholders. The government, it was claimed, levied taxes against the related companies for the years 1911 and 1912 on the ground that they were subject to the excise law. Counsel for the companies claimed the taxes were unjustly assessed, as the parties were acting under lease agreement and were not doing business under the provision of the excise tax law. Decision was reserved.

St. Louis, Lakewood & Grant Park Railway, St. Louis, Mo.—Bondholders of the St. Louis, Lakewood & Grant Park Railway filed suit in the St. Louis Circuit Court on Oct. 31, alleging that they have received no interest on their bonds since October, 1914. W. G. Carpenter, attorney for the bondholders, says the company operated two passenger cars until the floods of 1915 washed away a bridge over the River Des Peres. Traffic has not been resumed since then. The petition says some of the rails have been stolen and that little or no care has been taken of the company's property. The line extends from the end of the Cherokee line 4 miles into St. Louis County. The bondholders seek the appointment of a receiver to foreclose the mortgage securing the bonds and to sell the property for their benefit.

Steubenville, East Liverpool & Beaver Valley Traction Company, East Liverpool, Ohio.—The Steubenville, East Liverpool & Beaver Valley Traction Company has been incorporated under the laws of Ohio with an authorized capital stock of $4,500,000 as a consolidation of the Steubenville & East Liverpool Railway & Light Company, the

East Liverpool Traction & Lighting Company and the Ohio River Passenger Railway. The application to the Ohio Public Utilities Commission for permission for the consolidation and the terms of the proposal were referred to briefly in the ELECTRIC RAILWAY JOURNAL of July 7, page 34. The approval of the consolidation was noted in the issue for Aug. 4, page 203.

Electric Railway Monthly Earnings

Period	Operating Revenue	Operating Expenses	Operating Income	Fixed Charges	Net Income
AURORA, ELGIN & CHICAGO RAILROAD, WHEATON, ILL.					
1m., Sept., '17	$202,865	*$138,015	$64,850	$35,574	$29,276
1 " " '16	183,593	*124,894	58,699	35,935	22,764
9 " " '17	1,638,859	*1,165,943	472,916	321,659	151,257
9 " " '16	1,537,671	*1,021,229	516,442	326,495	189,947
BATON ROUGE (LA.) ELECTRIC COMPANY					
1m., Aug., '17	$18,122	*$9,772	$8,350	$3,606	$4,744
1 " " '16	17,352	*8,528	8,824	3,528	5,296
12 " " '17	225,492	*110,971	114,521	42,432	72,089
12 " " '16	207,284	*104,233	103,051	37,623	65,428
BROCKTON & PLYMOUTH STREET RAILWAY, PLYMOUTH, MASS.					
1m., Aug., '17	$15,509	*$11,605	$3,904	$1,252	$2,652
1 " " '16	15,933	*10,446	5,487	1,105	4,382
12 " " '17	125,442	*121,453	3,989	14,073	†10,084
12 " " '16	120,329	*103,765	16,564	13,242	3,322
CAPE BRETON ELECTRIC COMPANY, SYDNEY, N. S.					
1m., Aug., '17	$39,683	*$26,667	$13,016	$6,552	$6,464
1 " " '16	35,264	*19,185	16,079	6,568	9,511
12 " " '17	437,604	*266,661	170,943	78,718	92,225
12 " " '16	385,278	*225,932	159,346	78,532	80,814
CENTRAL MISSISSIPPI VALLEY ELECTRIC PROPERTIES, KEOKUK, IOWA					
1m., Aug., '17	$26,687	*$19,565	$7,122	$2,371	$4,751
1 " " '16	24,196	*17,081	7,115	2,014	5,101
12 " " '17	302,865	*210,995	91,870	25,796	66,074
12 " " '16	293,038	*190,390	102,648	23,220	79,428
COLUMBUS (GA.) ELECTRIC COMPANY					
1m., Aug., '17	$92,681	*$36,376	$56,305	$31,075	$25,230
1 " " '16	74,427	*29,465	44,962	28,654	16,308
12 " " '17	1,023,721	*388,162	635,559	347,146	288,411
12 " " '16	814,064	*339,132	474,932	344,091	130,841
COLUMBUS RAILWAY, POWER & LIGHT COMPANY, COLUMBUS, OHIO					
1m., Sept., '17	$949,881	*$244,555	$105,326	$42,209	$62,187
1 " " '16	289,975	*177,917	112,058	42,862	69,196
12 " " '17	3,884 890	*2,664,680	1,220,210	543,204	677,006
12 " " '16	3,426,016	*2,007,953	1,418,063	509,659	908,404
COMMONWEALTH POWER, RAILWAY & LIGHT SYSTEM, GRAND RAPIDS, MICH.					
1m., Sept., '17	$1,695,725	*$1,058,018	$637,707	$442,529	$195,178
1 " " '16	1,434,201	*799,304	634,897	421,048	213,849
12 " " '17	18,843,595	*11,290,067	7,553,528	5 178,205	2,375,323
12 " " '16	16,340,522	*8,746,988	7,593,534	4,961,774	2,631,760
CUMBERLAND COUNTY POWER & LIGHT COMPANY, PORTLAND, ME.					
1m., Sept., '17	$281,195	*$159,490	$121,705	$70,230	$51,475
1 " " '16	270,012	*155,575	114,437	69,098	45,339
12 " " '17	3,049,224	*2,001,371	1,047,853	814,815	233,038
12 " " '16	2,803,676	*1,701,853	1,101,823	802,307	299,510
EASTERN TEXAS ELECTRIC COMPANY, BEAUMONT, TEX.					
1m., Aug., '17	$79,889	*$45,938	$33,951	$12,419	‡$23,755
1 " " '16	71,088	*39,148	31,940	9,059	22,881
12 " " '17	916,137	*498,222	417,915	125,164	‡301,672
12 " " '16	813,903	*428,528	385,375	106,249	279,126
EL PASO (TEX.) ELECTRIC COMPANY					
1m., Aug., '17	$105,941	*$71,710	$34,231	$6,339	$27,892
1 " " '16	84,156	*78,121	6,035	4,919	1,115
12 " " '17	1,265,299	*760,604	504,695	61,913	442,782
12 " " '16	1,054,363	*603,227	451,136	54,883	396,253
GALVESTON-HOUSTON ELECTRIC COMPANY, GALVESTON, TEX.					
1m., Aug., '17	$183,597	*$116,715	$66,882	$37,907	$28,975
1 " " '16	168,724	*104,365	64,359	36,429	27,930
12 " " '17	1,976,953	*1,313,944	663,009	444,620	218,389
12 " " '16	1,935,343	*1,215,651	719,692	437,338	282,354
GRAND RAPIDS (MICH.) RAILWAY					
1m., Sept., '17	$114,773	*$73,920	$40,853	$18,219	$22,634
1 " " '16	111,638	*72,249	39,389	15,842	23,547
12 " " '17	1,308,439	*872,905	435,534	212,329	223,205
12 " " '16	1,279,977	*839,802	440,175	176,619	263,556
HOUGHTON COUNTY TRACTION COMPANY, HOUGHTON, MICH.					
1m., Aug., '17	$29,133	*$19,243	$9,890	$5,096	$4,794
1 " " '16	29,459	*16,327	13,132	5,241	7,891
12 " " '17	339,876	*203,514	136,362	61,950	74,412
12 " " '16	313,999	*175,833	138,166	65,042	73,124
JACKSONVILLE (FLA.) TRACTION COMPANY					
1m., Aug., '17	$53,176	*$36,982	$16,194	$15,815	$379
1 " " 16	49,422	*34,769	14,653	15,408	755
12 " " '17	663,524	*441,714	218,810	187,483	31,327
12 " " '16	617,874	*419,744	198,130	180,890	17,240
KEOKUK (IOWA) ELECTRIC COMPANY					
1m., Aug., '17	$21,479	*$15,920	$5,559	$2,319	$3,240
1 " " '16	19,794	*13,897	5,897	2,011	3,886
12 " " '17	242,986	*168,818	74,168	25,675	48,493
12 " " '16	239,139	*154,239	85,200	22,890	62,310

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*Includes taxes. †Deficit. ‡Includes non-operating income.

Traffic and Transportation

Car Safety Equipment Insisted Upon

Massachusetts Public Service Commission in Connecticut Valley Case Requires Safety Equipment on One-Man Cars

One-man cars will not be authorized by the Public Service Commission of Massachusetts unless such rolling stock is provided with the safety equipment now looked upon as standard for this class of service or with subsequent improvements upon present designs. This policy was made known by Chairman McLeod at a hearing in Boston on Nov. 8, when the Connecticut Valley Street Railway appeared before the board in behalf of a petition to obtain the commission's consent to the use of two one-man cars on the Millers Falls branch of the road. R. H. Holt of Gaston, Snow & Saltonstall, Boston, appeared as counsel for the company. John A. Taggert, Greenfield, Mass., its general superintendent, also took part in the proceedings.

THE COMPANY'S PLEA

Mr. Holt said that one-man cars had formerly been operated on the Millers Falls branch of the company's system until the commission ordered two-man service some time ago. At present traffic was lighter than formerly. The company had endeavored to obtain one-man cars from three manufacturers, but without success. Bids were in hand from the Wason Manufacturing Company, Brightwood, Mass.; the Osgood Bradley Car Company, Worcester, Mass., and the Laconia Car Company, Laconia, N. H., when the railway company was notified that the first two manufacturers must withdraw their tenders on account of entry into war material production for the federal government. The third company also withdrew its bids before the road acted upon the matter. Hence the railway company's officials sought permission to convert existing equipment into one-man cars, closing up the rear door and operating without the usual automatic safety apparatus. It was felt that the high initial cost of a new car provided with full automatic equipment was an obstacle to its purchase at this time. The management also desired to use a truck built in two sections in order to minimize oscillation, and felt that the trucks of some makers were not entirely suited to its conditions.

Chairman McLeod called upon George W. Bishop, chief of the commission's inspection department, for his opinion of the proposed use of non-automatic cars of the one-man type. Mr. Bishop discountenanced the use of such equipment. The chairman informed the petitioner that the board would hesitate to approve the operation of one-man cars without safety equipment and ordered the petition placed on file, pending further efforts on the part of the company to procure the necessary safety appliances. At the hearing the commission did not take the position that the company should purchase entirely new rolling stock units for the proposed service, but insisted upon the adoption of the full safety equipment in all rebuilt as well as in new rolling stock of the one-man type.

Appeal to Council for Fare Change

According to recent reports, Marshall P. Sampesell, president of the Seattle & Rainier Valley Railway, Seattle, Wash., formerly known as the Seattle, Renton & Southern Railway, will ask the Council of Seattle for relief from the franchise obligation requiring the sale of 4-cent tickets. In the event the City Council refuses to amend the company's franchise as it relates to car tickets, the company will still have the alternative of a petition to the State Public Service Commission. Amicable settlement of differences between the city of Seattle and the Seattle & Rainier Valley Railway recently has prompted the railway to ask the Council for relief rather than carry the matter to the Public Service Commission.

Passenger Profiteering

Short Shrift Likely for Passengers Who Seek to Evade War Tax on Their Car Fares

Interurban passengers between Alton, Ill., and St. Louis, Mo., who try to evade the war tax by paying their fare in installments will have to make explanations to the federal authorities. W. C. Myers, general superintendent of the Alton, Granite City & St. Louis Traction Company, has instructed conductors to report any case in which through passengers insist on paying their fare in amounts so small as not to be taxable. The one-way fare is 45 cents, and the 8 per cent tax applies to all fares over 35 cents. The tax on the 45-cent fare is 4 cents. Any passenger who pays fare to an intermediate point and then remains on the car and pays for the rest of the trip with the apparent intention of avoiding the war tax will be turned over to the federal authorities. The tax applies to single fares of more than 35 cents, but does not apply to commutation tickets or season tickets between St. Louis and Alton, which are sold by the electric railway and two steam railroads.

Unprofitable Lines to Go

Portland Company Makes Request to That Effect—Suggest Subsidy as an Alternative

F. I. Fuller, general manager of the Portland Railway, Light & Power Company, Portland, Ore., recently requested the City Council for permission to discontinue service on a number of short ends and stub lines in various districts of the city so that the cost of operation may be reduced. The discontinuance of these lines and a general reduction in service as planned are in accordance with the suggestions recently made by the State Public Service Commission when the company petitioned that body for permission to raise its fares to 6 cents. When he made the request to the Council Mr. Fuller stated that if his appeal was granted the company would be relieved of an expense of several thousand dollars a month.

In regard to a number of lines built to certain additions to the city and operated at a loss, Mr. Fuller said the company would refuse to operate such lines unless the real estate owners guaranteed the full expense of operation over the revenues received from their operation. Owners along the Kings Heights and Arlington Heights lines have already made such arrangements, and the owners of the Errol Heights line are negotiating to this end.

The City Council decided that it would go over the various lines which the company desires to abandon and hold a hearing later on the petition so that all parties interested would receive an opportunity to be present before any formal action is taken.

Traffic Studies in Connecticut

Utilities Commission Reports on Conditions in Waterbury—Traffic Expert Retained by Bridgeport Recommends Cars in Trains and Purchase of Light-Weight Cars

The Public Utilities Commission of Connecticut reported on Nov. 2 in regard to the inquiry made by it with respect to service and equipment furnished by the Connecticut Company on its Waterbury lines. The inquiry by the commission was made following a request of Mayor Scully. The commission visited Waterbury on Oct. 19. A meeting was held in the Mayor's office at which J. K. Punderford, vice-president and general manager of the company, was present. Mr. Punderford admitted that the service in Waterbury was lacking in some essentials, but said that this was due very largely to the abnormal industrial conditions with which the company was confronted. In its finding the commission said that in considering what is or would be reasonably satisfactory service certain unavoidable and abnormal conditions with which the company was confronted, particularly at Waterbury, should be taken into consideration. It did say, however, that these conditions should not prevent the company from having all cars in service in sanitary condition.

J. Peyton Clark, traffic expert, who was engaged recently by the city of Bridgeport to report on the service of the Connecticut Company in that city, presented a preliminary report to the Council on Nov. 5. Mr. Clark declared that the poles, wires and other property of the company were in a fair condition, but that better service could be given with more modern rolling stock. He reported that the suburban service was better than the city service, which failed to provide adequately for rush-hour demands. With respect to jitney competition, he said that the jitney could not exist on a 5-cent fare in a city where adequate electric railway service was in effect. He recommended a loop in Water Street to relieve congestion and suggested the operation of cars in trains during the rush hours. He urged an increase in the number of cars, and suggested the purchase of fifty light-weight cars at an approximate cost of $250,000. He is said to have declared that this expenditure for new cars would be returned to the company in six months' time by the saving which would be effected in operating costs and by the increased revenue which would result to the company.

Increase in Fare Postponed.—The proposed increase of fare on the Northern Massachusetts Street Railway, Athol, Mass., scheduled to go into effect on Nov 2, has been postponed until Dec. 1 by order of the Public Service Commission of Massachusetts. A hearing will be held at the office of the commission in Boston on Nov. 8.

Survey of Trenton Traffic Proposed.—The City Commission of Trenton, N. J., decided recently to employ experts to make a survey of conditions on the lines of the Trenton & Mercer County Traction Corporation. The report of the experts to the City Commission will be transmitted to the State Board of Public Utility Commissioners.

Connecticut Fare Hearing Postponed.—The hearing on the petition of the city of Hartford, Conn., for a reduction in the fare of the Connecticut Company from 6 cents to 5 cents, arranged to be held before the Public Utilities Commission of Connecticut on Nov. 12, has been postponed until Dec. 3 at the request of Corporation Counsel Cole of the city.

School Tickets Will Be Sold.—The Columbus Railway, Power & Light Company, Columbus, Ohio, has put on sale five-day-a-week school tickets, good on its Westerville interurban line. They will be on sale the last five days of each month and will be sold only to persons having credentials showing that they are connected with some university, public or private school.

Fare Increase Sought in Wheeling.—Application has been made to the Public Utilities Commission of West Virginia by the West Virginia Traction & Electric Company, Wheeling, for an increase in fare on the Elm Grove line from 5 to 6 cents. This will affect the line only between Wheeling and West Alexander. The company claims that the increase is necessary if it is to make the improvements desired by the public at the present time.

Dormitory for Bridgeport Men.—The Connecticut Company has opened a dormitory for its men on the spare list at Bridgeport and has taken out a permit to conduct a lodging house, in accordance with the State statutes. A large room has been set apart for this purpose at the Congress Street carhouse, and twelve white enamel beds for the use of motormen and conductors assigned to extra trips have been installed. No charge is made to the men for their night's lodging.

Rehearing in Jitney Bonding Case Denied.—Litigation in the fight of the jitney drivers of Seattle, Wash., to compel H. O. Fishback, State Insurance Commissioner, to issue to their mutual bonding company a certificate to do business without posting the necessary cash reserves required by law, was concluded recently when the Supreme Court at Olympia denied the jitney drivers' petition for a rehearing in the case. The court sustained the stand taken by Commissioner Fishback.

Believe in Electric Freight Transportation.—One of the planks in the platform of the Democratic candidates for freeholder in Bergen County, N. J., at the recent election was: "We believe that the electric railways of the State should be compelled to carry freight, at least during the war, under the direction and supervision of the Public Utilities Commission. This would enable the farmer to get his produce to the consumer in the cities quickly and cheaply. It would reduce the high cost of living."

Hearing on One-Man Cars Postponed.—The hearing on the petition of the Worcester & Warren Street Railway, Brookfield, Mass., for authority to operate one-man cars, scheduled to take place before the Public Service Commission of Massachusetts on Oct. 29, was postponed until Nov. 5. Officials of the railway appeared before the board to give their reasons why the road between Worcester and Warren should be allowed to use the one-man car, but the board was of the opinion that the road did not inform the public sufficiently of its intention to make a change in the service.

Ohio Company Appeals for Aid in Collection of War Tax.—In order that mistakes may be avoided in making change, due to the addition of odd cents for the war tax on interurban fares, the Northern Ohio Traction & Light Company Akron, Ohio, is appealing to the public through newspaper advertisements to buy tickets at the regular ticket offices, instead of paying fares to conductors. The advertisements of the company say: "It should be borne in mind that conductors have many duties to perform in addition to collecting fares and that when this part of their duty is lessened it enables them to give better service."

Interurban Tariffs Suspended.—The Public Service Commission of Oregon has suspended until Nov. 30 the tariffs filed by the Portland Railway, Light & Power Company, which were to have become effective on Oct. 30. The tariffs advance the freight rates 15 per cent on all class and commodity rates, and switching rates on the interurban lines. They also abolish the passenger transfer between the interurban and city lines, together with all commutation and round-trip fares. The latter fares were put in by order of the commission in 1911, and cannot be changed without a formal hearing, which will be set in the near future.

Utilities Need Not Advertise New Rates in Advance.—The Public Utilities Commission of Ohio has notified Governor James M. Cox that there is no law to compel utilities companies to advertise proposed increases in rates in local papers previous to filing them with the commission. Governor Cox had suggested that giving notice in this way thirty days in advance would afford full information to patrons, who could then have an opportunity to file objections. The commission may find a way around this by inserting advertisements on its own account. It is believed that the receipt of complaints or objections at an early date would facilitate the work of the commission.

Accidents in New York and New Jersey During October.—According to the report of the National Highways Protection Society, eighty-eight persons, of whom thirty were children, were killed by automobiles on the streets and highways of New York State during October. In New York City forty-two persons were killed by automobiles, five by surface cars and three by wagons, as compared with thirty-nine by automobile, four by surface cars and eleven by wagons in October, 1916. In New Jersey twenty-six persons were killed by automobiles, two by trolley and one by wagon. Twelve persons were killed at highway grade crossings in New York State and five in New Jersey.

Business of Motor Truck Extension of Railway Grows.—The Shelbyville & Mount Eden Motor Truck Company, originally designed as a freight transportation line to connect with the freight cars of the Louisville & Interurban Railway at Shelbyville, Ky., is now carrying passengers. In addition to a light passenger-carrying car which meets the passenger trains of the company, the freight trucks have been fitted with folding seats which let down from the sides of the car. Outgoing passengers or incoming passengers are picked up by the truck drivers and transported over the route for a nominal fare. With more than a year and a half behind it, the motor truck extension of the interurban line has proved that it meets a need. This concern is independent of the railway, but, having given a bond, it operates under a joint rate with the electric line. Sometimes three trucks are required to handle the business.

Personal Mention

E. S. Bigelow, secretary-treasurer of the Kansas City (Mo.) Interurban Freight Terminal Company, is secretary-treasurer of the Kansas City, Kaw Valley & Western Railway.

L. P. Baurhenn, superintendent of the Hudson division of the Public Service Railway, has been appointed to a similar position on the Essex division, with headquarters in Newark.

Elmer L. Williams, division superintendent of the Public Service Railway at Essex, N. J., will hereafter do special work connected with the office of the general superintendent at Newark.

A. P. McCullough, supervisor at the West New York carhouse of the Public Service Railway, Newark, N. J., has been appointed superintendent of the Hudson division to succeed L. P. Baurhenn.

Henry T. Ledbetter, for some time auditor of the Empire District Electric Company, Joplin, Mo., has been appointed auditor of the Toledo Railways & Light Company, Toledo, Ohio, to succeed C. E. Murray.

M. S. Sloan, upon his resignation as vice-president and general manager of the New Orleans Railway & Light Company, New Orleans, La., which was noted recently in these columns, was the recipient of a tea service and chest of solid sterling silver from the employees of the company.

W. E. Herring, industrial agent of the Puget Sound Traction, Light & Power Company, Seattle, Wash., has been elected chairman of the new industrial opportunities committee of the industrial bureau of the Seattle Chamber of Commerce and Commercial Club. The committee is composed of thirty-six men engaged in manufacturing and mercantile lines.

W. E. Grogman, freight agent of the Kansas City (Mo.) Interurban Freight Terminal Company, has been in railroad freight work for fifteen years. For the last ten years he has been with the Kansas City Terminal Company, the organization of railroads operating the Union Station, of which he has been chief clerk in the freight department for three years.

C. E. Murray, who recently resigned as secretary and auditor of the Toledo Railways & Light Company, Toledo, Ohio, was tendered a dinner at the Toledo Club on Oct. 25 by seventy-five company officials and associates. He was presented with a platter, on which the names of his associates were engraved. Mr. Murray will become secretary and auditor of the Empire Gas & Electric Company of Bartlesville, Okla.

J. R. Harrigan, general manager of the Kansas City, Clay County & St. Joseph Railway, on Oct. 31 was also elected president of the Kansas City (Mo.) Interurban Freight Terminal Company, the station of which was opened for business on Oct. 10 for use by the interurban electric railways operating into Kansas City. All the officers and directors of the terminal company are actively engaged in the interurban electric railway business. The stock of the company is owned by interests associated with two of the interurban electric railroads that enter Kansas City. Other railroads entering the city will use the terminal under lease.

C. F. Holmes, one of the directors of the Kansas City (Mo.) Interurban Freight Terminal Company, is president of the Kansas City-Western Railway, which position he has occupied since 1903, when he secured his interest in the property. He had previously for several years been general manager of the Metropolitan Street Railway, Kansas City, Mo., and had effected the consolidation of three groups of companies into the Metropolitan. Before that Mr. Holmes was connected with the Westport & Belt Railway, of which his father, Nehemiah Holmes, had been president. C. F. Holmes worked for the Westport & Belt Railway successively through the stages of horse, cable and electric operation, being general manager of the company through the last two periods.

J. F. Holman, vice-president of the Interurban Freight Terminal Company, is general freight agent of the Missouri Short Line. He started railroading fifteen years ago with the Hocking Valley line at Columbus, Ohio, as assistant receiving clerk in the freight department and advanced in the following three years through all positions. He then entered the office as bill clerk and later was promoted to rate clerk. He was with the Hocking Valley for six years. From that company he went to the Ohio Electric Railway as local freight agent at Columbus. Four years later, in 1912, he went to Kansas City and for three months he was in the rating department of the local freight office of the Santa Fé railroad. Subsequently he served three months as chief clerk and rate clerk of the joint offices at Kansas City of the Pere Marquette and Missouri & Northern Arkansas railroads. Mr. Holman's freight experience with railroads in the Kansas City territory prepared him especially well for the appointment he then received of general freight agent of the Kansas City, Clay County & St. Joseph Railway, the Missouri Short Line. Mr. Holman made the first tariffs for the company and has built up its freight business from the ground.

W. F. CARR

W. F. Carr, for the last seven and one-half years engineer of maintenance of way of the Chicago, Ottawa & Peoria Railway, Ottawa, Ill., included in the system of the Illinois Traction Company, has resigned to become engineer of the Chicago, South Bend & Northern Indiana Railway, South Bend, Ind. While acting as consulting engineer for all departments, he will have direct supervision of all roadway, track, bridges and buildings. Mr. Carr was born in 1881. He began his work in the railway field in 1897 with the Wabash Railroad serving successively in section work, as rodman and as transitman. He was employed as a transitman on the Frisco Railroad for a short period, and in all spent about eight and one-half years in the steam road field in various occupations connected with the roadway department. He began work with the Illinois Traction System eleven years ago, serving the first two years of this period as a transitman in making a resurvey of the entire system for record purposes. For the next three and one-half years he was employed as assistant engineer of the system, working under L. B. Martin and taking part in the construction of the line into St. Louis, and the Belt Lines in Decatur, Edwardsville and Springfield. Since April 1, 1910, he has been engineer of maintenance of way of the north property of the Illinois Traction System, the Chicago, Ottawa & Peoria Railway, in charge of track and roadway, buildings, bridges, overhead lines and signals. He continued in this position until the present time.

E. M. Walker, whose resignation as general manager of the Dubuque (Iowa) Electric Company was reported in the ELECTRIC RAILWAY JOURNAL for Sept. 15, has been appointed general manager of the Terre Haute division of the Terre Haute, Indianapolis & Eastern Traction Company. In this capacity Mr. Walker will have full charge of the electric lighting and power work in the city of Terre Haute and a number of suburban towns, the city railway system and certain sections of the interurban lines radiating from Terre Haute. In announcing Mr. Walker's appointment to the people of Dubuque, in which city he was formerly located, the local newspapers reviewed the many improvements installed under his direction, and had only words of praise for the manner in which he had managed the local property. They expressed great regret at the loss to the civic and social life of Dubuque as well as to the public service.

C. S. KEEVER

C. S. Keever, as noted recently in the ELECTRIC RAILWAY JOURNAL, has been appointed superintendent of transportation of the Union Traction Company of Indiana, with office at Anderson. As stated previously, he was the oldest division superintendent in point of service, having worked up through the ranks of the Union Traction System. Mr. Keever was born at Fountain City, Ind., in February, 1882. He entered the service of the Union Traction Company in 1901 as a conductor and was later appointed a motorman on one of the interurban lines. In 1903 he was made instructor of motormen and conductors for the entire system. The following year he became division superintendent at Tipton. He held that position until Jan. 1, 1907. Since that time he has been superintendent of the Muncie division, which office he has just relinquished.

Luke Grant has been appointed publicity manager of the Chicago (Ill.) Elevated Railways and the Chicago, North Shore & Milwaukee Railroad, both of which are under the management of Britton I. Budd. Mr. Grant has been connected with Chicago newspapers for more than fifteen years, during which time he covered much of the traction news in the city. He left the newspaper field three years ago to enter upon special investigation work for the United States Industrial Commission. Upon completion of this work and the discontinuance of the commission, he entered upon general publicity work for himself, handling among other campaigns the publicity for the Universal Military Training League. Mr. Grant has been editing the *Elevated News* since it was begun. He is now planning to bring out a new publication for use on the Chicago North Shore & Milwaukee Railroad which will be known as the *North Shore Bulletin*. This will be a monthly publication, as is also the *Elevated News*. A third publication which will be established is *The Safety Bulletin*. It will be issued for the company's employees to promote safety work. Both the *Elevated News* and the *North Shore Bulletin* will be for the use of the employees and the public. Mr. Grant was born in Scotland. He has been a resident of Chicago for more than twenty-seven years.

A. G. SNELL

A. G. Snell, who has been appointed division superintendent at Muncie for the Union Traction Company of Indiana, has been in railway work nearly twenty years, about fifteen of which were spent continuously with the Union Traction Company. He began in the shops at Muncie in 1898 and soon afterward became connected with the transportation department, which he served in various capacities. He was for six years following 1904 chief clerk to C. A. Baldwin, then superintendent of transportation of the Union Traction Company, and in June, 1910, was appointed division passenger and freight agent with headquarters in Indianapolis. He held that position for about three years, when he resigned to become superintendent of transportation of the Rockford & Interurban Railway at Rockford, Ill., in charge of the interurban divisions and the city lines in Rockford, Ill., and Janesville, Wis. He returned to the Union Traction Company on Oct. 1 of this year. Mr. Snell was educated at Culver Academy in Northern Indiana.

New Publications

Business Law for Engineers. By C. Frank Allen. McGraw-Hill Book Company, Inc., New York, N. Y. Cloth, $3.

This is an instructive as well as an entertaining book on the important fundamental features of law that an engineer should understand. The first section, dealing with elements of law, is a readable discussion from which the engineer can obtain a general idea of when and how to act for himself and when to seek expert advice. No attempt is made to list the exceptions arising under varying laws. The second part of the book deals with the writing of forms and other essentials of contract letting.

Transactions of the American Society of Mechanical Engineers, Vol. 38. Published by the Society, New York, N. Y., 1371 pages.

Electric railway men will find the following papers in this volume of the A. S. M. E. Transactions of special interest: "Standardization of Power Plant Operating Costs," by Walter N. Polakov; "Report Upon Efficiency Tests of a 30,000-Kw. Cross-compound Steam Turbine," by H. G. Stott and W. S. Finlay, Jr.; "Clasp Brakes for Heavy-Passenger-Equipment Cars," by T. L. Burton; "Mechanical Design of Electric Locomotives," by A. F. Batchelder. The paper "How Does Industrial Valuation Differ from Public Utility Valuation?" by John H. Gray, is also of interest to utility men in general.

J. E. Aldred Lectures on Engineering Practice. The Johns Hopkins Press, Baltimore, Md. 254 pages; paper, $1.

These lectures are the first series of a course of lectures established about a year ago in the department of engineering of the Johns Hopkins University. They are designed to present the essential features of the planning, construction and operation of modern engineering projects. This series contains nine lectures. Those of special interest to electric railway engineers and utility men are: "Some Things Engineers Should Know Concerning the Rudiments of Corporate Finance," by Ralph D. Mershon; "The Development of Power from the Standpoint of the Boiler Room," by C. F. Hirshfeld; "Rapid Transit Problems in American Cities," by George Staples Rice; "Some Practical Problems Met with in the Design and Construction of Bridges and Similar Structures," by W. W. Pagon; "Public Utility Engineering and Finance," by Herbert A. Wagner. Only a limited number of copies are available.

Lubricating Engineers' Handbook. By John R. Battle. J. B. Lippincott Company, Philadelphia, Pa. 333 pages. Price, $4 net.

To quote the sub-title of this work it is "a reference book of data, tables and general information for the use of lubricating engineers, oil salesmen, operating engineers, mill and power plant superintendents, machinery designers and others." It covers in a large number of short chapters the essentials of the subject, including briefly the characteristics of different lubricants, oil and grease testing, mechanical and lubricating data, and the application of the principles of lubrication to many different types of machinery. The economics of the subject are also briefly treated. One very short chapter is given to electric street and interurban cars. In view of the wide range of topics covered and the comparatively small compass of the book the treatment is necessarily somewhat superficial, but it contains a mass of hints and facts drawn from practice. It should, therefore, prove suggestive to every electric railway man who has to do with the lubrication of motors, compressors, machine tools, power-house machinery, etc.

According to the report of the railway bureau of the government-general of Chosen (Corea) for the year ended March 31, 1916, the open light railway and tramway lines at the end of the year had a mileage of 64.9, as compared to 44.5 miles the year before. A total of 144.4 miles are not yet opened. It is said that the results of traffic were very good, reaching 445,348 yen in total receipts.

Construction News

Construction News Notes are classified under each heading alphabetically by States.

An asterisk (*) indicates a project not previously reported.

RECENT INCORPORATIONS

***Empire State Railroad Corporation, Syracuse, N. Y.**—This company has been incorporated to take over, under the conditions noted in the ELECTRIC RAILWAY JOURNAL for Nov. 3, page 835, part of the property of the Empire United Railways, Inc., sold recently under foreclosure. Officers: H. S. Holden, president; Frank R. Ford, chairman of executive committee; J. C. Nelson, vice-president and general manager; H. J. Clark, treasurer; S. C. Stivers, secretary and comptroller; J. H. Yoder, auditor; H. C. Beatty, assistant secretary, and J. M. Hyland, assistant treasurer.

***Steubenville, East Liverpool & Beaver Valley Traction Company, East Liverpool, Ohio.**—Incorporated as a consolidation of the Steubenville & East Liverpool Railway & Light Company, the East Liverpool Traction & Light Company and the Ohio River Passenger Railway. Capital stock, $4,500,000. Incorporators: J. H. Maxwell, George H. Faulk and J. E. Delaney.

FRANCHISES

Baltimore, Md.—An ordinance has been introduced in the City Council of Baltimore to authorize the United Railways & Electric Company to construct a number of small sections of connecting and second tracks from one to six blocks long, also curves and switches to improve car service.

Boston, Mass.—The Public Service Commission of Massachusetts has granted permission to the Boston Elevated Railway to construct a loop at the new Everett terminal of its line.

Westfield, Mass.—The Turners Falls Power & Electric Company has received a franchise from the Selectmen of Westfield for entering Westfield and the privilege of selling power to the Springfield Street Railway. The line will be brought in from the Southampton line to the town dike and then proceed to the West Springfield line.

Walkerville, Ont.—Acting on the application of the Co-operative Essex County Hydro-Radial Association, the Ontario Railway Board has refused to sanction the by-law recently indorsed by the electors of Walkerville to allow the Sandwich, Windsor & Amherstburg Railway to make track extensions in Walkerville.

TRACK AND ROADWAY

British Columbia Electric Railway, Vancouver, B. C.—This company is reconstructing its track on Main Street between Seventh Avenue and Broadway with heavier rails. The cost is estimated at $6,000.

Key West (Fla.) Electric Company.—This company proposes to lay new rails on Eaton Street.

Georgia Railway & Power Company, Atlanta, Ga.—This company, which is now operating cars to Nancy's Crossing, ¾ mile south of the point where camp activities begin, has begun laying rails for the extension of its line along the western side of the Southern Railway to the remount station, directly across the railroad from Peachtree Road and the camp proper. Street car passengers will be discharged at a point directly in front of the old Georgia cavalry field, at which point a viaduct is being built to span the railroad tracks. By this method the company, in reaching Camp Gordon, does not cross the tracks of the Southern Railroad Company.

Joplin & Pittsburg Railway, Pittsburg, Kan.—Work on the final survey for the extension of the Joplin & Pittsburg Railway from a point 1 mile south of the Waco station to 1½ miles west has been begun. This line will serve three ore mills already in operation and several others now under construction, and will later be extended to Lawton.

Twin City Rapid Transit Company, Minneapolis, Minn.—Commissioner Oscar Keller has announced that the construction of all extensions of the Twin City Rapid Transit Company in St. Paul planned for this year have been completed and the lines are open for traffic. These extensions include that of the St. Clair-Hope line from Oxford Street to Fairview Avenue and the Payne Avenue line on Maryland Street from Forest Street to Duluth Avenue. A wye has been constructed on the Como-Harriet line at Eustis Street, which permits the turning of St. Paul-St. Anthony Park cars without their being run into Minneapolis. Next year the Mississippi line will be extended from Edgerton Street and Brainerd Avenue to Ivy Street, thence out Payne Avenue to the city limits; also it is hoped to have Margaret Street graded so that the St. Clair-Hope line may be extended from the present terminus at Atlantic and Fourth Streets up Atlantic Street and thence out Margaret Street to the city limits.

Kansas City (Mo.) Railways.—A new reinforced-steel and concrete viaduct will be built jointly by the city, the Kansas City Railways and various railroads at Twenty-third Street at an estimated cost of $600,000. The structure will connect with the viaduct built to the State line by the Kansas side. Howard & Ash, Kansas City, consulting engineers.

***Bowen Motor Railways Company, Omaha, Neb.**—Organized for the purpose of constructing and operating electric railways. Capital stock, $100,000. A. D. Bowen and Carl T. Self are interested.

New Jersey & Pennsylvania Traction Company, Trenton, N. J.—Permission has been granted to the New Jersey & Pennsylvania Traction Company to issue $50,000 in bonds to grade its road from Gladstone to Pitney.

Cincinnati (Ohio) Traction Company.—An effort is being made to secure the consents of the property owners on Elberon Avenue between Eighth and Warsaw Streets for the extension of the car tracks to establish the Warsaw-Elberon line.

Toronto (Ont.) Suburban Railway.—It is reported that an agreement has been reached between the Toronto Suburban Railway and Guelph Radial Railway for the installation of a service between the city and the military hospital located at the old prison farm. The agreement provides that the Toronto Suburban Railway shall be allowed to operate its cars along the city line to almost in front of the Royal Hotel, opposite the Grand Trunk Railway station. In return for this privilege it will be willing to allow the Guelph Radial Railway to operate cars on the Toronto Suburban tracks to the Military Hospital.

Essex Terminal Railway, Walkerville, Ont.—It is reported that this company is constructing an electric railway from Ojibway to Amherstburg.

Boyertown & Pottstown Railway, Boyertown, Pa.—A proposal has been submitted by the Boyertown & Pottstown Railway to the Town Council to connect its system with the Oley Valley Railway to Reading. It is proposed to do this by means of a loop on several streets.

Valley Railways, Lemoyne, Pa.—The construction of a terminal on Walnut Street and the double-tracking of its Walnut Street line is being considered by the Valley Railways.

Canton & Ohio River Railways, Pittsburgh, Pa.—Plans have been completed by the Canton & Ohio River Railways for the construction of its proposed electric railway. The line will extend from Canton, Ohio, to Kingwood, W. Va. The line will be built primarily as a freight line, but passenger trains will also be operated. The total trackage of the Canton & Ohio River Railways will be about 400 miles. The line as laid out from Canton to Kingwood will cover 180 miles, the remaining 220 miles will be given over to long sidings, spurs and yards. Power plants for the Kingwood division probably will be located at Cameron and Morgantown, although the decision of this matter has not been made definite, the engineers being still employed on their calculations to determine the most advantageous sites. On the Ohio side the substations probably will be located at Minerva, Carrollton, Toronto and Martins Ferry. The total cost of construction will be about $6,000,000. Parts of the line are expected to be in operation within six months. The entire road is scheduled for completion within eighteen months. James D. White, Pittsburgh, secretary and treasurer. [Aug. 11, '17.]

Montreal (Que.) Tramways.—The city of Montreal has asked the Quebec Public Utilities Commission to compel the Montreal Tramways and other companies to put all their wires underground in District No. 4, Montreal.

Quebec Railway, Light, Heat & Power Company, Quebec, Que.—The extension of the line of the Quebec Railway, Light, Heat & Power Company on St. Valier Street has been completed across the Canadian Pacific Railroad and is ready for operation. The proposed extension of the Belvidere line to Bells Hill and to a junction with the St. Valier line has not yet been begun. The contract calls for its completion by Sept. 1, 1918.

***Lewisburg Railway & Power Company, Lewisburg, W. Va.**—In order to prevent the sale and dismantling of the old Lewisburg & Ronceverte Electric Railway, which had been ordered by court decree, leading business men of Lewisburg and farmers of the territory concerned have organized the Lewisburg Railway & Power Company with an authorized capital stock of $50,000, to take over, rehabilitate and operate the line. A committee has been appointed to obtain a new charter. It is planned to extend the line from the corporate limits of Lewisburg into the heart of the town.

SHOPS AND BUILDINGS

Shore Line Electric Railway, Norwich, Conn.—A contract has been awarded to Peck McWilliams Company, Norwich, by the Shore Line Electric Railway for the construction of a new freight house. The structure will be 20 ft. x 60 ft., one story high.

Salina (Kan.) Street Railway.—A new carhouse is being constructed by the Salina Street Railway at the end of the West Walnut Street line. Heretofore the cars have stood out in the open when not in use.

Port Arthur (Ont.) Civic Railway.—This company proposes to construct a waiting room and shelter at its terminus at Port Arthur.

POWER HOUSES AND SUBSTATIONS

Pacific Gas & Electric Company, Sacramento, Cal.—It is reported that arrangements are being made by the Pacific Gas & Electric Company to discontinue the use of the old Newcastle electric power plant. Transformers are being installed at the Wise power plant in Auburn ravine below Auburn to take on the Auburn-Newcastle load. All distribution and power lines of the San Jose Railroads and the Peninsular Railway have been taken over by the Pacific Gas & Electric Company.

Connecticut Company, New Haven, Conn.—The Public Utilities Commission of Connecticut has approved the proposed method of construction of a transmission line from Station A of the Connecticut Company in New Haven to Middletown Avenue along private right of way and along and across highways in the town of North Haven.

Hattiesburg (Miss.) Traction Company.—In order to take care of the cantonment, the Hattiesburg Traction Company spent $11,000 on the construction of a 22,000-volt line 8 miles to Camp Selby. The company also constructed a temporary annex to its plant to house six 100-kw. transformers and made various improvements to its boilers and other equipment.

Hudson Power Corporation, Albany, N. Y.—A petition has been presented by the Hudson Power Corporation to the Public Service Commission for the Second District of New York for permission to erect electric power lines between Rensselaer and Poughkeepsie, to construct a generating station in Greenport and to exercise the franchise granted by the town of Greenport. The corporation is owned in third shares by the Albany Southern Railroad, the Central Gas & Electric Company of Poughkeepsie and the Upper Hudson Company. Its plans call for the lighting and supplying of power to virtually all the cities, villages and small towns along the upper Hudson and the Catskills. The company will also supply power to the Albany Southern Railroad. The entire development, including the power station at Greenport, will cost $1,000,000.

Manufactures and Markets

Discussions of Market and Trade Conditions for the Manufacturer, Salesman and Purchasing Agent

Rolling Stock Purchases Market Quotations Business Announcements

New England Roads Developing Interest in One-Man Cars

Demand for Railway Equipment Not Large, Although Routine Business of Considerable Volume Is Being Handled in the Supply Field

New England electric railways are deferring purchases as far as practicable at present, and little new construction is under way. The volume of traffic, however, is unusually heavy in the industrial districts, and if it were not for the high cost of operation, net earnings would be very satisfactory and would stimulate much-needed improvement work. Even the best properties are hard pressed to raise money for betterments of demonstrable economy. In the aggregate a large business of routine character is being handled in the supply field, for it is impossible to maintain safe service without substantial purchases of material. Manufacturers are feeling the effects of the war upon the labor supply, and priority considerations are naturally holding back deliveries through the diversion of material from industrial and railway orders to strictly governmental business. The passing of the Boston Elevated quarterly dividend this week reflects a situation which is more than local. The evils of jitney competition are being remedied to a considerable extent in outside cities, and the time appears ripe to acquaint the public as never before with the economic issues which the roads are facing.

Interest Centers on One-Man Cars

In the rolling stock field the New England roads are gradually developing a real interest in the one-man car. This section has been more conservative than the West and South in sensing the importance of this type of rolling stock in the present age of automobile competition and high operating costs, but prospects are improving. There is no doubt that the Sept. 22 issue of the Electric Railway Journal aroused more interest in the one-man car in New England than any previous influence, and at a meeting on Oct. 26 of the New England Street Railway Club in Boston an entire evening was profitably devoted to an excellent discussion of the subject. A report of this meeting appeared in last week's issue.

At the meeting it was announced that the Stone & Webster properties are to utilize one-man cars on a far more comprehensive scale than heretofore, although more than 300 such cars are now in service or on order. The Bay State Street Railway, also, hopes to install fifty such cars in the near future, and smaller properties like the Bangor Railway & Electric Company and the Brockton & Plymouth Street Railway have joined the list of purchasers or users. It is reported that the Concord, Maynard & Hudson is about to install such cars on its lines, and some of the smaller mid-State properties in Massachusetts are looking favorably upon these units. One manufacturer states that he is in a position to ship a number of these cars, completely equipped, from the Middle West by Feb. 1, 1918.

Other car business is rather quiet. Two large manufacturing plants are now actively at work on war orders. The Bay State company is receiving steady deliveries at the rate of one car per day on an order of 200 placed about a year ago with the Laconia company. Lumber, steel and labor supplies are considerably below normal in the car factories. Not a few managers in New England are considering the possibilities of rebuilding cars for one-man service, but little actual work has been done as yet.

Motor manufacturers are six to eight months behind on orders. The demand for car equipment is below that of a year ago, and renewal business is at present rather slow. Asbestos-insulated wire is in great demand, makers being four to five months behind in orders. Gears and pinions are behind on deliveries, the demands of war industry being abnormal. The temporary suspension of the Massachusetts car-heating law as a measure of fuel economy until Dec. 1 has accentuated the dullness in the car heater trade. Carbody accessories in general are rather quiet.

Patching appears to be the policy in both overhead line and track maintenance at present. A little new construction is under way, notably from Boston to the new destroyer plant under erection at Squantum, for war service only, and the Malden elevated extension of the Boston company is being carried forward. On most overhead line material deliveries are characterized as fair, say from three to four weeks, but insulators require four to five months. At present there appears to be little demand for rail bending, grinding or sawing machinery. Deliveries of three to four weeks are quoted on benders, and one to two weeks on rail braces. Spikes, bolts and joints require four or five months and demand is low at present. Prices on these appurtenances have risen from 50 to 75 per cent within a year.

In general, prices have undergone little change during the past month. The opinion is current that the top has been reached in most lines, and with a better understanding by the public of the cost and service equation the outlook should be more favorable for 1918.

Electrification After the War

National City Bank Expects It Will Be an Important Aid to the Economic Development of the Country

The bulletin for November of the National City Bank, devoted to economic conditions in this country, refers to the probable much greater use of electrical energy after the war as one of the important economic factors which will help then to make good the loss of capital and labor from the war, and will enable this country to take a long step toward the conservation of its natural resources. Some of the figures showing the saving on the Chicago, Milwaukee & St. Paul Railway, already published in this paper, are given, and C. A. Goodnow, F. H. Shepard, E. H. Sniffen, Samuel Insull and Thomas A. Edison are quoted on the advantages of supplying power from a central source instead of by numerous small units. According to Mr. Edison, it will be not many years before the public will hardly know what coal is. Its use will be segregated in vast power houses, and to the ordinary individual it will become a curiosity, as all users will obtain their light, power and heat from electrical distribution stations.

In the opinion of the National City Bank the vital problem at present is not how to divide up the production of to-day for consumption to-day but how to use the output of to-day to increase the production of to-morrow. This is the purpose to which all capital accumulations are put, whether they come from individual savings, accomplished by self-denial, or from profits in business. In the development of electric power the article sees an opportunity by which the world can put into effect new industrial economies. It quotes the fact that the development of the steam engine enabled England to withstand the cost of the wars with Napoleon and speedily enjoy a more widespread prosperity than the country had ever known before, and thinks there is good reason to believe that electricity can do now for this country what steam did then for England. Continuing it says:

"There is naturally a feeling of uncertainty and apprehension as to industrial conditions after the war. The demand for war materials will fall off, the supply of labor on the market will be greatly increased, and it is a question whether all of this labor can be promptly placed in employment. It will be the most stupendous reorganization of industry ever known, and it is going to be a great social problem to accomplish this change without confusion, loss of confidence, and a period of stagnation. It is important that plans be laid on a large scale to take up the slack, and other countries are laying them.

"In this country, ready at hand, is the task of equipping the railroads, and other industries where practicable, to operate by electric power. The undertaking would involve an enormous amount of work and of many kinds. Hydroelectric plants would require in construction a great amount of labor, cement, steel and heavy machinery. The demand for copper would take the place of the war demand for that metal, and keep the copper mines busy. The demand for electrical equipment of all kinds, including locomotives, would be very great, for the enlargement of the facilities for supplying electric power would cause electricity to be more generally adopted for all the industries. The amount of work in sight, if a general scheme of electrification was undertaken, would be sufficient to relieve the business community of its fears as to idleness and poor trade for some years to come, and would thus encourage other enterprises to go ahead.

"The danger will be in a pervasive feeling of uncertainty, causing men to wait with their own plans until they can discern the general trend, and waiting of itself slows down business. Large plans for the employment of labor which can be brought definitely forward at the critical time will serve to inspire confidence and support the whole situation.

"The strength of the proposal is in the great amount of work of a semi-public character which it is possible to have done, and which would not only tide the country over the period of industrial uncertainty, but serve to put the country's industries upon a more economical basis permanently. Any reduction in the cost of power will strengthen the country's position in the competitive situation after the war. Every saving of this character will lessen the necessity for wage reductions after the war."

Statements of this kind, coming from the National City Bank, are most significant.

Apparent Shortage in Lamps Only Temporary

Investigation Reveals That, Although Stocks of Standard Sizes Are Larger than Normal, Local Pressure Is Very Acute

Reports of a shortage in lamps in certain sections of the country, particularly in the New England States and the Pacific Northwest, have led to a careful investigation. It appears that there is no valid reason for this unless it is transportation difficulties, and if stocks in the hands of the trade have been exhausted, as advices state, it is only a temporary condition and will soon right itself. An inquiry at one of the larger lamp works brought out the statement that present business is so heavy that no reserve stock in standard sizes can be accumulated.

On standard sizes of lamps there is also a 25 per cent increase in the specifications of jobbers and dealers over last year. The stock of lamps on hand with this manufacturer is on the whole the largest it ever has been and deliveries are being made in from three to four weeks. In some sizes deliveries can be made immediately, in others the delays vary.

Another manufacturer reports a very large stock in all its many warehouses in the standard sizes. One of its Eastern warehouses, in fact, asked that shipments be discontinued for a time as there was no more storage room available and the street was being utilized.

As a matter of fact, the lamp factories are in a strong position considering conditions, and stocks are relatively as ample as last year. The prohibition of lead in the manufacture of either bulbs or lamps is in no way acknowledged at this plant. While the quantity of the metal in the glass is so small as to appear almost infinitesimal, the base of the lamp contains 80 per cent lead, and it was stated lamps cannot be made without it. Owing to the war some chemicals coming from Germany were shut off completely, but with lively work on the part of American chemists a domestic product was evolved, so that the glass-bulb factories will be independent of Europe for all future time.

If there is an apparent shortage in 25, 40, 50 and 60-watt lamps, it is ascribed to the acute pressure for these sizes at the army cantonments and naval bases. In the Pacific Northwest, owing to the enlarged shipyards and the increased number of lumber camps, in which the operations are not only greatly expanded but work is being carried on continuously, the stock of lamps in the hands of the local trade has doubtless been exhausted; but the manufacturers state that there is no reason for uneasiness. The shortage is temporary only. The method of keeping up stock with jobbers and dealers is such that any serious curtailments, as in these cases, is quickly looked after and the remedy applied.

To sum up, the supply is satisfactory. The trade is advised that in placing orders requirements should be anticipated as much as possible, at least three weeks in advance. Labor conditions, raw material and freight congestions should all be considered, in justice to the manufacturer. Agents, jobbers and dealers ought to know and should see that the records of the different types of lamps are properly assorted. So far no hoarding is reported, and the factories are prepared to prevent it if such an emergency arises.

Movement to Dispense with Trade Holiday Cards

Even if not for business, certainly for patriotic reasons in conserving the supply of materials and utilizing labor to the best advantage, many economies are finding their way into commerce. One of the latest, a movement started in Chicago, is to dispense with Christmas and New Year's business greetings this year.

Ordinarily several hundreds of thousands of dollars are spent each year by business houses and manufacturers in these seasonable greetings. The Chicago firms with whom the idea originated of breaking the custom this year have decided to contribute the money that they would ordinarily spend in this manner to the Red Cross or other relief organizations where it will do real service.

The saving in labor and materials, if a sufficient number of organizations follow this plan, will be considerable, in addition to lightening the burden on the post office. In this latter case the requirements of the National Army has reduced the number of employees seriously. Any way in which the burden on this smaller force can be lessened, especially at a time when the holiday rush is on, will help the delivery of more important mail.

Market for Badges, Numbers, Buttons, Caps, Etc.

With the departure of trainmen for military service an active market for badges, numbers, buttons, uniform caps, and similar paraphernalia was looked for. Manufacturers and suppliers in the East are not noticing any indications of an increased demand or even an unusual inquiry. Government orders are large, in cases taxing the capacity of the manufacturers. Prices have not changed recently, but may, without notice, according to conditions in metals. Business placed through official channels is taken care of so far as regards the supply of raw material by governmental provision.

Notwithstanding the pressure to fill the contracts awarded by the War Industries Board, deliveries to the regular trade are not delayed beyond three weeks or a month, as against a week or ten days in normal times. In common with other lines it is believed peak prices have been reached for material. Brass, an important item in this branch of the railway supply trade, has dropped a few cents a pound, and there are hopes of it going lower. Aluminum, another almost indispensable article, is higher but steady, a situation commented upon favorably.

ROLLING STOCK

Little Rock Railway & Electric Company, Little Rock, Ark., has purchased six second-hand cars.

Butler & Grove City Railway Company, Grove City, Pa., will be in the market for one and possibly two gasoline motor cars by Jan. 15 or sooner.

TRADE NOTES

H. F. Bardwell has been appointed district manager with offices at 30 Church Street, New York, N. Y., for the Vanadium-Alloys Steel Company of Pittsburgh and Latrobe, Pa.

National Railway Appliance Company, New York, N. Y., has been appointed representative of the Valley Steel Company, East St. Louis, Ill., for the Eastern and Southern territory.

Page & Hill Company, Minneapolis, Minn., announces that J. E. Lynch of its staff is at present acting as general superintendent of stores for the American International Shipbuilding Corporation at Philadelphia, and that it has added J. D. Milburn to its staff.

Arthur E. Allen, manager of the supply department in the district office of the Westinghouse Electric & Manufacturing Company, New York, N. Y., who is a Canadian, has resigned to join the Royal Engineers. His successor is Charles E. Stephens, formerly in charge of the illumination and rectifier section at East Pittsburgh, Pa.

Page Steel & Wire Company, Monessen, Pa., and **Adrian, Mich.,** announces a change of corporate name from that of the Page Woven Wire Fence Company. The company has opened a branch office in Pittsburgh, Pa., at 644 Union Arcade, where E. C. Sattley, general manager, will be located; but correspondence for various departments should be addressed as heretofore.

George A. Paff, formerly superintendent of the rod and wire mills at the Aliquippa works of the Jones & Laughlin Steel Company, is now general superintendent at the Monessen works of the Page Steel & Wire Company. Mr. Paff served in the former capacity eight years and previously was superintendent for five years in the rod and wire mills at the Sharon works of the American Steel & Wire Company.

General Electric Company, Schenectady, N. Y., is publishing as a supplement to the *General Electric Review* for November a "Roll of Honor," giving the names of its employees who have entered the military or naval service of the United States as reported to the editors up to the time of going to press. The list occupies twelve pages and approximates about 120 names per page. The department occupied by the employee while with the General Electric Company and the branch of the service in which he is now engaged are mentioned.

Ford, Bacon & Davis, New York, N. Y., are giving special attention at present to the appraisal of industrial and other property, especially for the purpose of war tax returns. The war profit tax section of the war revenue bill just enacted by Congress requires the determination of invested capital, fixing not only the exemption of earnings but also the actual tax. The long experience of this firm with appraisals of all kinds and its trained staff of engineers, accountants and other technical experts seem peculiarly to fit it to make appraisals of industrial and other plants to meet the provisions of war tax legislation and for the usual commercial purposes.

New York Municipal Railway Corporation, Brooklyn, N. Y., the subway title of the Brooklyn Rapid Transit Company, is equipping its steel subway cars with the "Rico" sanitary steel car strap, manufactured and furnished by the Railway Improvement Company, New York, N. Y. The work of installation is under way in the Brooklyn company's shops, and the last of 1600, the first lot ordered, have been about delivered, and were used in fitting up forty cars —forty to each car. An additional order for 20,000 was placed, and these will be installed following their delivery, which will not be before March, 1918. Altogether 500 new cars are to be equipped, and later possibly 200 more. The cost of the "Rico" white porcelain enameled glazed hanger "straps" and that of their installation will be $125 a car, a total of $62,500 for the equipment. The Public Service Commission for the First District of New York originally suggested the improvement and subsequently the application of the company to that effect was approved. There is a further possibility, it is reported, that the Brooklyn Rapid Transit Company's elevated railway system may be equipped in the same manner at a later day. New York Municipal Railway Corporation will install the Johnson fare box on the stations of its subway system when the section between Fourteenth and Forty-second Streets, New York, N. Y., is completed. It has been thought the construction work on the road and stations would be finished about the first of the year; possibly before. At any rate the National Railway Appliance Company, New York, with which the order was placed, will have the boxes ready for delivery and installation whenever the company is in a position to accept them.

NEW ADVERTISING LITERATURE

Utility Fittings Company, Philadelphia, Pa.: A resale sheet dated Oct. 1, 1917, descriptive of its approved ground clamps, is being distributed.

Crouse-Hinds Company, Syracuse, N. Y.: Bulletin 1D, describing the company's new safety panel and cabinet, will be forwarded to applicants free of charge.

Titanium Bronze Company, Inc., Niagara Falls, N. Y.: Illustrated pamphlet describing the properties and uses of the company's product, aluminum bronze.

Benjamin Electric Manufacturing Company, Chicago, Ill.: General catalog No. S-2, descriptive of Benjamin-Starrett panelboard cabinets, has been published by the company.

Worthington Pump & Machinery Corporation, New York, N. Y.: Snow oil pumps are illustrated and described in bulletin No. S-112, prepared by the Worthington company for trade use.

National City Bank, New York, N. Y.: "Property Rights and Trade Rivalries," an address delivered by George E. Roberts, assistant to the bank's president, reprinted for free distribution.

Chicago Flexible Shaft Company, Chicago, Ill.: The Stewart handy worker, a device which comprises drill press, a vise, pipe vise, anvil, metal cutter and a substantial three-speed machine, is illustrated and described in a folder distributed by the company.

NEW YORK METAL MARKET PRICES

	Oct. 31	Nov. 7
Prime Lake, cents per lb	23½	23½
Eleectrolytic, cents per lb	23½	23½
Copper wire base, cents per lb	31	31
Lead, cents per lb	5¾	6¼
Nickel, cents per lb	50	50
Spelter, cents per lb	8	7.87½
Tin, Straits, cents per lb	66	68
Aluminum, 98 to 99 per cent, cents per lb	34	35

OLD METAL PRICES—NEW YORK

	Oct. 31	Nov. 7
Heavy copper, cents per lb	23½	22
Light copper, cents per lb	20½	19½
Red brass, cents per lb	18	17½
Yellow brass, cents per lb	16	16
Lead, heavy, cents per lb	7	4¾
Zinc, cents per lb	6	5¾
Steel car axles, Chicago, per net ton	$41.00	$41.00
Old carwheels, Chicago, per gross ton	$27.00	$28.00
Steel rails (scrap), Chicago, per gross ton	$35.00	$33.00
Steel rails (relaying), Chicago, per gross ton	$55.00	$55.00
Machine shop turnings, Chicago, per net ton	$15.50	$16.00

RAILWAY MATERIALS

	Oct. 31	Nov. 7
Rubber-covered wire base, New York, cents per lb.	34-35	34
Rails, heavy, Bessemer, Pittsburgh	$38.00	$38.00
Rails, heavy, O. H. Pittsburgh, per gross ton	$40.00	$40.00
Wire nails, Pittsburgh, per 100 lb	$4.00	$3.50
Railroad spikes, 9/16 in., Pittsburgh, per 100 lb.	$5.50	$5.50
Steel bars, Pittsburgh, per 100 lb	$5.00	$5.00
Sheet iron, black (24 gage), Pittsburgh, per 100 lb.	$7.55	$5.80
Sheet iron, galvanized (24 gage), Pittsburgh, per 100 lb.	$5.85	$4.85
Galvanized barbed wire, Pittsburgh, cents per lb.	4.85	3.95
Galvanized wire, ordinary, Pittsburgh, cents per lb.	4.65	4.35
Cement (carload lots), New York, per bbl	$2.22	$2.22
Cement (carload lots), Chicago, per bbl	$2.31	$2.31
Cement (carload lots), Seattle, per bbl	$2.65	$2.65
Linseed oil (raw, 5 bbl. lots), New York, per gal.	$1.17	$1.18
Linseed oil (boiled, 5 bbl. lots), New York, per gal.	$1.19	$1.20
White lead (100 lb. keg), New York, cents per gal.	11	11
Turpentine (bbl. lots), New York, cents per gal.	54	54

Electric Railway Journal

Published by the McGraw-Hill Publishing Company, Inc.
Consolidation of Street Railway Journal and Electric Railway Review

Volume 50 . NEW YORK, SATURDAY, NOVEMBER 17, 1917 Number 20

Change in Address

On Nov. 24 the publication offices of the ELECTRIC RAILWAY JOURNAL *will be moved to the corner of Tenth Avenue and Thirty-sixth Street, New York. All communications relating to editorial or business matters should be sent to that address. Our new home, which will contain our printing office and will house all of the periodicals in New York of the McGraw-Hill Publishing Company, Inc., is close to the main post office at Eighth Avenue and Thirty-third Street, so that we expect to have better mailing facilities and thus to serve our subscribers even more promptly than ever before. Our new quarters are only a short distance from our old, and we extend a cordial invitation to all subscribers and advertisers to visit us there.*

War Board Completes Organization at Washington

IN THESE times of national stress, when one of the most important problems before the government is that of securing adequate transportation, the appointment of a War Board by the American Electric Railway Association was eminently the proper thing, indeed the only thing, to do. The plan should, therefore, receive from all the electric railways of the country that financial support without which the work cannot be carried on. While composed of electric railway executives, the purpose of the board, as we understand its mission, is not to ask special consideration by the government for electric railways. Instead, it is to provide an official body through which, or through whose Washington representative the government authorities can take up directly all matters of national interest so far as they affect electric railways, as well as to secure such help as they may need from the electric roads in the present acute transportation situation.

With its duties viewed in this light, the election by the board, as an *ex-officio* member, of Daniel Willard, representative of the steam railroad interests on the Council of National Defense, was the natural and logical thing to do. Indeed, the board might even go further by appointing as another *ex-officio* member the chairman of the newly created Highways Transportation Board, Roy C. Chapin, president of the Hudson Motor Car Company. By a coincidence the appointment of this new committee of the Council of National Defense was announced by Walter S. Gifford, director, on the evening of Friday, Nov. 9, the same day on which the new electric railway War Board was organized in Washington.

No Real Competition Between Electric Roads and Motor Trucks

AS WE have consistently maintained in this paper, there should be no real competition between the motor truck industry and the electric railway industry. For very short hauls and where there are no electric or steam railroads, there is need for the motor truck and in a great many cases motor trucks will have to be used between the ends of the existing electric railways and the points of receipt or delivery of freight. Hence, in a great many cases, both means of transport will have to be used, and the two interests could well work together to determine the most economical method of transport in each individual case under consideration by the government and then present a complete plan to the authorities. This is, in fact, according to the reports of our Washington representative, the plan being followed by the steam railroads in a number of instances. That is to say, the steam railroads are now arranging to purchase and operate trucks to take care of that part of their business which they could not otherwise handle for want of cars or power, or for some other reason. If these three interests should get together and arrange so that each would take over that portion of the work for which it is best adapted a great step in advance will have been made.

What Else a Resident Washington Representative Can Do

THERE is much that an electric railway representative in Washington could do at present besides arranging for military transportation of men and supplies by electric roads. The ability of the electric roads to supply good service, or even any service at all, will depend to a large extent upon the degree to which they are considered as being essential to the prosecution of the war. The inconvenience to which the citizens of New York were put by an interruption of but a few hours in the service of the Interborough Rapid Transit Company, owing to coal shortage, was shown last summer, but many electric railroads have come perilously near the same conditions many times during the past year. Hence, the question of priority is an important one, both as regards fuel and labor. In his work of promoting the use of electric railways for freight transportation, the director of the new War Board who is to be resident at Washington will occupy the position of sales manager, or at least he should. He should have to assist him a staff of traffic men, salesmen, competent to trail down "prospects" in a war capital whose expansion in recent months has required the War Department alone to have offices in fourteen different buildings, competent to make and hold acquaintances and to renew old friendships in a city to which are flocking in thousands every day representatives of every industry in the country. Washington needs help. The new War Board of the American Electric Railway Association will be welcomed there. No diffidence, no false modesty, no fear of an unwelcome reception from any interest should hold back the making of every effort to be of service to the government. Army officers, naval officers and officials of other branches of the government who are now dealing with tremendous transportation problems—men who were civilians yesterday, but who are in uniform to-day, and there are 1700 reserve corps officers in the ordnance bureau of the War Department alone—are at their desks every night until midnight and all day Sunday. They want help, and they will be only too glad to get it, in transportation as well as in everything else, from the men they knew back home.

New Capital Can Be Found If Adequate Earnings Are Assured

THE current talk in banking circles relative to the possible necessity of a government board to pass on the priority of corporate financing is a good indication that in public opinion the financial needs of the government are of paramount importance. There can be no argument on this point. British experience, under the strict control of the Treasury, shows how national needs must receive first consideration. In the seven months ended Sept. 30, 1917, the government borrowed £1,089,382,500 as compared to only £14,852,400 for all other applications, the latter including £100,000 for tramways and omnibuses and £200,000 for electric lighting and power plants. It probably is not necessary yet to exercise such rigid supervision in this country, but unless new capital requirements are limited to necessary corporate purposes some such means as a priority board will be necessary. Be that as it may, the financial needs of electric railways must receive due recognition. The nation's industries are dependent upon these and other utilities; they must be continued in operation and expanded to meet the nation's demands. But the problem of securing new capital for such a purpose or for refunding maturing obligations is not merely that of establishing either an unofficial or an official claim to priority. The utilities can do this, for their value is manifest. The problem is rather that of attracting the investor when the rate policy of commissions makes him doubt the stability of return and in some cases even the safety of principal. O. B. Willcox sums up the situation well in this issue when he says that investment bankers will undertake to provide new capital for utilities if adequate earnings are assured by the commissions. Regulatory bodies never have needed, so much as now, a realization of what the public welfare demands in the way of growing utilities. Public service corporations are vitally important agents in low-cost production now, and new development must not be further stunted by commission shortsightedness.

Kill the Fixed-Fare Idea Once for All

AGAIN we would urge electric railway operators to keep clearly in mind the fundamental involved in all the present higher-fare agitation, *i.e.*, the necessity of getting rid of the fixed-fare idea. Success cannot result from stationary income and mounting costs, and custom must give way to this simple but inexorable economic law. Railway men know this, but the big task now is so to emphasize it as to make the public understand the facts.

The 5-cent fare for electric railway service has been in use for so many years that the public looks upon any higher fare as unthinkable. Now, however, thinking men are beginning to realize very clearly that the fixed unit of compensation is fundamentally weak. As Dr. Wilcox says elsewhere this week, any careful student of public utilities must recognize that from the theoretical point of view the fare should be the last of the important conditions affecting electric railway operation to be fixed. In his opinion—and as that of a franchise expert it carries weight—it will certainly not be practicable to maintain the principle of the fixed inflexible fare unless a city is prepared to make up deficits through the remission of taxes, or through subsidies, or through both. On the other hand, a flexible fare adjustable by the public service commission or by arbitration is the logical outgrowth of a clearly defined city policy regarding electric railways.

In Massachusetts, too, the need of a more scientific fare basis is being recognized. Last week Homer Loring, representing the Association of Owners of Massachusetts Street Railway Securities, proposed to the special legislative commission in that State a service-at-cost plan. Without commenting upon the details, which are given on another page, suffice it to say that this plan contemplates a reservoir fund and a flexible fare. The credit of electric railways, Mr. Loring said, cannot be revived until investors are assured that fares will fluctuate with changed conditions of operating costs.

Thus both Dr. Wilcox and Mr. Loring commend the idea of a flexible fare, and it is this basic conception that ought never to be lost to view. New franchises, we believe, should be drafted with a provision for the future readjustment of fares up or down as justice demands. Resettlement franchises, where such are possible, should be so constructed. As for existing franchises, some commissions are displaying a clear realization of their responsibility under the rate-making authority delegated to them by the legislatures, and alleged fare limitations contained in franchises are admitted by them to be not controlling as against their rate-making power. In our opinion, however, the overthrowing of a franchise fare limitation would be more widely and more quickly accomplished if the petitioning railways would specifically stipulate their advocacy of a flexible fare policy. Nothing is to be gained by permitting the public impression that any fare increase that may be granted must be everlasting.

Theoretically there are only two conceptions in rate-making—flexibility or fixity. The latter has almost proved the death of the electric railway industry, and it is time that the former was used. It will not be easy to drive the idea of a fixed fare out of the public's mind, but we simply suggest that concentration, co-operation and persistence are capable of great deeds.

Can Railway Employees Promote a Fare Increase?

IF THE flexible fare is accepted as a means to insure a more stable rate of return with fluctuating costs of operation, there must obviously be some check on the reasonableness of the operating costs. This brings to mind the current demands for higher wages in connection with increased rates of fare in Portland, Ore., and Kansas City, Mo. In the former city, as noted in the issue of Oct. 27, the granting of a shorter basic day and a reasonable increase in wages was held by the commission to be one of the factors justifying a partial increase in rates. In Kansas City a similar question of commission recognition of employees' demands may arise. According to the latest news, a committee of employees has accepted a 3-cent an hour increase, being convinced that the company had offered all that was possible under present revenues. But when the proper method is worked out, it is said, the men will make an appeal for higher company revenues.

Such action does not seem illogical for the employees to take in either city, and it presents possibilities not realized with the usual company application. For instance, if the men asked for a fare increase they could probably secure the support of organized labor in other industries. On the other hand, if the company attempted to secure an increase, the laborers of other industries would be very likely to oppose it. Moreover, where the difficulty of a maximum fare fixed by city franchise would have to be overcome, as in Kansas City, the support of the labor men might mean the minimizing of opposition to such steps as were necessary to make the change. In any event, the support of the employees would in all likelihood be of material benefit, even if they were actuated by completely selfish motives.

But suppose the employees ask for excessive wages? In Kansas City, for example, the Amalgamated Association presented a demand calling for a wage increase of $1,700,000 a year on a property with a gross of only $7,000,000. If the men asked for a rate to cover this increase, the plea undoubtedly would be poorly received by the public. This point involves a frequent criticism of the flexible fare, in that under such a system a railway is not interested in preventing excessive operating expenses. In our opinion, however, this is not an insuperable obstacle, for the public service commission should be expected to oppose wages greater than those in the public's interest, just as it scrutinizes now carefully all payments for material to determine whether more than the market price is paid.

Labor, therefore, can assist electric railways to put their rate-making upon a more scientific basis. If a proper desire for a living wage degenerates into greed, the public, even under a flexible fare, can be expected to protect both the railways and itself. A scientific determination of wages in industries serving the public might eventually follow the flexible fare, but the latter need by no means wait for the former.

Reduce Load Peaks to Help Win the War

IN AN article by F. W. Doolittle on operating cost and shifts in service, printed in the Aug. 21, 1915, issue of this paper, the criterion of all-round satisfactory service was stated to be the greatest good of the greatest number. It was clearly shown that concentration of service during rush hours increases the unit cost of all service, hence it should be minimized in the general interest. We have shown, also, that similar concentration in the generation of electrical energy may result in a cost of $2 or more per kilowatt-hour during short periods, thus greatly increasing the average cost. In consequence, even in peace times, it is important to keep equipment in efficient use as nearly continuously as possible. How much more important is it to do so in this perilous war period!

The "peak" load on power plant or rolling stock is the bane of the existence of the prudent operator, and the shorter the peak period the more difficult and expensive is it to give acceptable and profitable service. To a very great extent the existence of peaks is due to conditions not under the railway's control, and it becomes necessary to secure the co-operation of the people who do control these conditions if the peaks are to be reduced. The principal factor is the coincidence in hours of opening and closing of factories, stores, offices, etc. If those who set these hours could get together in conference with the transportation officials they could work out schedules which would result in the saving of material and labor, and would greatly increase comfort and safety in getting about. It is imperatively necessary that such co-operation be secured, and that speedily, for we are in no position to permit the slightest waste of our resources if we are to win the war.

The transportation men are the natural ones to take the initiative in the matter, but they must go at it from the patriotic side and not primarily for their own profit. And they must be able to carry the conviction that their motives are patriotic or their efforts will defeat themselves. In another column is a brief account of a plan just inaugurated by the Public Service Corporation of New Jersey with the peak-flattening purpose in view. The central feature is a committee of responsible officials whose standing indicates the importance attached by the management to the movement. This incident is significant of a tendency, which is becoming general and must eventually become universal, to improve the load factor in the use of existing equipment. "The voice of wisdom cries 'Be in time!'"

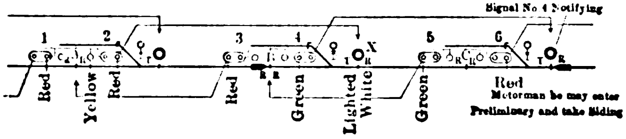
New 60-Cycle Signal Installation on the T. H., I. & E.

Movement Through Three-Light Aspect Blocks Adjacent to Meeting Points Is Speeded Up by Use of 2000-Ft. Preliminary Sections Equipped with White Aspect Block Indicator Signals—Time-Element Relays Control Switch Indicators When No Preliminary Is Installed and Also at Outlying Switches—Detail Description of Installation Is Given

By ADOLPH SCHLESINGER
Superintendent Distribution and Substations, Terre Haute, Indianapolis & Eastern Traction Company

THE section of high-speed interurban line between Highland Lawn and Keaseys, Ind., on the Terre Haute division of the Terre Haute, Indianapolis & Eastern Traction Company, has recently been equipped with General Railway Signal Company 60-cycle, automatic block signals. This section of line comprises 11.1 miles of single track, but 0.4 mile through the village of Seeleyville was not signaled because of the location of the track in city streets. From forty-five to fifty-five trains pass over this section of line daily. There are four stub-end sidings and one double-end siding included within the protected section. One end of the double-end siding lies in the street in Seeleyville and is not signaled. The installation includes four single and four double-light signals. This latest installation brings the total mileage on the T. H., I. & E., which is protected with automatic block signals, up to 58 miles.

The present 60-cycle installation is similar to the 25-cycle signaling previously installed at other points on the property by the General Railway Signal Company. It consists of a modified A. P. B. scheme with the intermediate signals omitted. The signal controls and indications are shown in the accompanying drawings, Figs. 1 and 2. The signals are of the colored light type with the indications as follows:


Lights when Train Passes Signal No. 4 Notifying Motorman he may enter Preliminary and take Siding

T. H., I. & E. SIGNALS—FIG. 1—SIGNAL INDICATIONS FOR OPPOSING TRAINS APPROACHING SIDING MEET AT SIGNALS 3 AND 4

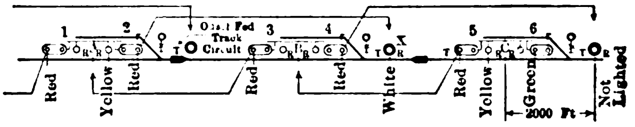
Red—stop. Stop and stay unless authorized to proceed by the dispatcher.

Green—clear. Proceed at normal speed.

Red and yellow—permissive signal. Proceed under control, block occupied by a receding train.

Each signal block has a preliminary section about 2000 ft. long for the purpose of preventing simultaneous moves of two cars past opposing signals. At the sidings the signals are located about one-half the way through. In making meets at stub-end sidings, one car heads in, and then after the other car has passed on the main line, backs out and proceeds. At a double-end siding, the first train arriving heads in and backs out. A block indicator, marked *X* in Figs. 1 and 2, located at the beginning of each preliminary section, informs the train crew of the approximate location of the opposing train. This block indicator shows white only when the next block is occupied by an approaching train. When a meet is scheduled at a siding, one train does not pass the block indicator until it lights up, which then shows that the opposing train has entered the other end of the block. This practice avoids the opposing train being held up if it has not yet entered the block at the time the first train would have proceeded into the preliminary, were it not for the telltale indicator signal.

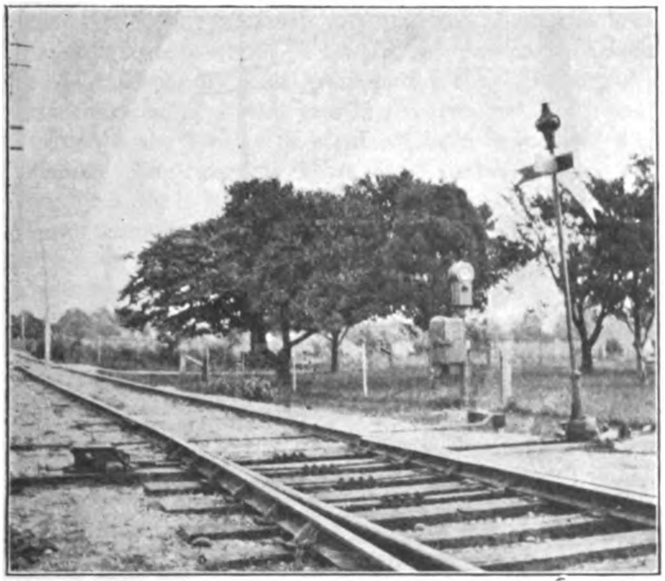
When a train passes a signal, as No. 1 in Figs. 1 and 2, it leaves a red and yellow, or permissive, indication behind it, which holds through the block and until the train passes the next signal, No. 2, and enters the preliminary of the next block. Signal No. 1 then changes to green and signal No. 2 shows red and yellow. This arrangement of circuits avoids the preliminary acting as an overlap. The scheme differs from previous installations in which the permissive indication at signal No. 1 would hold while a train was receding through the preliminary, thus acting as an overlap. The newer scheme gives an earlier proceed indication to a following train and permits it to run the block at a higher speed, provided the receding train is far enough ahead to have passed signal No. 2 before the following train reached signal No. 1. This system of signaling requires a track relay, a line relay and a stick relay at each signal.



Normal Signal Indication
Red at Preliminary End of Block
Green for Opposing Signal
Opposing Signals Electrically Interlocked

T. H., I. & E. SIGNALS—FIG. 2—SIGNAL INDICATIONS FOR OPPOSING TRAINS AT EACH END OF BLOCK TO MEET AT SIGNALS 5 AND 6

The normal signal indication with no trains present is red at the preliminary end of the block and green at the opposing signals. This condition is brought about through an electrical interlocking of opposing signals, which insures that one must indicate "stop" before the other can indicate "clear." When a train enters the preliminary approaching the normal stop signal, it sets the opposing normal clear signal to danger and then the normal stop signal at the first end of the block changes to clear. This, of course, is assuming that the block



T. H., I. & E. SIGNALS—SWITCH INDICATOR SIGNAL WITH HOUSING FOR TIME-ELEMENT RELAY

was not occupied by a train. This control is accomplished through the medium of three-position line relays.

Optical Features of Signals

The several lights necessary to give the various aspects are housed in two iron cases. The upper one has two 8⅜-in. diameter lenses, the top one being red and the bottom one green. The lower case has one 7-in. diameter yellow lens. The red and green lights are fitted with two lenses which are known as a doublet combination. The outer one of these is a clear lens, 8⅜-in. in diameter, and the inner one, which is placed close to the outer, is a 5½-in. diameter red lens having the short focal length of ½ in. Only one lamp is used behind each lens and this is a 55-volt, 40-watt double filament lamp, fitted with an S-19 bulb and an Edison medium screw base located very close to the inner lens on account of its short focal length. This combination of doublet lenses and double-filament lamps gives a very efficient optical combination. The range of the signal is about 3000 ft. to 3500 ft. under adverse sunlight conditions.

The yellow or permissive indication light has only a single standard optical lens, 7-in. in diameter and with a 4-in. focal length. It is illuminated by two 55-volt, 40-watt lamps connected in multiple behind the lens. The focus of the lens comes midway between the two lamps. The range of the yellow light is from 1000 to 15,000 ft. in sunlight, depending on atmospheric conditions and the location of the sun with respect to the observer. This range is sufficient for the yellow lens when used in combination with the red. When approaching a signal, a motorman will first see the red indication and will slacken his speed prepared to stop, and then if the block is occupied by a receding car, he will "pick up" the yellow light when he gets closer to the signal and proceed with caution. All the lenses are hooded, but no sheet-iron background is required with signals of this kind.

The block indicators located at the beginning of a preliminary section are installed in the same kind of case as is used for the yellow light on the high signal. These are equipped with a clear lens and a sheet-iron background about 24 in. in diameter. The lamp case is supported by a cast-iron bracket which is bolted to the wood transmission line pole.

Switch Indicators and Time-Element Relays

The switch indicators used in this installation at the various sidings are model 4, form B type, with double windings on the stator. One of these windings designated as the local winding is controlled through the line and stick relays for the signals at the siding location and the switch box normal. The other winding, called the line winding, is connected in series with the line wire which controls the three-position line relay for the normal clear signal when the switch is reversed. The indicator shows clear with the switch normal; (*a*) when the blocks at either side of the signal and the preliminary section are not occupied by a train; (*b*), when a car is receding in one block and the other block is clear; or (*c*) when both blocks are occupied by receding cars. The indicator shows danger when a car is approaching in either direction in the blocks or the preliminary. Assuming that the indicator is clear with the switch at normal position, upon reversal of the switch the following conditions would prevail:

(*a*). The indicator clears if the blocks at either side of the preliminary are unoccupied by approaching trains.

(*b*). The indicator clears if the blocks at either side of the preliminary are occupied by receding trains.

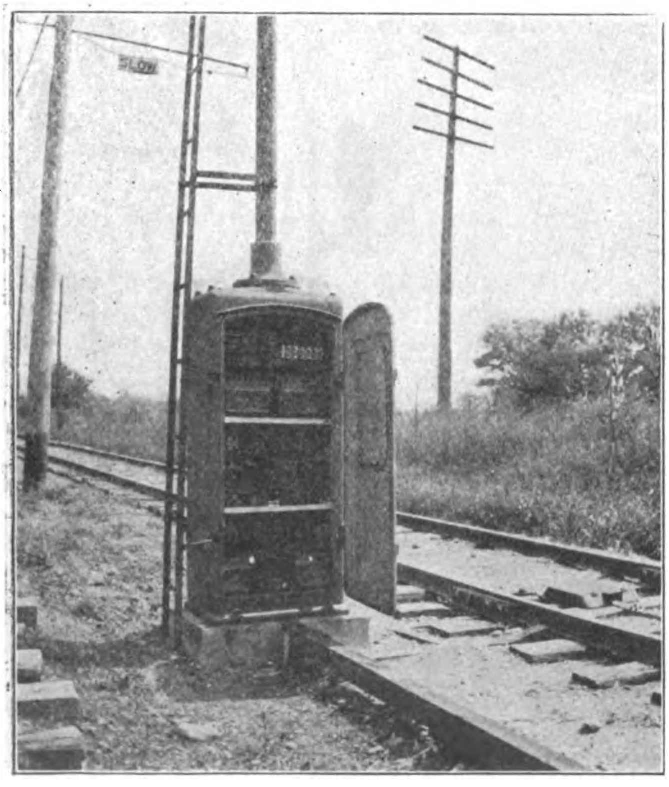
(*c*). If a car enters the preliminary or the block either way from the siding just as the switch is thrown, the indicator will not clear.

(*d*). If the point of the switch in a clock does not have a preliminary at its far end, it is then necessary that the indicator be controlled by a time-element relay. It requires fifteen seconds for this relay to close after the switch has been placed in the position to permit a

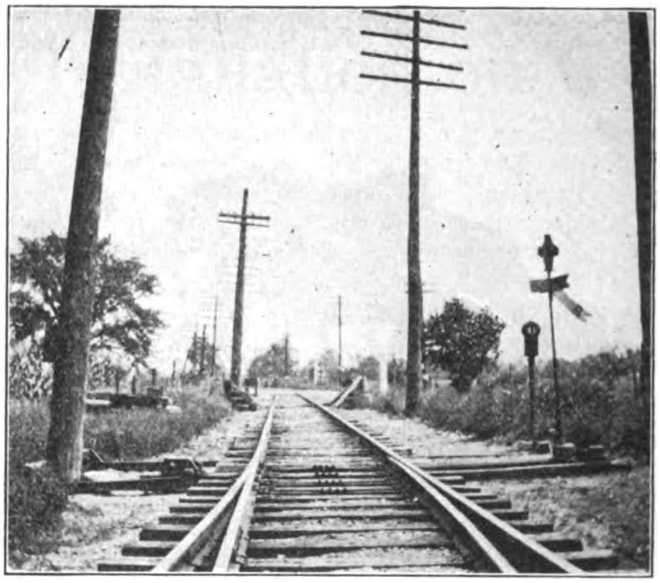
T. H., I. & E. SIGNALS—DOUBLE SIGNAL AND RELAY HOUSING, REAR VIEW car to run out onto the main line from the siding. The indicator line winding is controlled through a contact on the time-element relay which completes this circuit when the relay finally picks up. This relay avoids the use of a preliminary in such a case for the following reasons: Assuming that a car was just about to accept the "clear" signal at the entrance to a block which had no preliminary section and that the car was so close to the signal that the motorman did not notice the change in indication from "clear" to "danger" when the switch was thrown, the switch indicator would not clear until the fifteen seconds time required by the relay to pick up had elapsed. Before this time, the approaching car would have entered the block and opened the line circuit, cutting energy off from the line wire which supplies energy to the switch indicator. The latter, therefore, would not clear and the crew of the car in the siding would know that another car was approaching and would restore the switch to its normal position for the main line movement.

Time-element relays are also used to control the switch indicator at outlying switches. This prevents a car from entering the block from the siding just as another car enters the block on the main line. This type of switch indicator does not require a separate line wire through the block, as it is connected in series with the line wire which controls the line phase of the three-position line-relay when the switch is reversed. This permits the indicator relay to pick up, but causes the line relay to assume the de-energized position and the signals to indicate danger. When the switch is normal, the local winding on the switch indicator is controlled by a wire from the stock and line relays at the near-by signal location.

Energy for the signal system is obtained from a 2200-volt, 60-cycle, single-phase line from the Terre Haute power station for signals installed between West Seeleyville and Highland Lawn, and from the Brazil substation for signals between the east limits of Seeleyville and Keaseys. The 60-cycle system was used for this installation instead of the 25-cycle current on the previous installations on the T. H., I. & E. because of the fact that the generating station at Terre Haute is a 60-cycle station and it would have been necessary to install motor-generator sets and additional transmission lines for 25-cycle signaling. The same transmission lines which supply the signals are also used for supplying power to the communities along the railway. The wire used on this transmission line is No. 6 B. & S. gage copper, covered with triple-braid weatherproof insulation. All the line transformers used are the General Railway Signal Company's type L, oil cooled with 220-volt primaries. Transformers of 0.2-kva. capacity and a 14-volt secondary winding with taps are used for center-fed and offset-fed track circuits. Transformers of 0.6-kva. capacity with one 14-volt secondary winding and a 110-volt secondary winding with a 55-volt tap are used for single signal locations. This arrangement is for feeding the 55-volt incandescent lamps, the relay local phases and stick relays and to permit reversing the polarity of the three-position line relays. This is done by taking energy from one end or the other of the 110-volt winding, with the center tap connected to the common line wire. Transformers of 1-kva. capacity and 14-volt secondary winding are used for the double-signal locations.



T. H., I. & E. SIGNALS—FRONT VIEW OF RELAY EQUIPMENT



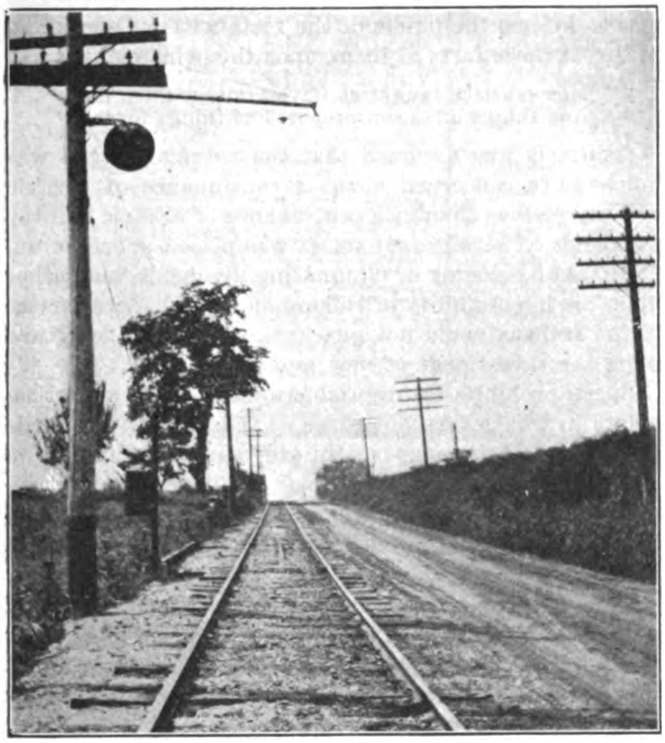
T. H., I. & E. SIGNALS—SWITCH INDICATOR AND SWITCH BOX

The low voltage transformers used to feed short track sections are the type K, 0.1-kva. capacity, single-phase, air-cooled, and with a voltage ratio of 110 volts to 7 volts and with other taps.

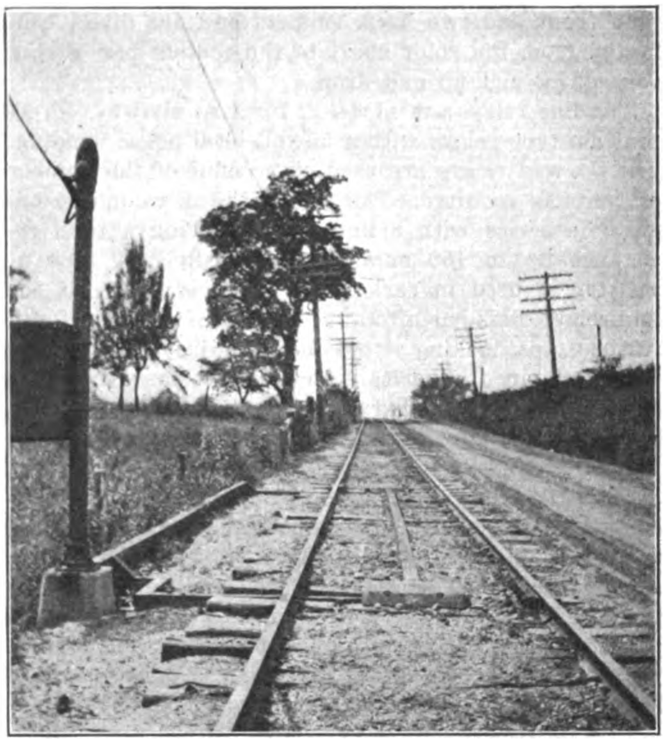
LIGHTNING PROTECTION FOR SIGNAL SYSTEM

All low-tension line circuits are protected by the General Railway Signal Company's model 1, choke-coil type air-gap lightning arresters. A 200-ohm graphite rod resistance is connected in series with the ground wire for the low-tension lightning arresters at each location. This prevents heavy arcing across the gaps of arresters in case the 600-volt trolley feeders become crossed with the signal-line wires, which sometimes occurs. If this resistance rod was not used, the low-tension arresters would be destroyed upon contact with the 600-volt supply. All grounds for the lightning arresters consist of a 1-in. galvanized iron rod, 8 ft. long, to which a short piece of stranded bare copper wire is soldered. The ground wire from arresters to the grounding rod is No. 10 solid copper wire.

The primaries of all high-voltage transformers are fused with two single-pole push-plug type porcelain cut-outs with 3-amp. fuses. These plug-type cut-outs are equipped with a locking feature which prevents the plug from jarring out due to pole vibration. All local, low-voltage, 55-volt and 110-volt circuits are fused with 250-volt screw-plug fuses of 10-amp. capacity. All line circuits are protected with 3-amp. fuses of the same type.



T. H., I. & E. SIGNALS—BLOCK INDICATOR AT END OF PRELIMINARY—THE PURPOSE OF THIS INDICATOR IS DESCRIBED ON PAGE 892



T. H., I. & E. SIGNALS—INSULATED RAIL JOINTS, IMPEDANCE BONDS, AND CABLE POST WITH RELAY AND TRANSFORMER HOUSING AT END OF PRELIMINARY SECTION

Line and Track Circuits

The low-tension line circuit used on this type of signal installation requires three wires through the block, one control wire for each direction of traffic and a common wire. The one control wire which supplies 55-volt energy for the block indicator lights must be run from the siding through the 2000-ft. preliminary. When there is a definite cut in the track for the preliminary track circuit, another wire must be run from the siding to the beginning of the preliminary to carry 55-volt energy for the primary of the type-K track transformer. In general at sidings, the rubber-covered wires between the switch point and the signal location are cabled together and run on the pole line. From six to ten wires are required between the switch point and the signal, the distance between these points usually being not more than 200 ft.

The long main-line track circuits utilize both rails and include impedance bonds. These track circuits are of three kinds—center fed, offset fed and end fed. With the center-fed type the track transformer is located at the center of the block with a track relay at each end. With the offset type, the track transformer is located about 1500 ft. from one end and up to about 1½ miles from the other end, with a track relay at each end of the track circuit. This type of circuit is used to obtain a preliminary section without the expense of putting in a definite rail cut with insulating joints, impedance bonds and a track relay. This type of track circuit is used when the long end is not so long that it is impossible satisfactorily to feed it. This length which will operate satisfactorily depends largely on ballast conditions. Roughly, the long end of offset-fed track circuits may be 1½ miles long. Above this length one center-fed track circuit and one end-fed track circuit are required to take the place of the one offset-fed track circuit.

The end-fed double-rail type track circuits are used when it is necessary to put in a definite cut for a preliminary track circuit. This type of circuit requires the installation of a 55-volt transformer at the end of the preliminary section. The 55-volt energy is run from the nearest signal location, which is generally not to exceed 2000 ft. away.

Weber insulating rail joints were used in the present signal installation. The rail bonding comprises one No. 0000 conductor at every joint, electrically welded to the head of the rail. Ballast conditions on the T. H., I. & E. are fair, and the ballast is, for the most part, kept clear of the rails. This ballast is mostly gravel, but with cinders in some places.

Relays Controlling the Signal Operations

The relays used on all T-rail track circuits are model 2, form A, two-position relays with 55-volt local-phase having two windings which are connected in series directly across the 55-volt supply on short track circuits where the ballast conditions are fairly good. If the ballast conditions are bad, the two local windings are connected in multiple with a reactor of low power factor connected in series with the windings and with 55 volts impressed across the entire circuit. This arrangement gives good phase relations between the currents in the local and track phases of the track relays and permits the operation of long track circuits under bad ballast conditions without the use of an excessive amount of energy.

The model 2, form B, two-position relays used on all single-rail track circuits are two-element relays with a 55-volt local-phase winding. These are equipped with four front and two back contacts and are direct connected from the rotor shaft to the contact bar, giving very quick pick-up and drop.

The line relays are model 2, form A, six-way, three-position type relays with a 55-volt local phase winding. The six-way relays are used on account of the number of contacts required. The line phase is wound to operate in series with a line circuit having a total resistance up to 150 ohms. A porcelain unit type of resistor is used in series with the line phase of the line relay. This has a total resistance of 175 ohms with various taps, making it possible to adjust for giving a fixed resistance in series with the local phase and thus compensate for the varying lengths of line circuits. This insures uniform strength of operation of line relays.

The stick relays which control the permissive indication are single-element, two-position, four-way, model 4, form B quick-acting relays wound for 55 volts. These relays pick up when the track relay is down and the three-position line relay is dropping to the de-energized position. This condition occurs at the instant a train is receding past the signal governing the entrance into a block.

The time-element relays which control the energy supplied to the line winding of the switch indicators, are model 2, form B, two-position, single-element relays. These are located at the switch points in a relay housing bolted to the switch indicator post. They are wound to operate on 55 volts. The slow time of pick-up is obtained by interposing a train of gears between the pinion on the rotor shaft and the contacts. The time lapse can be adjusted from two to fifteen seconds, as desired, by means of an adjusting screw.

The impedance bonds with which all track circuits are equipped are of the iron-core type, having coils wound with No. 0000 stranded cable insulated with cotton sleeving and impregnated by a vacuum process. These bonds will carry approximately 400 amp. per track continuously with a temperature rise of not to exceed 75 deg. C.

This system of signaling is adequately fulfilling the requirements of the traffic on this line and is facilitating as well as safeguarding all train movements.

A summary of passenger traffic just issued by the Public Service Commission for the First District of New York shows that on the lines operated by the New York Consolidated Railroad, controlled by the Brooklyn Rapid Transit Company, the total number of passengers carried in June amounted to 20,236,571, as against 18,070,722 in June, 1916, or an increase of 11.9 per cent.

Schenectady Asks for Higher Fare

The "Straight Talks" Advertisements Place the Situation Convincingly Before the Patrons

BETWEEN Aug. 14 and Sept. 20, 1917, the Schenectady Railway Company ran thirteen half-page advertisements in the local newspapers to present its case for the 6-cent fare. Some of the statistical data used in these advertisements were taken from the research files of the New York Electric Railway Association, but the copy and style were adapted to local conditions and to the "man in the street," or better still, the man in the car.

The general thought that ran through the whole series was to inform the public of the facts without appearing to thrust those facts at them, upon the principle that

> Men must be taught as if you taught them not
> And things unknown proposed as things forgot.

Again, it was assumed that the average person was much more concerned about a continuance of electric railway service than of a continuance of electric railway dividends. Therefore no stress was placed upon the unfairness of reducing or eliminating dividends, but rather upon the impossibility of raising money for more service if the railway could not guarantee a reasonable return upon the investment of new money.

Space prohibits the reproduction of all the advertisements in this series, but three of those which are written in typical newspaper vein are reproduced in full on the following page. A survey of the thirteen advertisements follows:

No. 1—Is Six Cents a Fair Fare for Safe, Efficient Trolley Service?

This advertisement uses the increase in the price of milk as an analogy for the increase in price of another necessity of life, transportation. It may be stated that this advertisement appeared some time before the price of milk became an acute question.

No. 2—Good Credit Provides Means for Constantly Better Service.

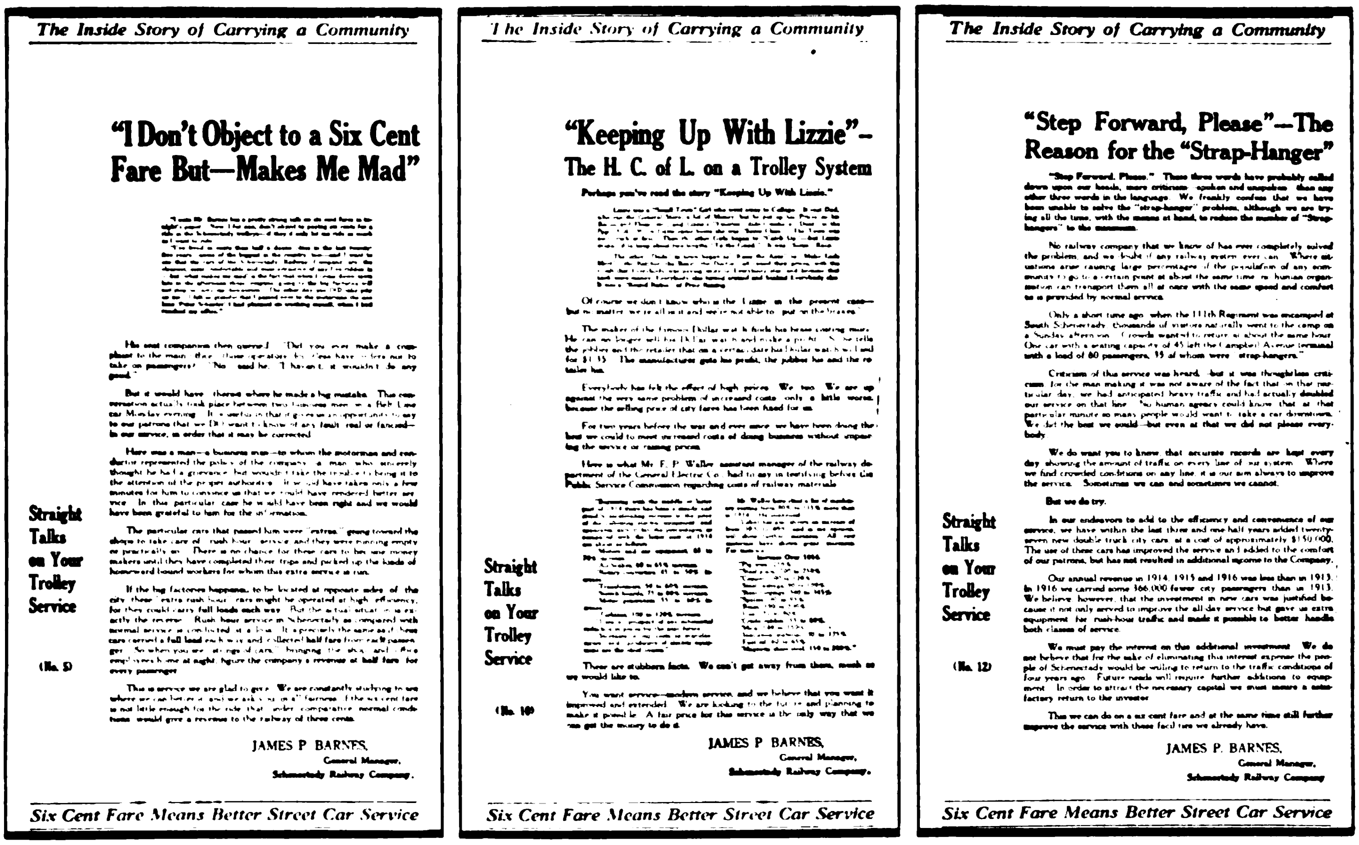
This advertisement opens with the statement that the growth of Schenectady demands extensions to its railway system, but that it takes money to build extensions and it takes good credit to obtain money. It is then shown that while the government has estimated 8 per cent as a reasonable return on electric railway investments, the Schenectady Railway Company actually has averaged only 5.46 per cent during the past twelve years. Since the government considers 10 to 15 per cent a proper return in other fields, it follows that electric railways must at least approach an 8 per cent return if they are to attract capital.

No. 3—Paid-in Capital Over Half a Million Dollars *More* Than Securities Issued.

This advertisement states clearly that while the Public Service Commission's figures show an investment of $7,300,000, the outstanding bonds and outstanding stock total $6,776,000, or actually $524,000 less than the money paid into the property.

No. 4—Capitalization and Investment—Facts Showing Our Company Under-Capitalized.

This advertisement develops the theme of No. 3 by comparing the capitalization per mile of track in Schenectady with that in other cities, showing that Schenectady is the lowest in the list; also that for every $63,000



The Inside Story of Carrying a Community

"I Don't Object to a Six Cent Fare But—Makes Me Mad"

His seat companion then queried: "Did you ever make a complaint to the main office that these cars have [illegible] to take on passengers?" "No," said he, "I haven't; it wouldn't do any good."

But it would have—there's where he made a big mistake. This conversation actually took place between two business men on a Belt Line car Monday evening. It is useful in that it gives us an opportunity to say to our patrons that we DO want to know of any fault—real or fancied—in our service, in order that it may be corrected.

Here was a man—a business man—to whom the motorman and conductor represented the policy of the company—a man who sincerely thought he had a grievance, but wouldn't take the trouble to bring it to the attention of the proper authorities. It would have taken only a few minutes for him to convince us that we could have rendered better service. In this particular case he would have been right and we would have been grateful to him for the information.

The particular cars that passed him were "extras," going toward the shops to take care of "rush hour" service, and they were running empty or practically so. There is no chance for these cars to be money makers until they have completed their trips and picked up the loads of homeward bound workers for whom this extra service is run.

If the big factories happened to be located at opposite sides of the city these "extra rush hour" cars might be operated at high efficiency, for they could carry full loads each way. But the actual situation is exactly the reverse. Rush hour service in Schenectady as compared with normal service is conducted at a loss. It is precisely the same as if these cars carried a full load each way and collected half fare from each passenger. So when you see "strings of cars" bringing the shop and office employees home at night, figure the company a revenue at half fare for every passenger.

This is service we are glad to give. We are constantly studying to see where we can better it, and we ask you in all fairness if the six cent fare is not little enough for the ride that, under comparative normal conditions, would give a revenue to the railway of three cents.

JAMES P. BARNES,
General Manager,
Schenectady Railway Company.

Straight Talks on Your Trolley Service

(No. 5)

Six Cent Fare Means Better Street Car Service

The Inside Story of Carrying a Community

"Keeping Up With Lizzie"—The H. C. of L. on a Trolley System

Perhaps you've read the story "Keeping Up With Lizzie."

Of course we don't know who is the Lizzie in the present case—but no matter, we're all in it and we're not able to "put on the brakes."

The maker of the famous Dollar watch finds his brass costing more. He can no longer sell his Dollar watch and make a profit. So he tells the jobber and the retailer that on a certain date his Dollar watch will sell for $1.35. The manufacturer gets his profit, the jobber his and the retailer his.

Everybody has felt the effect of high prices. We, too. We are up against the very same problem of increased costs, only a little worse, because the selling price of city fares has been fixed for us.

For two years before the war and ever since, we have been doing the best we could to meet increased costs of doing business without impairing the service or raising prices.

Here is what Mr. F. P. Waller, assistant manager of the railway department of the General Electric Co., had to say in testifying before the Public Service Commission regarding costs of railway materials:

These are stubborn facts. We can't get away from them, much as we would like to.

You want service—modern service, and we believe that you want it improved and extended. We are looking to the future and planning to make it possible. A fair price for this service is the only way that we can get the money to do it.

JAMES P. BARNES,
General Manager,
Schenectady Railway Company.

Straight Talks on Your Trolley Service

(No. 10)

Six Cent Fare Means Better Street Car Service

The Inside Story of Carrying a Community

"Step Forward, Please"—The Reason for the "Strap-Hanger"

"Step Forward, Please." These three words have probably called down upon our heads more criticism—spoken and unspoken—than any other three words in the language. We frankly confess that we have been unable to solve the "strap-hanger" problem, although we are trying all the time, with the means at hand, to reduce the number of "Strap-hangers" to the minimum.

No railway company that we know of has ever completely solved the problem, and we doubt if any railway system ever can. Where situations arise causing large percentages of the population of any community to go to a certain point at about the same time, no human organization can transport them all at once with the same speed and comfort as is provided by normal service.

Only a short time ago, when the 111th Regiment was encamped at South Schenectady, thousands of visitors naturally went to the camp on a Sunday afternoon. Crowds wanted to return at about the same hour. One car with a seating capacity of 45 left the Campbell Avenue terminal with a load of 80 passengers, 35 of whom were "strap-hangers."

Criticism of this service was heard—but it was thoughtless criticism, for the man making it was not aware of the fact that on that particular day, we had anticipated heavy traffic and had actually doubled our service on that line. No human agency could know that at that particular minute so many people would want to take a car downtown. We did the best we could—but even at that we did not please everybody.

We do want you to know that accurate records are kept every day showing the amount of traffic on every line of our system. Where we find crowded conditions on any line, it is our aim always to improve the service. Sometimes we can and sometimes we cannot.

But we do try.

In our endeavors to add to the efficiency and convenience of our service, we have within the last three and one-half years added twenty-seven new double truck city cars, at a cost of approximately $150,000. The use of these cars has improved the service and added to the comfort of our patrons, but has not resulted in additional income to the Company.

Our annual revenue in 1914, 1915 and 1916 was less than in 1913. In 1916 we carried some 366,000 fewer city passengers than in 1913. We believe, however, that the investment in new cars was justified because it not only served to improve the all-day service but gave us extra equipment for rush-hour traffic and made it possible to better handle both classes of service.

We must pay the interest on this additional investment. We do not believe that for the sake of eliminating this interest expense the people of Schenectady would be willing to return to the traffic conditions of four years ago. Future needs will require further additions to equipment. In order to attract the necessary capital we must insure a satisfactory return to the investor.

This we can do on a six cent fare and at the same time still further improve the service with these facilities we already have.

JAMES P. BARNES,
General Manager,
Schenectady Railway Company

Straight Talks on Your Trolley Service

(No. 12)

Six Cent Fare Means Better Street Car Service

THREE OF THE "STRAIGHT TALKS," ISSUED BY THE SCHENECTADY RAILWAY

per mile invested the securities outstanding are only $59,000.

No. 5—"I Don't Object to a Six-Cent Fare But—Makes Me Mad."

In this advertisement, reproduced in full, the company cleverly made use of a complaint about the failure of empty cars to stop by bringing out the fact that these cars were being operated non-stop in order to handle rush-hour loads, and that such loads really pay one-half fares because the cars run empty in the opposite direction.

No. 6—Manufacturing Trolley Service Has Its Own Peculiarities.

This advertisement explains that unlike the production of tangible goods, the manufacturer of transportation cannot store up a supply in advance but must sell the commodity the instant it is manufactured.

No. 7—It Takes Four Men to Run a Trolley Car in Schenectady.

This advertisement tells about the men behind as well as the men on the car. In a future advertisement the same facts will be brought out more directly by a pictorial organization diagram.

No. 8—One Thousand Average City Fares Brings Our Company Exactly $41.60—

Beginning with an apparent mathematical error, this advertisement startles the reader into examining it. He soon appreciates its truth when allowance is made for the number of free, half fare and transfer riders.

No. 9—"What Does the Trolley Company Do With My Street Car Fare?"

This advertisement was a splendid example of the perfect frankness with which a railway company should talk to its patrons. The cost of various items like power, taxes, accidents, wages, interest, etc., were given both in dollars and numbers of fares, the latter unit helping to visualize the relative importance of each division of expense. Special display was given to the significant fact that out of every dollar taken in by the company 38 cents goes out for labor alone.

No. 10—"Keeping Up With Lizzie."

This advertisement is also reproduced in full as an example of a catchy introduction backed by solid facts and figures. In giving its figures the company also quoted a well-known local expert rather than some out-of-town individual whose figures might be open to question. The story of Lizzie originated in the fertile brain of the editor of the Denver *Tramway Bulletin*, and the Schenectady Railway was not slow to appreciate its excellent newspaper sense.

No. 11—"Give Me a Nickel's Worth."

This advertisement listed a number of things that could be bought for 5 cents ten years ago and mentioned what they cost to-day. While this advertisement is correct in every essential, it probably would have been stronger if the electric railway company had mentioned the increase in the cost of such staples as copper and steel, so that it could not be accused of trying to board the high-cost-of-living band wagon.

No. 12—"Step Forward Please"—The Reason for the "Straphanger."

This advertisement, reproduced in full, is a good example of how to meet complaints of overcrowding. Instead of making a general answer the company discussed a recent specific instance which everybody could appreciate.

No. 13—"Our Cards Are 'Face Up' on the Table. Your Answer."

This advertisement summarized the principal points of the preceding twelve, and mentioned incidentally that the conditions calling for a higher fare were not peculiar to Schenectady but were universal.

While it is too early to say what tangible results will come from this publicity campaign, one significant thing has followed. This is the great increase in the number of complaints, commendations and suggestions received in personal letters to Mr. Barnes—ample evidence that the public is beginning to think seriously about the relation between their convenience and the continuance of good railway service.

War Board Completes Organization

Several Sub-Committees Were Appointed at Meeting in Washington on Nov. 9—Assistance Rendered Kansas City Railways on Fuel Supply—Resident Director Not Yet Appointed

THE new War Board of the American Electric Railway Association, whose appointment was mentioned in the issue of this paper for last week, held an organization meeting in Washington on Nov. 9. The full board was in attendance, namely, Arthur W. Brady, Thomas N. McCarter, Lucius S. Storrs, Britton I. Budd and P. H. Gadsden. Secretary Burritt was also present. Mr. McCarter was elected permanent chairman of the board.

Naturally, the first subject discussed was in regard to the way in which the expenses of the board were to be met. Secretary Burrit presented the draft of a letter which the executive committee had prepared to be sent to the members of the association and to all non-member railway companies, asking from the former a sum equal to the amount of their annual dues to the association and from the latter a sum equal to the amount of dues provided by the constitution of the association for companies having gross railway revenue equal to those of the subscribing companies. The text of this letter, which was approved by the board, appears on page 899. It was also decided to send copies of it to the officers of the various state and sectional associations of electric railways.

The next question considered was as to the representation which the board would require at Washington. The conclusion reached was that a resident director familiar with electric railway affairs was necessary, but no appointment was made. The duties of the board were then considered.

As one of the duties would be to develop freight transportation, the chairman was authorized to appoint a sub-committee on traffic, with authority to perfect an organization of traffic men by the selection of proper representatives throughout the country, with power to work through the various sectional and state organizations and by any other agencies which might seem desirable. This committee would then provide a means whereby information could be secured, where needed, pertaining to each individual road with respect to rates, physical conditions, facilities for transportation and such other data as might be necessary. Mr. Budd, Chicago, was appointed chairman of this sub-committee on traffic.

Another suggestion made in the interests of fuel conservation was that the board might take up the question of flattening out the peak load on electric railways by arranging with various industries to vary their opening and closing hours. It was decided to refer this matter to the director of the board upon his appointment.

Upon motion, a resolution of thanks to James H. McGraw was passed for his offer of the full support of his organization, including the services of the Washington correspondent of the ELECTRIC RAILWAY JOURNAL, to assist the work of the board.

P. H. Gadsden was then appointed representative of the board in its relations with the Chamber of Commerce of the United States.

BOARD HELPS KANSAS CITY RAILWAYS GET FUEL

The chairman then presented to the board a telegram received from E. E. Stigall, purchasing agent Kansas City Railways, addressed to President Stanley and referred by him to the board. This telegram quoted the text of a telegram recently sent by the Kansas City Railways to the fuel administrator at Washington as follows:

"The Kansas City Railways Company, which operates all of the street cars in the two Kansas Cities and vicinity, and the Kansas City Light & Power Company, which furnishes light and power to the same community, are dependent practically from day to day upon their coal contracts with five Illinois coal operators. Even with this, it is requiring the most strenuous effort in the purchase of free coal to keep the street cars moving and to provide street and home lights. They are being operated on curtailed service now. If your contemplated order requisitioning for government 10 per cent of the output of coal mines in this district is to apply to those contracts, Kansas City will meet with disaster, due to practical shutdown of street cars and electric lights and power."

In his telegram to President Stanley, Mr. Stigall then said that the situation in Kansas City was evidently similar to that of many other railway companies and that he believed that it would be of much assistance if the weight of the association could be used to protect the coal supply for the electric railway industry as compared with private industries not manufacturing government requirements. The board decided to take this matter up promptly and was able to telegraph Mr. Stigall before the end of the day that the fuel administrator had notified the contractor to supply full tonnage under the contracts regardless of the 10 per cent government assignment.

At the request of the chairman, the secretary then read a letter from the Commissioner of Internal Revenue addressed to the association and requesting the appointment of a committee to submit suggestions as to the administration and application of the excess profits provision of the war revenue act. This matter was referred to Mr. Gadsden for his attention. The board then asked the chairman to notify the special war committee of the National Association of Railway Commissioners of the organization of the board. The personnel of this committee is as follows: Max Thelen, California, chairman; Travis S. Whitney, New York, First District; Frank H. Funk, Illinois; J. B. Eastman, Massachusetts; R. W. B. Donges, New Jersey.

The board then voted to elect Daniel Willard, chairman advisory commission, National Council of Defense, a member ex-officio of this board, and the chairman was authorized to write to Mr. Willard notifying him of the formation of the board and making a formal tender to him of ex-officio membership. The chairman was also authorized to notify the President, the Secretary of War and the Secretary of the Navy of the organization of the board.

The board then adjourned to meet again in Washington on Friday, Nov. 16, at the New Willard Hotel.

Letter Sent to Industry

The letter being sent by the association to member companies and non-member railway companies is published below. It bears the indorsement of the twenty-eight electric railway presidents and others who were in attendance at the conference on Nov. 2. Altogether 112 companies in thirty states were represented at that meeting.

In accordance with the recommendation made at a conference called by the executive committee of the American Electric Railway Association and held in New York on Nov. 2, 1917, President John J. Stanley of the association has appointed a War Board, which is to be organized on the general lines of the War Board of the steam railroads, which is to have its headquarters in Washington and which will select a man of established standing in the electric railway industry to represent such industry in all matters connected with governmental business during the war.

The recommendation of the conference was made only after a careful survey of existing conditions as they affect electric railways. The war is producing far-reaching changes in the business structure of the nation, and developments are daily taking place which have an all-important bearing upon the relations of our business to the country and upon the affairs of the companies themselves.

Washington is to-day the center of activities which are giving to electric railways a national as well as a local importance.

The time has come when every means of transportation at the nation's command must be co-ordinated in an effort to carry the men and goods essential to the winning of the war. The further continuance of the nation's industries depends upon it—the further progress of its communities and the welfare of its citizens.

Patriotic duty demands that the electric railways take up their share of this burden. Their facilities are not now available to the fullest extent. In many ways the railways are capable of assuming a much more prominent part in the solution of the all-important transportation problem. Examples of what certain urban as well as interurban railways have already done to relieve the congestion that threatens to interfere seriously with the necessary business of the country were cited at the conference and led inevitably to the conclusion that their usefulness in the present emergency may be greatly increased by

First, proper co-operation between the railways themselves looking to the expansion of their activities, and

Second, a proper presentation to the government and to manufacturing and other business enterprises of the extended resources of electric railways.

Moreover, the interests of the companies themselves call for adequate representation at Washington. There is hardly a railway in the United States that has not had convincing evidence in its own experience that its affairs are materially affected by what is being done at the nation's capital. Congress, the Interstate Commerce Commission, the Treasury Department with its control over the administration of the war revenue measures; the Post Office Department, with its $8,000,000 appropriation available for experimentation with motor trucks; the Priority Committee, which decides preference in the matter of shipments of the things necessary to railway operation; the Labor Committee, the importance of the work of which as it affects your interests cannot be too strongly emphasized; the Quartermaster's Department of the Army and the similar department of the Navy, each having the disposal of the transportation business of its own department; the Storage Committee, which is even now considering the use of motor trucks in lieu of other forms of transportation in connection with the immense storage warehouses for the housing of goods prior to their shipment abroad; the Housing Facilities Committee, in charge of the erection of dwellings for workers in war industries; the Industry Survey Committee, which will have power to recommend the discontinuance of non-essential industries during the war, and the War Board of the steam railroads—all of these deal with matters of vital importance to electric railways.

Under such conditions it is necessary to the welfare of our industry that it be represented in Washington by a board, which will have the confidence of and receive the fullest co-operation from every railway and that, in turn, the board shall have at its disposal the services of a man equipped by reason of his ability, his acquaintance and his standing to handle the difficult problems with which the board will be confronted.

The situation is one that affects us all—the smaller as well as the larger companies. Our representatives in Washington must have our moral support and financial backing if they are successfully to accomplish their purpose. In order that this may be brought about the conference approves the resolution of the executive committee of the American Electric Railway Association providing that each member company be asked to subscribe to the expense of the War Board a sum equal to the amount of its annual dues to the association, and that each non-member company be asked to subscribe a sum equal to the amount of dues provided by the constitution of the association for companies having gross railway revenue equal to those of the subscribing companies.

Order to Use Electric Railways

On Nov. 3 Major C. M. Curran, Quartermaster, War Department, Washington, issued the following instructions to depot and camp quartermasters.

Subject: INSTRUCTIONS TO USE ELECTRIC RAILWAYS FOR GOVERNMENT TRAFFIC

1. Pursuant to the personal request of Daniel Willard, president of the B. & O. R. R. Co. and member of the executive committee of the American Railway Association, it is desired that all shipping quartermasters will make use of such electric railways as have regularly published tariffs, for freight and passenger traffic whenever it shall be to the advantage of the government to do so.

2. The burden laid upon the steam railways, under the present war emergency, requires that government freight and passenger traffic be routed over electric railways (having regularly published tariffs) whenever it can be done to the advantage of the government and to the relief of the steam railways.

3. It is known that many electric interurban railways are now equipped for and desirous of securing government freight and passenger traffic; and it is believed that when the instructions contained in this circular become generally known, many other electric interurban lines will be glad to equip themselves for such traffic.

Flexible Fare Is Desirable

Theoretically, the Fare Should Be Last of Important Conditions Affecting Electric Railway Operation to Be Fixed—Public Service Commissions Should Be Best Qualified to Modify Fares to Meet Changing Necessities

By DELOS F. WILCOX, Ph.D.
New York, N. Y.

IN a recent editorial the ELECTRIC RAILWAY JOURNAL directed attention to one unique feature of the pending Philadelphia rapid transit lease that deserves general discussion. I refer to the provision for the future increase of fare in case the initial rate of fare proves to be inadequate. Under the proposed lease the unified system, consisting of the company's lines and the city's lines, is to be operated at the start on the basis of a 5-cent fare and free transfers at intersecting points. It is stipulated, however, that whenever the gross revenues for any two successive three-month periods are insufficient to enable the company to pay a dividend at the rate of 4 per cent per annum on its present capital stock the city shall join with the company in an earnest appeal to the Public Service Commission "to order a just and reasonable fare, which may be by flat increase or charge for transfers, or both, on all or any part of the unified system." The standard for a just and reasonable fare is to be the production of at least enough revenue to enable the company to pay 6 per cent on its existing stock.

The Need of a Flexible Fare

One thing is certain—it will not be practicable to maintain the principle of the fixed inflexible fare unless the city is prepared to make up deficits through the remission of taxes, or through subsidies, or through both. Here the need for a clear definition of fundamental policy becomes apparent.

—DR. WILCOX

FARE SHOULD BE LAST CONDITION TO BE FIXED

I am not concerned with the fairness of the dividend rates proposed, for that is a matter of local history and local conditions, with the details of which I am not familiar. The significant thing about this plan is that it gets away from the inflexible fixed fare which has hitherto generally prevailed in electric railway franchises.

Any careful student of public utilities must recognize that from the theoretical point of view the fare should be the last of the important conditions affecting electric railway operation to be fixed. Electric railways have been installed for the purpose of rendering a necessary service, and the cost of this service must be paid by or for those who enjoy its benefits. Logically, in a resettlement of electric railway franchise conditions the principal factors should be taken up and determined in the following order:

1. The value of the existing property actually and necessarily devoted to the public service.
2. The city's immediate requirements in the way of extensions and additional facilities necessary to meet the reasonable existing demands of the city's growth.
3. The extent and the quality of the service required by the community.
4. The necessary operating cost of the service to be rendered, including proper allowances for depreciation, insurance, accident reserve and taxes that are fixed beyond the power of the city to change them.
5. The rate of return upon the recognized investment necessary properly to compensate the investors in view of the degree of security given to the investment and of the certainty of its earning the annual return allowed to it.
6. The amount of compensation to be paid to the city for the enjoyment of the franchise, whether in the form of special franchise taxes, license fees, percentages of gross receipts, share of net profits or contributions to the amortization of capital for the city's benefit.
7. The schedule of fares that will be sufficient to provide the revenues necessary to the carrying out of the preceding financial program.

Heretofore the only important electric railway settlement in which the fare problem has been worked out in part along scientific lines is the 1910 Cleveland franchise. I disregard the new Dallas franchise for the reason that it has just come into effect and has not yet been subjected to the test of experience. Even the Cleveland franchise, with its automatic or self-regulating system of fare schedules, is not based upon a complete and definite financial policy. It leaves to the future the determination of the question of amortization and ultimate public ownership. It over-emphasizes, perhaps, the importance of low fares as compared with good service. At least it leaves these two factors to play see-saw with each other indefinitely.

The Chicago and Kansas City settlements make no provision for increases of fares, but do hold out the elusive hope of reductions of fares through the application of the city's share of the profits under conditions that make a reduction wholly impracticable. The New York subway contracts of 1913 are based upon a definite and fairly complete financial policy, but the means provided for carrying this policy out is not a flexible fare but a municipal subsidy-guaranty.

FLEXIBLE FARE IS LOGICAL OUTGROWTH OF CLEARLY DEFINED CITY POLICY

A study of the experience of the principal cities which have adopted electric railway resettlements tends to show that the one thing most needful, and the one thing thus far most lacking, is a definite determination of municipal policy with respect to the electric railway business. The investment clamors for security, but the city cannot afford to grant full security unless the amount of the investment is kept down or brought down at least to a level corresponding to the value of the visible property. The public demands a low rate of return upon the investment, but it is generally unwilling that the city itself should assume the ultimate risk of the investment and should substantially guarantee the net earnings of the enterprise as the price of securing capital at a low cost. Both parties are still trying to eat their cake and have it too.

A flexible fare is a logical outgrowth of a clearly defined policy regarding electric railways, but the public cannot be expected to accept the idea of a flexible fare if the result is to be merely to relieve the electric railway from all responsibility for keeping down costs. In other words, it is not feasible to put into effect an automatic scheme for the adjustment of fares to meet the company's financial necessities unless adequate means are provided for determining these necessities.

The discussion of the plan recently proposed for the fixing of wages by public service commissions has brought out very clearly the fact that if wages are to be fixed in this way, then the company's responsibility for economy in this particular item of expenditure is practically at an end, and the same authority that increases the wage scale must logically increase the fares sufficiently to meet it, unless, indeed, the community at large is enough interested in maintaining a fixed fare to make up the additional labor cost by a decrease in electric railway taxes or by an actual subsidy out of the taxes derived from other sources. The authors of the Cleveland franchise recognized the difficulties inherent in the automatic readjustment of fares and made an effort to prevent any illegitimate increase in operating and maintenance expenses by the establishment of certain arbitrary allowances per car-mile to cover these expenses. The alleged insufficiency of these allowances has been one of the principal bones of contention between the city and company under the Cleveland plan.

The financial problems of the electric railway business are difficult enough where private ownership and operation is recognized as its permanent and proper status, and also where public ownership has been established either in fact or as a clearly defined ultimate policy. But the difficulties are still greater where an effort is made to leave the question open for future determination without prejudice. It is as if a complex and difficult military campaign were to be undertaken without any objective. All the delicate problems of security, motive, compensation and service are incapable of definite adjustment except on the basis of a prior determination of ultimate policy.

FARE COULD BE ADJUSTED BY COMMISSION OR BY ARBITRATION

Theoretically the public service commission is the body best qualified to fix rates and to modify them from time to time in accordance with changing necessities. It is, therefore, not illogical that under the Philadelphia plan the city should join with the company in securing from the commission an adjustment of rates whenever the financial scheme of the contract between the city and the company requires additional revenues. This, however, does not mean that a city must necessarily second the company's request for an increase of fares. It should be kept clearly in mind that before any automatic or discretionary readjustment of fares is provided for, the financial scheme looking to the fulfillment of the city's policy with reference to the electric railway business should be worked out in detail. Then it will be proper to leave to arbitration, or to the state commission, the determination of any adjustments in the fare which may become necessary from time to time in carrying out this scheme. But the city ought always to be in a position to oppose before a competent tribunal the company's requests, *though bound to accept the decision* of the tribunal with respect to any increase of fare made necessary by the financial program to which the city is committed.

It may be necessary, indeed, for the city itself to initiate a movement for the increase of fare in case such an increase is needed to enable the electric railway to meet its obligations with respect to those portions of the financial program, such as amortization, in which the city has a primary interest. In any case, however, it is logically necessary that the financial results to be accomplished should be definitely set forth in the franchise contract, and the determination of the particular rates of fare necessary to bring about these results should be left to arbitration or to the Public Service Commission, with both the city and the company privileged to appear before the tribunal and take such positions as their respective interests require. Of course, if fares are to be made flexible, possible decreases as well as increases should be provided for.

One thing is certain—it will not be practicable to maintain the principle of the fixed inflexible fare unless the city is prepared to make up deficits through the remission of taxes, or through subsidies, or through both. And here again the need for a clear definition of fundamental policy becomes apparent.

Electric Furnace for Steam Locomotives in Switzerland

With coal at $16 per ton and scarce at that and with the possibility of its reaching $20 in the near future in Switzerland, the railway authorities have been forced to consider plans for reducing coal consumption on the locomotives of the country. Water power is cheap, but electrification cannot be pushed rapidly on account of the cost and scarcity of materials needed for electric locomotives.

One scheme considered is the use of electric heat under the boilers of the present steam locomotives. With electrical energy at 0.3 cent per kilowatt-hour and coal at $20 per ton the electrically produced heat is said to be as economical as that produced from coal, omitting the cost of fitting up the furnaces of the locomotives. While this temporary expedient would be justified only under extreme conditions, it may be the only solution of the Swiss transportation problem if the coal supply from Germany is shut off.

The subscription of Henry L. Doherty & Company, New York, N. Y., to the second Liberty Loan of 1917 was $1,000,000. Another $1,000,000 of the loan was bought by Cities Service Company, controlled by Doherty & Company.

Automobile Maintenance on a Public Utility Property

Public Service Corporation of New Jersey Has Comprehensive Plan for Maintenance and Use of 350 Automobiles and Trucks

THE Public Service Corporation of New Jersey, of which the Public Service Railway is a part, has found it necessary to develop a rather comprehensive plan for looking after the upkeep of the 350 or more automobiles and motor trucks which are necessary in the conducting of its business.

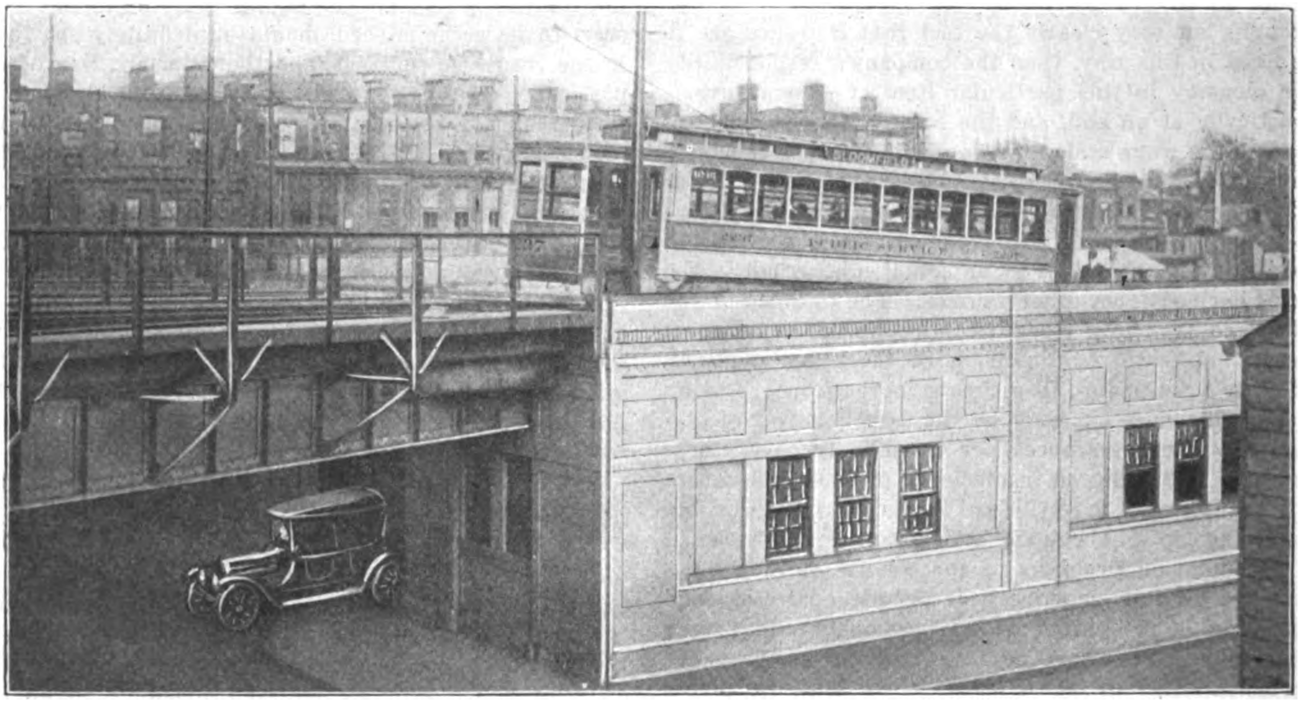
In order to give unity to the administration of the automobile and truck service, authority has been concentrated in an "automobile maintenance committee," with representatives of the several branches of the corporation. Percy Ingalls, secretary of the corporation, is chairman of this committee. The other members are H. C. Donecker, assistant general manager Public Service Railway; Farley Osgood, vice-president and general manager Public Service Electric Company; E. H. Ernshaw, assistant general manager Public Service Gas Company, and E. J. Allegaert, general auditor Public Service Corporation.

The work naturally divides itself into two parts—operation and maintenance. Both of these come under the jurisdiction of the committee, which decides on matters of policy and administers the department through a general superintendent. This official attends to the engaging of chauffeurs and other employees, superintends the making of repairs, etc. He is located at Newark and gives personal attention to repairs made on all machines assigned to the territory north of Trenton. These repairs are made at the Plank Road shops, where a section is reserved for the purpose. The superintendent reports to H. A. Benedict, mechanical engineer of the railway company, who has charge of all upkeep of rolling stock.

As it would not be economical to send cars and trucks from the southern division to Newark for repair, they are repaired locally by mechanics employed by each of the operating companies.

AUTOMOBILE SERVICE AT NEWARK

The corporation plans to furnish automobile service to all officials who need it in performing their routine duties. There is no hard-and-fast rule regarding the matter, but the plan of the maintenance committee is to render the equipment as flexible and useful as possible. In other words, an effort is made to keep up the load factor. In many cases it is most efficient to assign cars to individuals, with or without chauffeurs, partly to fix responsibility for the proper use of the cars. It has been found that divided responsibility does not produce good results, and on the other hand, individuals to whom cars have been assigned are always willing to accommodate their colleagues when general cars are not available. A few cars are kept for general service, subject to the call of a limited number of individuals.



EXTERIOR VIEW OF PUBLIC SERVICE TERMINAL GARAGE IN NEWARK, N. J.

Forming a part of the Public Service Terminal in Newark is a garage with accommodation for about sixty automobiles. It is located in a space which otherwise would be of limited value, namely, under the yard tracks where they descend from the elevated train floor to the street level. The garage is on the street level, across Pine Street from the rear of the main building. This garage is in charge of a superintendent and is provided with all modern appliances for automatically supplying air, gasoline and lubricating oil to the cars as they enter.

OPERATING RULES FOR THE TERMINAL GARAGE

To obviate as far as possible the occurrence of misunderstandings regarding the use of machines, the maintenance committee framed some simple rules as reproduced on the next page.

PART OF PUBLIC SERVICE TERMINAL GARAGE IN NEWARK, N. J.

In order to secure the fullest service from the company's cars and chauffeurs it is ordered that the following rules shall be in effect at the company's terminal garage in Newark.

Definitions: The titles used in the rules refer to individuals as defined below.

Assignee. Any employee of the company to whom a car has been assigned, such car being regularly stored at the terminal garage.

Employer. Any assignee having a chauffeur.

Regular chauffeur. Any chauffeur regularly assigned to an assignee.

Available chauffeur. Any chauffeur not regularly assigned or temporarily released by assignees for other assignments.

Garage superintendent. The garage employee regularly in charge of the garage, or any other employee temporarily representing him.

Rule 1. No car shall be taken out of the garage without permission of the assignee.

Rule 2. Assignees shall notify the garage superintendent whenever their cars are available for general use. This means that if an assignee can see ahead for even a single day that he will not use his car himself he shall notify the garage superintendent and the car will then be considered available for emergency use during the period specified.

Rule 3. Assignees shall notify the garage superintendent whenever they do not expect to use their chauffeurs for periods even as short as part of a day, and for such periods they will be considered as "available chauffeurs."

Rule 4. In the assignment of cars and chauffeurs for emergency and temporary use the garage superintendent shall, so far as possible, use electric company cars and chauffeurs for electric company business, railway company cars and chauffeurs for railway company business, etc.

Rule 5. Regular chauffeurs shall be at all times subject to the assignee's order and shall not be sent away from the garage without the assignee's permission.

Rule 6. Regular chauffeurs are expected to remain at the garage during working hours, subject to calls by the assignees.

Rule 7. Available chauffeurs will be assigned to duty by the garage superintendent as the case may require.

Rule 8. When two or more available chauffeurs are in the garage they shall not all be permitted to leave the garage at the same time for lunch or for any purpose other than to take cars out on assignment.

Rule 9. All chauffeurs, "regular" and "available," will be expected to report to the garage superintendent when they come in to the garage, and when they leave the garage for any purpose shall also report to him, giving such information as they may possess as to their probable return, and on whose call they are going out.

Street Cars Eighty-five Years Old

The First Street Car Was Built by John Stephenson and Was Put in Operation in New York in 1832—Early History of the Line

BY CARL HOLLIDAY

Professor of English, University of Toledo

EIGHTY-FIVE years ago, on Nov. 26, the first street car in the world began its journey. It attempted to "crawl" up Fourth Avenue, New York City, from Prince to Fourteenth Street, and almost succeeded, but not quite. In those days Old Broadway was merely a rambling village road up to Eighth Street, and from there on was scarcely more than an indefinite country path, copiously decorated with mud puddles. Where Grace Church now stands was an old barn, while a powder house ornamented the future Union Square. At the corner opposite Houston Street stood a stone that told passers-by that it was "2 miles to New York." Broadway and Fourth Avenue were fashionable residence sections that had possessed gas light since 1825, and along these grassy boulevards unending processions of mules, oxen and horses slowly hauled freight and hoop-skirted ladies. Between 1746 and 1800 a company ran a regular route along these two highways and gathered a harvest of shillings from the "hurrying" throng. Then came the omnibus and car service, and the narrow streets were rapidly becoming congested.

In 1830 a New York carriage maker, John Stephenson, offered a brilliant suggestion for remedying the condition. Why not lay rails and carry the ladies and gentlemen on cars with flanged wheels? There was at once an outcry of protests and admiration. Some of the "mossbacks" pointed out the noisiness and the dangerousness of such a contrivance, but the progressives pointed out the danger of trying to cross the street full of omnibuses as big as family residences and declared that this state of affairs could not continue. Of course, the radicals won. A charter was granted the New York & Harlem Railroad on April 25, 1831, to construct a double-track road to any point on Harlem River "between the east bounds of Third Avenue and the west bounds of Eighth Avenue"; and on Nov. 26, 1832, the first car began the uneven tenor of its way.

Among the incorporators of this unique undertaking were some men famous in the commercial history of early New York: Benjamin Bailey, Mordecai Noah, Benson McGowan, James B. Murray, Thomas Addis Emmet, Gideon Lee, Samuel F. Halsey, Robert Stuart and others of equal prominence. These men of vision wasted no time in arguments and doubts, but in July, 1831, promptly elected a board of directors and chose John Mason, founder and first president of the Chemical Bank, as their president. The first street car in the world was named after him.

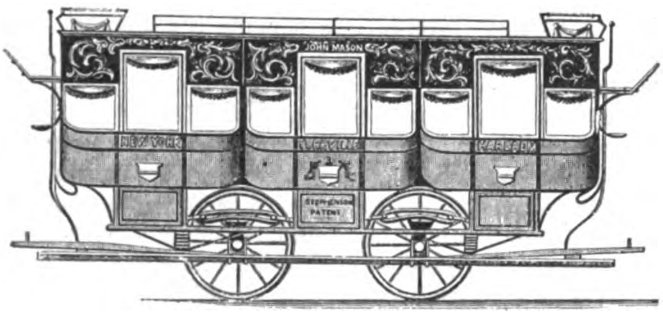
That first tramcar, as it was then called, was a wonder to behold. A combination of the American omnibus and the English coach, with three compartments each accommodating ten passengers, and six doors, three on each side. The seat for the driver was on the roof, as with the old-style omnibus. The car body was suspended on the truck by leather links.

NOTE—For other articles on the early history of the New York & Harlem Railroad, see STREET RAILWAY JOURNAL, Vol. VII, page 110, Vol. IX, pages 10, 90 and 591. [Eds.]

Owing to the rigid construction of the track, which was made of strap-iron rails on stone stringers, the cars were very noisy, and this perhaps had much to do with the removal uptown of the residence section. In spite of the fact that here were certain elements of the modern transportation system, the enterprise was not a financial success.

John Stephenson, inventor of this first car, came with his parents from Ireland to New York in 1811, when he was but two years old. After serving an apprenticeship as a coach builder he established a shop at 667 Broadway, and began the construction of omnibuses in 1831, the first built in the city of New York. It was while thus engaged that he designed and made the "John Mason."

In 1833 the Common Council passed an ordinance allowing the company to lay a track on Broadway, and two blocks of rails were actually put down, but the conservatives objected so violently that the route was soon abandoned. Doubtless when the horse-car plan on Fourth Avenue did not prove a great success financially, these same oldtimers wagged their heads with infinite satisfaction. About two years later, the company added a small steam dummy to assist in hauling its passengers, but in time the steam car had to go its way—which was exactly what it had been doing all along, even if it was a pretty poor way. Years later this same type of cars turned up—figuratively and actually—in the South, and until a recent date one stood in the streets of Middlesboro, Ky., exactly where it had exploded long before.



THE FIRST STREET CAR IN THE WORLD

The first New York conductors were boys, and were supposed to turn in their total receipts every Saturday night—but didn't. In fact, their forgetfulness became so clear that at length the company offered a reward to the boy bringing in the largest amount each week. The sudden increase in revenues is shocking evidence that graft is an ancient and time-honored institution around Long Island.

Nevertheless, the company must have been prospering for it made frequent expansions. We find that in 1837 the New York & Harlem Railroad was authorized to extend its double-track line to Yorkville, a distance of 5 miles. And we learn further that the "coaches" will pass every fifteen minutes, and that the fare will be 25 cents for the entire trip. In 1837 Fourth Avenue from Thirty-fourth Street to Harlem River was widened and the line promptly extended beyond the river. Three years later, or in 1840, the company purchased the controlling interest in the New York & Albany Railway Company, which had been organized several years before to build a railway to Albany, but had never done any construction, and later this line was built. Commodore Vanderbilt was, by this time, a heavy stockholder and director, and in 1864 became vice-president. Affairs were indeed looking prosperous for the New York & Harlem Railroad Company. Meanwhile had come Ross Wenans of Baltimore with a car possessing eight wheels, and, to meet this improvement, the pioneer Stephenson had been forced to expand, and in 1843 built a great factory covering sixteen city lots.

In spite of such improvements in transit, however, the downtown streets in New York as early as 1850 were so crowded that a bridge was built across Broadway at Fulton to accommodate pedestrians. This bridge idea would not be a bad scheme even in our own time, and is offered without extra charge to the present city fathers of New York. In just such an hour of danger came Jacob Sharp, who began to declare vigorously that it was a shame that a city of 500,000 should have no respectable rapid transit system. He placed counters at downtown corners, and proved that between 7 a. m. and 7 p. m. 16,215 omnibuses went up and down Broadway, past Chambers Street, that 9442 other vehicles went past, and that the omnibuses alone carried 33,583 passengers. The numerical arguments thus brought forward by Sharp were too tempting to be resisted by New York capitalists. About this time, 1852, a French engineer named Loubat revived the horse-car idea, and a vehicle a little less bulky and awkward than the one of 1832 having been constructed, a company was induced to lay a short line in Sixth Avenue. This was so successful that by 1855 horse cars were running out Third and Eighth Avenues. Thus, shortly after the middle of the century, the metropolis possessed four street car systems.

But not even then was New York satisfied. The first one-horse car, or "bobtail," was invented by Stephenson and Slawson and was successfully introduced at New Orleans just at the outbreak of the Civil War, and this simple device was added to the New York equipment in an effort to reduce congestion. Then came the cry for an elevated road. The "mossbacks" stood aghast sure enough at the audacity of this scheme; but in 1867 more than forty plans for such a scheme were submitted to the New York Legislature. Charles C. Harvey was granted permission to build a track, merely as an experiment, from Cortlandt Street through Greenwich Street and Ninth Avenue to Thirtieth Street, and the road was opened in 1870 with an endless chain run by stationary engines in four sections of the city. The endless chain, however, caused endless troubles, and in 1871 dummy engines pulling three cars each were substituted. Then came the "Gilbert" Road, to consist, as its inventor, Dr. Rufus Gilbert, declared, of a pneumatic tube on arches, through which tube the trains should race "unseen and unheard." Like painless dentistry, it was too beautifully theoretical to be true, and the road finally resolved itself into a plain elevated.

By 1876 the New York Elevated boasted that it was running forty through trains per day between the Battery and Fifty-ninth Street; but when Cyrus Field gained a controlling interest the next year such a boast soon seemed very tame indeed. On June 5, 1878, an "L" was opened from Rector Street to Central Park; the Third Avenue Road was opened on Aug. 26 of the same year, and in 1879 the two systems were merged under the name of the Manhattan Railroad Company.

Utility Growth Is Vital to Nation*

Increased Rates and New Capital Are Necessary if Electric Railways and Other Utilities Are to Do Their Allotted Work Now and in the Post-War Period—Money Available if Commissions Assure Earning Power

By ORLANDO B. WILLCOX
Vice-President Bonbright & Company, New York, N. Y.

THE ABILITY of utilities to give adequate, increasing and constantly improving service is a national necessity. Good service in every community served is essential to community health, growth and prosperity. The soundness of public utility securities is important to the welfare of the people as a whole, and, because of the large part of the people's capital invested in them, directly affects the ability of the people to respond to national requirements in taxes and loans for war purposes.

The national necessity of continuing all public utility service during the war is obvious on the most casual consideration. The most conspicuous war contributions of the utilities are the economies they effect in the three things most essential (excepting only food) for the prosecution of war, namely, labor, coal and capital.

ECONOMIES EFFECTED BY UTILITIES

Labor saving is, of course, a public utility's primary function. It is self-evident that suspension of any one of the great utilities would necessitate the unremitting work of vast armies of men to supply the necessities now so easily accessible. Conversely, these utilities release those vast armies of men for other useful labor.

The coal conserved by the utilities is quite as important though not so conspicuous. The shortage of coal in Italy is Germany's one steadfast ally, and that in France is more threatening than lack of men. In this country, although more coal is being mined than ever before, at the expense of the supply for future generations, the demand for war purposes added to normal requirements has caused a shortage already dangerous, now defying the strenuous efforts of a special commission of the national government. The coal consumption of utilities, enormous as it must be, produces energy that in the forms of light and heat, power and transportation, would consume at least twice as much coal if provided separately for each requirement.

Much of the power used by war factories is supplied by the central stations of public utilities. The saving to the various war industries in capital costs for power machinery, steel, copper and construction costs represents a substantial part of the total capital temporarily diverted to war production and therefore a saving to the nation of a considerable percentage of war outlays.

UTILITIES MUST EXPAND

The ever present question is, how is capital to be provided to meet the great national need for the constant expansion of public utilities? If the very nature of their enterprises permitted them to remain static, even for intermittent periods, or if their surplus earnings under regulation were sufficient to meet the costs of their expansion, their problems would be simple—merely the refunding of maturing obligations. Their real problems, however, arise from the need for the facilities they supply not only by the population and industries they serve at any one moment, but by every unit of every increase.

GREATEST HANDICAP HAS BEEN FIXED RATES

It may be admitted, to avoid argument, that the rates fixed in most cases have allowed a fair return on the capital invested at the moment. Too often, however, the utilities have failed to impress the commissions with the necessity of making provisions in advance for the large capital increases necessary in the business of providing an increasing population with facilities of constantly expanding use.

The rates fixed in pre-war periods were never sufficient to provide new capital out of surplus earnings; and often were insufficient to encourage the investment of new capital, either by allowing a sufficient margin of earnings above actual charges or the accumulation of a protecting equity. And in the face of rising prices, particularly during the war period, the greatest handicap to growth has been that the rates are fixed.

With the present costs of coal and all materials for operation, maintenance and construction doubled, and costs of labor largely increased, the utilities are limited to prices for their service rigorously regulated down to a scant return on capital already invested, based on pre-war costs.

Fortunately certain of the public service commissions are recognizing the necessity for increased rates to enable utilities to pay their operating costs, fixed charges and dividends on invested capital. In 462 rate applications reported so far for the year 1917, increases were allowed in 401 cases. These are but evidence of the increased rates which must follow the increased costs of operation, if the utilities, so necessary to national and community life, are to escape disaster.

COMMISSIONS HAVE BEEN SHORT-SIGHTED

The commissions must see to it that capital for great public service expansion is provided. The resulting benefits will inure to all the people through cheaper and increased national output and the resulting growth of the country's wealth. The penalty for failure to make these provisions now will be measured not merely by the investors' loss of profits, but by the country's loss of wealth through the fatal crippling of its chief agent in low-cost production.

The commissions have conceived their whole mission to be the prevention of large profits on capital already invested. They have fixed rates for service which are calculated to leave, after payment of expenses of operation in normal times, scarcely a fair return on the money invested.

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*Abstract of report presented by Mr. Willcox, as acting chairman of public service securities committee, at Baltimore convention of Investment Bankers' Association of America, Nov. 12-14.

They have conceived it to be in the public interest to penalize by loss, and make hazardous by low rates, capital already invested, oblivious of the far greater public interest in the constant expansion of the utilities' time and labor-saving service.

They have dealt with the utilities as already full grown and completed, and have fixed and limited the earnings on capital invested in the past, regardless of the requirements of capital needed for expansion in the future, vastly greater in amount and more necessary to public welfare.

They have dealt with history, while their business was preparedness. They have saved present operating costs by sacrificing the greater saving of capital costs. In their zeal to effect present economies they have been blind to the demands of the industries of the country for more public service and ever more service, and deaf to the utilities' cries for such regulation and such rates as would attract and not frighten the investors who must provide capital for the additional service required.

NEW CAPITAL IS COSTLY NOW

New plants and additions, betterments and extensions of old ones, will cost just twice what the old ones cost, on the valuation of which prevailing utility rates have been fixed, and costs of operation, maintenance and taxes have also nearly, if not quite, doubled. To discharge their obligations to the public the utilities, in addition to a fair return on the capital already invested, must show a margin of earnings and equities large enough to persuade investors to provide the capital for the expansion demanded by American industry in utility service in preference to other investment.

The rates for service required for these earnings would undoubtedly be paid, and freely paid, by the public served, because they represent no more than the value of the absolutely necessary service received. The federal government has recognized the justice of prices for necessities double the pre-war prices, in fixing the following prices:

	Pre-War Price	Price Fixed by Government
Wheat, per bushel	$0.90	$2.20
Corn, per bushel	.60	1.10
Copper, per pound	.14	.23½
Coal, per ton	1.15	2.75
Pig iron, per ton	16.00	33.00

Notwithstanding, some of the utilities, because of drastic and punitive regulation in the past, do not even dare apply for fair increases in rates! To these we would say that more receiverships would result from a failure to apply for increases than from just and defensible applications.

Pending very general and necessarily large increases in rates, the utilities are faced with the difficulty at the moment of getting needed capital at any rates, and are compelled to pay high for piecemeal and temporary financing, as much because of the restraint on their obvious right to charge fairly for their own output, as because of the strain on capital.

Constant additions to the capital of the utilities is so insistently required by the country's industries, and so important to national production as well as to national conservation of its sources and energies in these times of war, that it may be confidently expected that their requirements will receive instant and generous attention by a securities priority board, if national regulation of security issues becomes necessary.

IMPORTANCE OF UTILITIES IN POST-WAR PERIOD

After the war the peoples of the world will fight as strenuously as now for the world's trade, and the armies, the guns and the munitions of that battle will be labor, machinery and capital. We pay our labor more than any other people and we cannot and would not reduce the wages of American labor to the continental level; so we must always be at the disadvantage of higher labor costs. But we have always excelled in devising and using labor-and-time-saving machinery, and now we have great new additions to our wealth and capital. It is machinery and capital, and not cheap labor, that must establish our position as leaders of the world peace.

The commissions are charged by the public with the duty of visualizing now, even in these days of high costs and economic and financial strain, the destiny of all the utilities, and must make provision for the service the utilities have to perform for the nation in the trying and fiercely competitive period to follow the war. All the energies and all the talent of the country, co-ordinated to common effort, must be bent to the single task of reorganizing all the business activities on a peace basis to meet successfully the world's competition. Waste must be eliminated to reduce production costs, whether that waste is in the money costs of plants or materials, or in the time consumed in manufacture or transportation, or in the amount of labor employed in each operation; and our great time and labor and money-saving machinery, the public utility systems, will be our greatest contributor to low production costs.

CAPITAL FORTHCOMING IF COMMISSIONS ASSURE EARNINGS

The country's economic and industrial future and the successful prosecution of the war depend in large measure on the ability of public utilities to continue their service, and even more on the large expansion of their labor-time-and-money-saving machinery against the exigent needs of the post-war period. These are all functions of capital.

Utility managers can and will devote the skill, resourcefulness and ingenuity of the American executive to the operating problems, uniting system with system, building greater plants, devising new economies to reduce America's production costs, if only the needed capital is provided. Investment bankers will undertake to divert the necessary part of the savings of the nation to utility securities if they can give assurances for the safety of the investment and the protection of return through adequate earnings.

It remains for the public service commissions to provide those assurances for the needed capital; to see, in the light of wisdom and experience, that the public welfare requires the lowest possible production costs for the nation's industry, and that the public has lodged in their hands the responsibility and the power to direct the upbuilding of public utility machinery so that it may adequately do its allotted work.

EQUIPMENT and MAINTENANCE

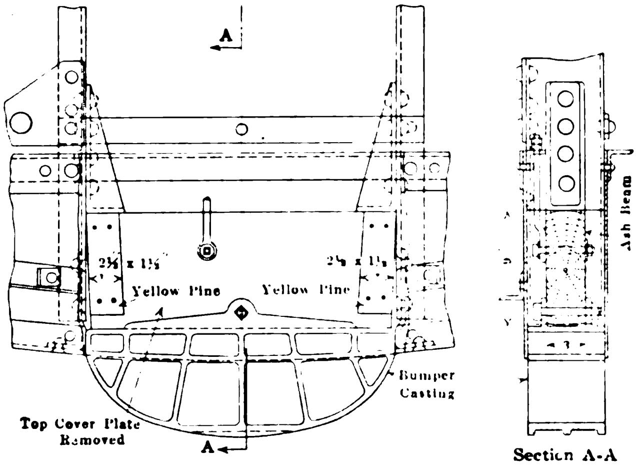
HAVE YOU A GOOD WAY
OF DOING A JOB?
—*Pass It Along*

These Articles Have Been Selected to Provoke Thought and Stimulate Discussion. All of the Technical Departments Are Represented

Bumper Localizes Damage Resulting from Minor Collisions

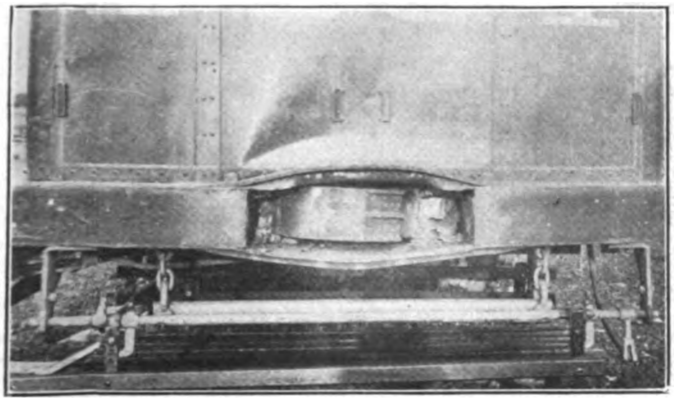
BY KEITH MACLEOD
Engineer of Equipment Montreal (Que.) Tramways

Without shock absorbers of some kind many small collisions between cars result in costly damage both to the platform and the car-body framing. To take up such shocks we have designed a bumper arrangement by which the damage is localized to parts which can be readily and cheaply replaced. The accompanying half-tone shows the results of a collision which would have been serious if no shock absorber had been provided. As will be seen, the bumper was demolished but the rest of the car was practically uninjured.



DETAILS OF WOOD-BACKED BUMPER FOR ABSORBING SMALL SHOCKS

As indicated by the drawing the device consists of a malleable iron bumper casting with anti-climbing ribs backed by an ash beam which in turn rests against brackets attached to the center platform sills. The ash beam is reinforced at the sides by 2½-in. x 1½-in. yellow pine blocks. The bumpers, castings and beam are of sufficient strength to withstand small touches between cars and at carhouse bumpers, but are designed to give way if a heavier shock is encountered. It has been found that in many small collisions nothing further than a new wood block and sometimes a casting is required to repair the car.



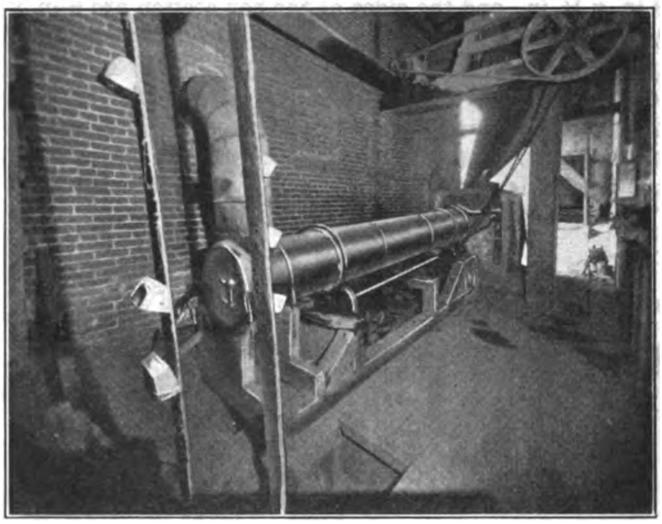
CAR AFTER COLLISION, SHOWING HOW THE SMASHING OF BUMPER HAS AVOIDED SERIOUS DAMAGE

Sand Drier Operates Like Cement Kiln

BY R. A. WILLSON
General Superintendent Washington Water Power Company, Spokane, Wash.

We have constructed a sand drier arrangement which takes the sand from a storage bin, screens it, runs it through a rotary drier and then conveys it to a second storage bin.

On the right in the illustration is shown the bucket conveyor which carries the sand from the receiving bin under the track to a hopper over the firebox. The sand is screened through a rotary screen, and it then goes through a chute and into the end of the cylinder which protrudes into the firebox. The latter is large enough for old track ties to be used as fuel without being cut. From the firebox the sand passes through a riveted steel cylinder 15 ft. long and 18 in. in diameter. This cylinder is patterned after a cement kiln. It is slightly tilted, sloping away from the firebox, and has blades ar-



LARGE CAPACITY SAND DRIER OF WASHINGTON WATER POWER COMPANY ranged so that as the cylinder revolves the sand is raised to the upper side of the tube and then drops back again.

As the cylinder forms a flue between the firebox and the chimney, the hot air and gases come into immediate contact with the sand and not only dry it but also remove all clay and vegetable matter, this being dried to dust and carried up the chimney. The dry sand comes out of the left end of the drying cylinder and is conveyed to the dry-sand storage bins by a second bucket conveyor. The capacity of the outfit is about 8 tons per hour. It was made largely of scrap materials.

West Penn Railways' Interurban Car

Its Light Weight and Large Capacity, Motor-Operated Doors and Magnetic Brakes Are Among the Interesting Features

The West Penn Railways, Pittsburgh, Pa., has in interurban service fifteen cars of the type shown in Figs. 4 and 5. This car is 57 ft. 10 in. long, 8 ft. 6⅜ in. wide, and has 33-in. wheels; the underframing and side girders are of steel, and the posts and roof are of wood. The car is equipped with magnetic and hand brakes, but no air brakes. The total weight is 46,000 lb., the seating capacity is seventy, and the total capacity, 200. The car bodies were built by the Cincinnati Car Company, and Brill type 27E-1 trucks were used. While the general construction of the car is not radically different from the modern type of interurban car, there are several unusual features.

Light-Weight Bolster

With economy of weight in mind, the box girder steel bolster shown in Fig. 1 was constructed in the railways' own shops. The top plate is 12 in. x ⅜ in., the bottom 9 in. x ½ in., and the sides of the box section are 6-in. x ¼-in. plates which are arc-welded to the top and bottom members. Bracing webs ⅜ in. in thickness are located as shown in the drawing. These bolsters have been carefully checked up after two years of service and no deflection is apparent. It is estimated that 100 lb. per bolster is saved by using this type of construction.

Motor-Operated Doors

Motor-operated doors are rarely used, but the design developed for these cars has proved so satisfactory that it has fully justified its installation. The general appearance and the details of the device are shown in Figs. 2 and 6 respectively. The door-operating levers are actuated by a Westinghouse 1/12-hp., 250-volt d.c. series motor located over the doors and supported from the letterboard. There is one motor for each pair of center doors, and the control switches are connected to cords running the full length of the car, so that the conductor at any location in the car can open the doors by pulling one cord and close them by pulling another. The question may be raised as to what would happen if a person got his hand or foot caught in a door. To meet this emergency the edges of the door have been fitted with pieces of sheet gum which are flexible enough to bend back and avoid an injury. Should a person's whole body be caught, it would immediately stop the motor and no bad effects would result. Since the car is equipped with magnetic instead of air brakes there are no air compressors on the car. This is one reason for adopting motor-operated instead of pneumatically operated doors.

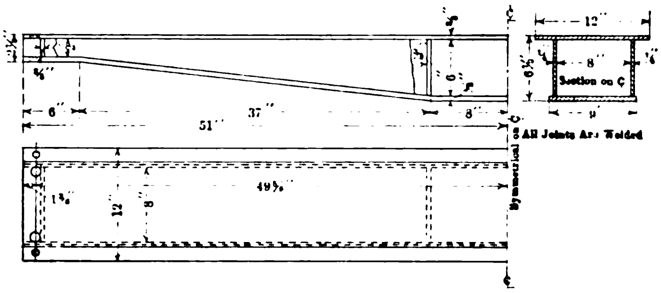


FIG. 1—DETAILS OF LIGHT-WEIGHT STEEL BOLSTER

Combination Heater and Foot Rail

Believing that the interurban passengers would appreciate a foot warmer, it was decided to locate the heaters under the seats, making a combination heater and foot rail by mounting a perforated guard over the standard Consolidated Car Heating Company's heating units. The details of the guard are shown in Fig. 8, and Fig. 3 shows the location of the unit under the seats. The guards were made in the West Penn shops at a cost of 33 cents each. The heaters consume 340 watts per unit, ten units being connected in series on 550 volts. Thermostatic control is provided.

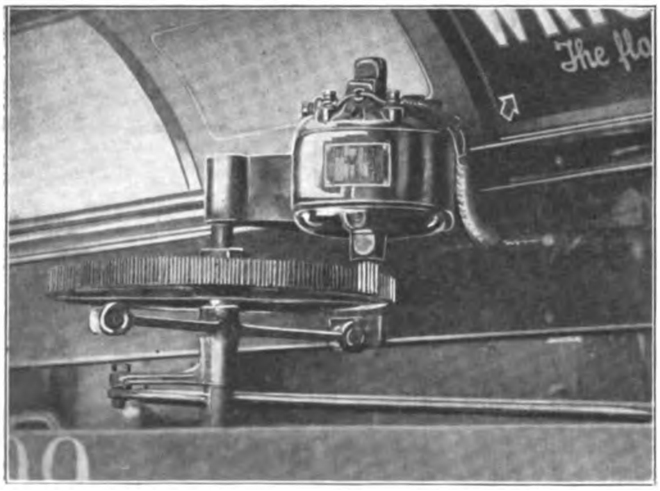


FIG. 2—ELECTRIC MOTOR FOR OPERATING DOORS

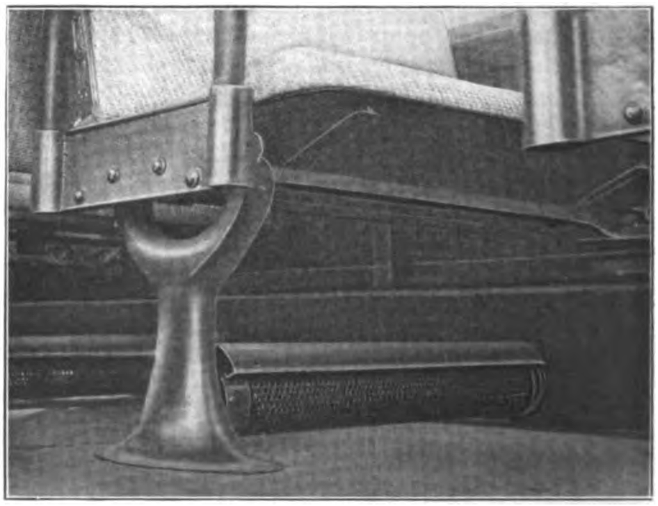
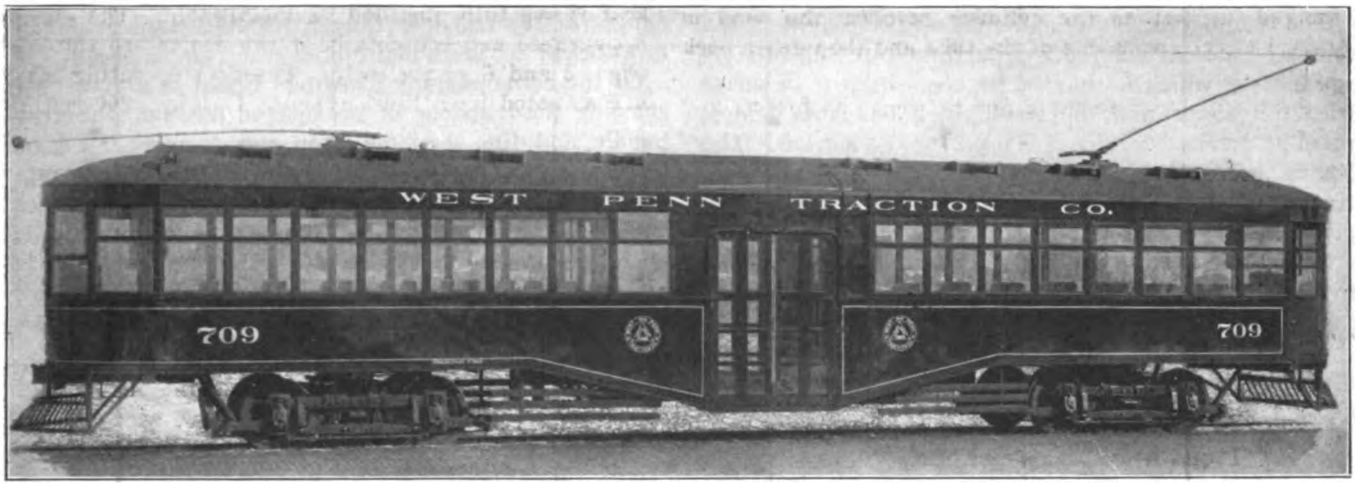
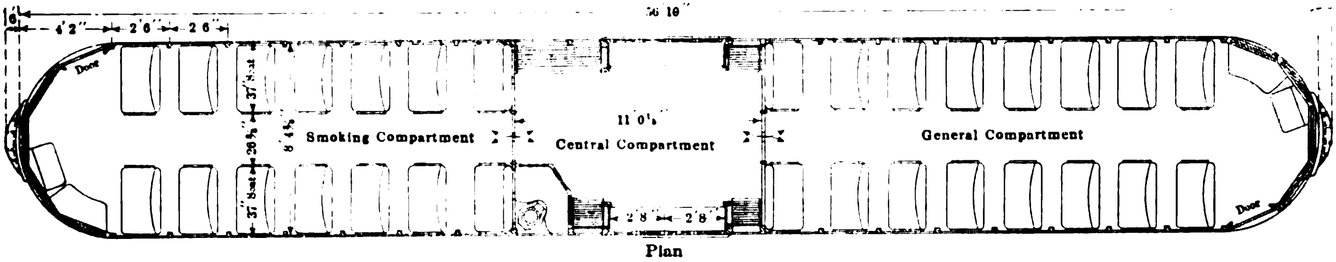


FIG. 3—VIEW OF HEATERS WHICH SERVE AS FOOT WARMERS


WEST PENN TRACTION CO.
709
709


4' 2"
2' 6"
2' 6"
Door
Smoking Compartment
11' 0½"
Central Compartment
General Compartment
2' 8"
2' 8"
Door
Plan

FIGS. 4 AND 5—WEST PENN RAILWAYS LIGHT-WEIGHT, LARGE-CAPACITY, CENTER-ENTRANCE INTERURBAN CAR

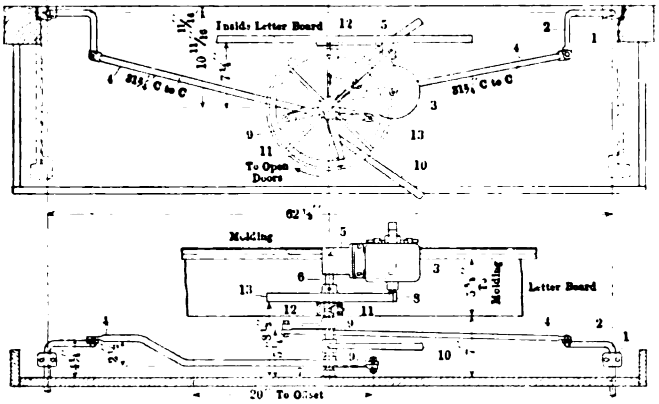
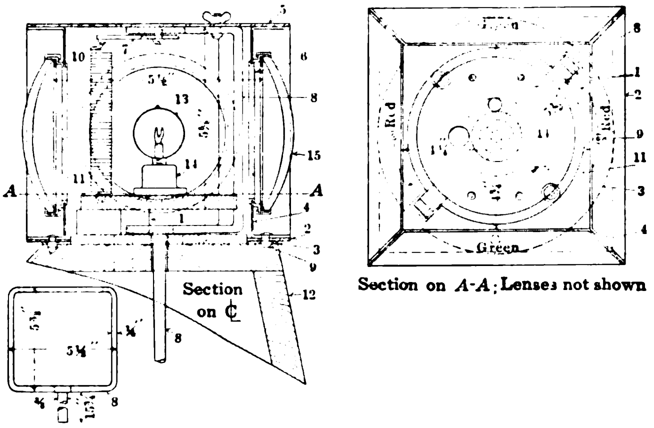

Inside Letter Board
To Open Doors
Molding
Letter Board
20" To Offset

FIG. 6—LAYOUT OF MOTOR-OPERATED DOOR-OPENING DEVICE

DESCRIPTION OF MATERIAL

1. Split bearing for door crank, brass.
2. Door crank, forged.
3. Driving motor.
4. Connecting links, W. I. pipe.
5. Bracket for motor, cast iron.
6. Door mechanism shaft, ⅝-in. C. R. steel.
7. Lower bearing for shaft, brass.
8. Fourteen-tooth steel pinion, 1⅛-in. face.
9. Lever arms, brass.
10. Hand lever arms, forged.
11. Bumper arms, brass.
12. Bumper, brass.
13. 14-in. cast iron cut-tooth gear.


A
A
Section on ℄
Red
Red
Green

Section on *A-A*; Lenses not shown

FIG. 7—DETAILS OF MARKER LIGHT

DESCRIPTION OF PARTS

1. Oak segments.
2. Bottom plate, No. 24 galv. iron.
3. Bearing plate No. 16 galv. iron or steel.
4. Slide plate, No. 24 galv. iron or steel.
5. Top plate, No. 24 galv. iron or steel.
6. Lens holder, No. 24 galv. iron or steel.
7. Spring pivot bar.
8. Yoke.
9. Combined pin and rivet.
10. Spring, ½-in. x 3½-in.
11. ⅝-in. oak disk, 4-in. dia.
12. ¾-in. poplar box, with 6¼-in. square top.
13. Tungsten lamp, 4 volts, 2 cp.
14. Lamp base.
15. Bull's-eye lens.

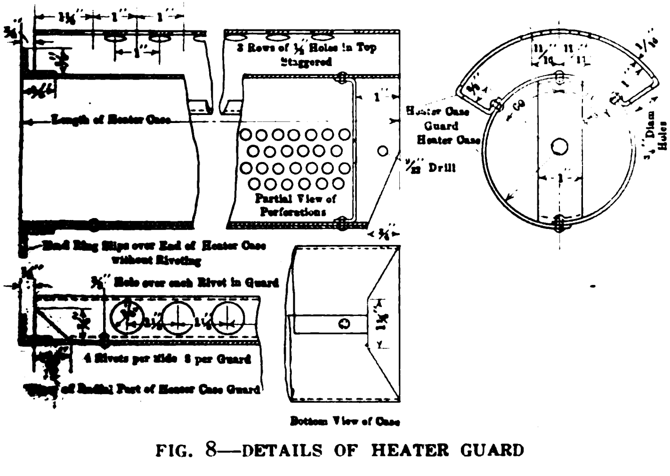

3 Rows of ½ Holes in Top Staggered
Length of Heater Case
Partial View of Perforations
Heater Case Guard
Heater Case
Drill
Holes
End Ring Slips over End of Heater Case without Riveting
Hole over each Rivet in Guard
4 Rivets per Side 8 per Guard
Radial Part of Heater Case Guard
Bottom View of Case

FIG. 8—DETAILS OF HEATER GUARD

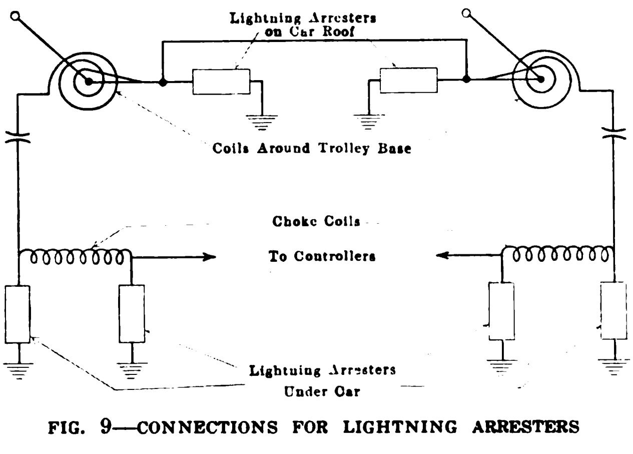

Lightning Arresters on Car Roof
Coils Around Trolley Base
Choke Coils
To Controllers
Lightning Arresters Under Car

FIG. 9—CONNECTIONS FOR LIGHTNING ARRESTERS

The two marker lights and an emergency light in the center of the car are fed from a three-cell Edison storage battery which is charged by connecting it in series with a resistor and the headlight. Tungsten lamps, rated at 4 volts and 2 cp. are used for the marker. The box in which the lamp is mounted is shown in the illustration of the car, and the details of the marker are given in Fig. 7. The bull's-eyes and color lenses are attached to a strap-iron yoke so that they can be turned to give either a red or green indication. The handle of the yoke comes down through the roof of the car. To shift the color indication this handle is pushed up to disengage the yoke and it is then given a half turn and allowed to come down to its normal position again.

LIGHTNING ARRESTER CONNECTIONS

Lightning is very severe in the territory served by these cars. Six Westinghouse type MP lightning arresters are used on each car, and the method of connecting them up which has worked out the best is shown in the diagram. Two arresters are located on top of the car and two underneath each platform. Choke coils are connected as shown. On the top of the car the coils are wound around the trolley bases, while underneath they are mounted on wooden cylindrical blocks 5 in. in diameter.

Trapdoor Hinged to Vestibule Door on Interurban Cars

Canadian Railway Uses Simple Plan of Preventing Accidental Falling of Trapdoor

BY G. J. MEYER

Chief Engineer and General Superintendent Montreal & Southern Counties Railway, St. Lambert, Canada

On the interurban cars of this company we formerly used a trapdoor over the steps which folded up against the end of the body and was held in place with a catch. On the under side of the trapdoor was a grab handle to assist passengers in boarding and alighting. As it sometimes happened that the catch did not hold the trapdoor securely there was a constant danger that injury would be caused by accidental falling of the door.

On recent cars a different arrangement has been provided, the trapdoor being hinged on the inside of the vestibule door, folding up against the latter when not in use. As before, a catch is used to hold the trapdoor in the open position. As the main door folds against the front of the vestibule there is no possible danger of the trapdoor falling. A stationary grab rail is attached to the bulkhead.

Of the accompanying drawings Fig. 1 is a plan view showing the trapdoor in its lowered position, the grab handle and the vestibule door and framing. Fig. 2 shows the lower part of the main door with the trapdoor folded up against it. In Fig. 3 the solid lines show the trapdoor in the lowered position and the dash lines in the raised position. The trapdoor is made of sheet iron about 3/16 in. in thickness.

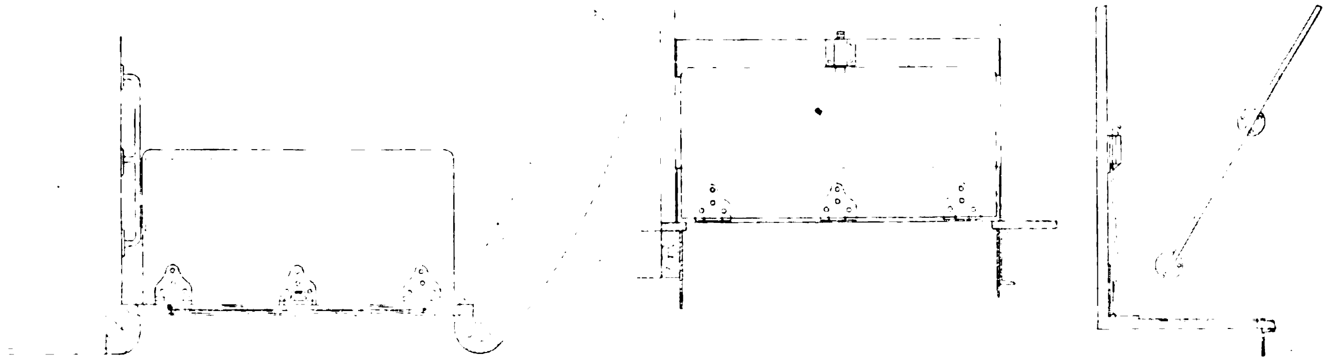


FIG. 1—PLAN SHOWING DOOR IN DOWN POSITION. FIG. 2—ELEVATION SHOWING DOOR IN UP POSITION. FIG. 3—END VIEW SHOWING DOOR IN BOTH POSITIONS

How to Make a Proper Rail Connection

BY W. M. PEGRAM

Brooklyn, N. Y.

The early conception of a proper railroad track was an immobile structure laid on stones, later modified by the introduction of wooden tie supports with rigid fastenings for rails and ties. There is no engineering justification for such a structure. In fact, most of the trouble which necessitates so much of the present track maintenance comes from the retention of this idea.

A wheel rolling along a rail exerts three forces on it. Of these, downward pressure and thrust along the rail are combined in the dynamic load of the wheel. The third force, vibration, results from the rolling contact of the wheel and rail surfaces which are more or less uneven, but in the usual form of track construction no provision is made to minimize this vibration of the rail except at the ties where its presence is recognized in the trackman's formula: "Don't hit that spike the last tap." This vibration is the principal factor in the cupping which occurs on the receiving end of a rail.

To prove this, assume a pair of continuous rails laid on ties in the conventional manner. A pair of wheels rolling along these rails sets up synchronous vibration in wheels and rails. Now, suppose these continuous rails to be cut into rail lengths. Then, as the wheels roll over these disconnected but firmly bedded rail lengths, the vibration in the leaving rails is broken at the rail-length junctures, and the vibrating wheels, passing to the receiving ends of the dead rails, rub the receiving rail ends and cause cupping.

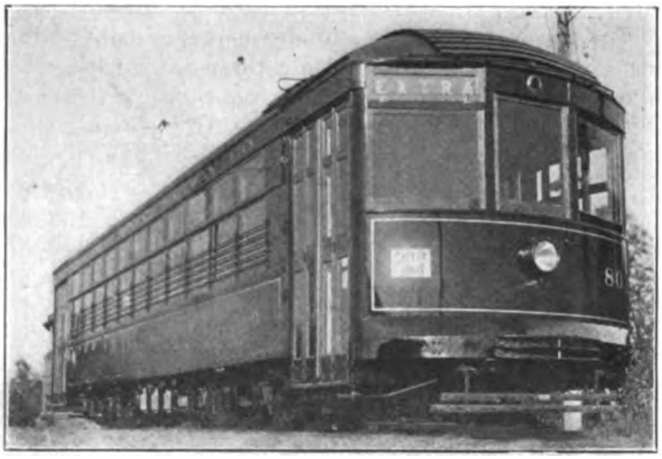
To overcome cupping, the continuity of the rail lengths must be maintained so that the vibrations will travel synchronously from one rail to the next. This can be accomplished only if heads of the rails are supported independently of the rails and also if the joint connection provides a minimum addition to the sectional area of the rail. The reason for this latter precaution is that sectional area dampens vibration, and while the vibrations along the heads of the rails are continuous, the vibrations along the bases of the rails are interrupted by the ties, so that the bases must be isolated to reduce this dampening.

By analogous methods, creeping of rails may also be prevented. With a continuous rail, the cumulative thrust of the wheels eventually moves the rails in the direction in which the wheels are rolling. But if these rails are cut into disconnected rail lengths, as assumed in the previous example, the thrust is broken at the rail length junctures, and as this thrust is not sufficient to overcome the inertia of single rail lengths there is no sustained forward movement of these rail lengths. To overcome creeping, therefore, this independence of rail lengths must be maintained, and if the rail ends are connected so as to remain flexible vertically, as on a hinge, this result is obtained.

To understand the cause of the churning of ties, one needs only to observe the vibration of a tie under a moving train. The effect of the vibration is to loosen the tie in the ballast until it is free to move vertically with the wave motion of the rail. To overcome this churning, the vibration of ties must be minimized by so connecting the rails to the ties that there is a crowned surface transversely of the tie for the support of the base of the rail and a limited vertically loose fastening from the rail flange to the tie. The desired result is then obtained because a tangent contact is the practical minimum contact and the loose fastening interrupts the transmission of continuous vibration.

Although large numbers of rail joints have been patented, none of the patent specifications recognizes all of these functions of the track structure. There are rail joints which permit vertical flexibility so as to maintain the creeping independence of rail lengths, there are devices for supporting rail ends to maintain the vibratory continuity of rail lengths, and there are devices combining both of these functions. There are also tie fastening devices designed to allow loose connections and minimum contact with the rails. Proper rail connections should take heed of these qualities.

The Bloomington & Normal Railway & Light Company last year posted the following New Year's resolution: "Resolved, that I will do everything in my power to further the safety movement in view of the fact that I am the chief beneficiary."



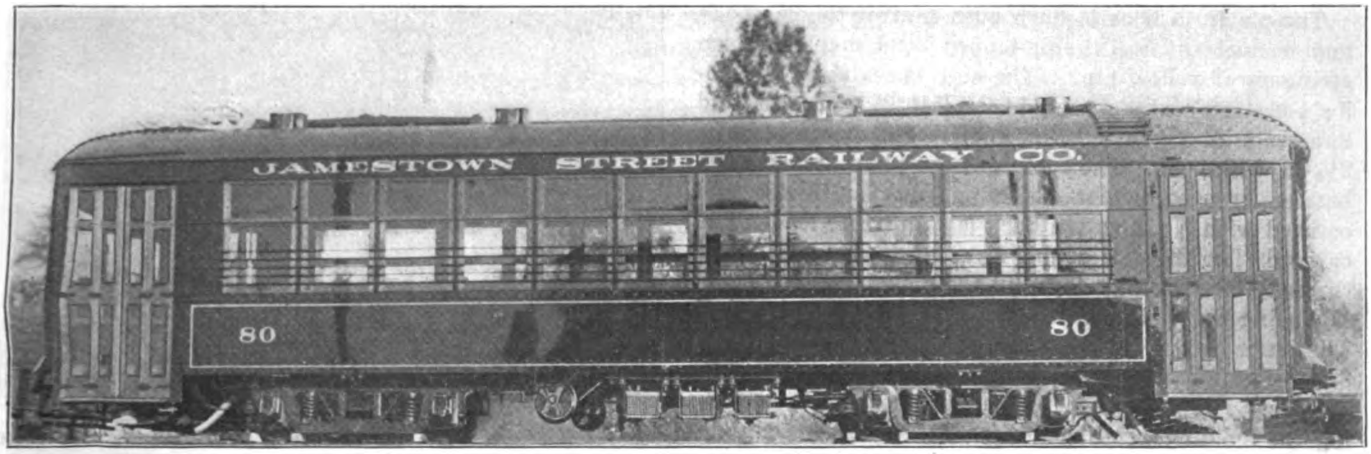
FRONT AND SIDE VIEW OF JAMESTOWN CAR

Modern Steel Cars for Jamestown Street Railway

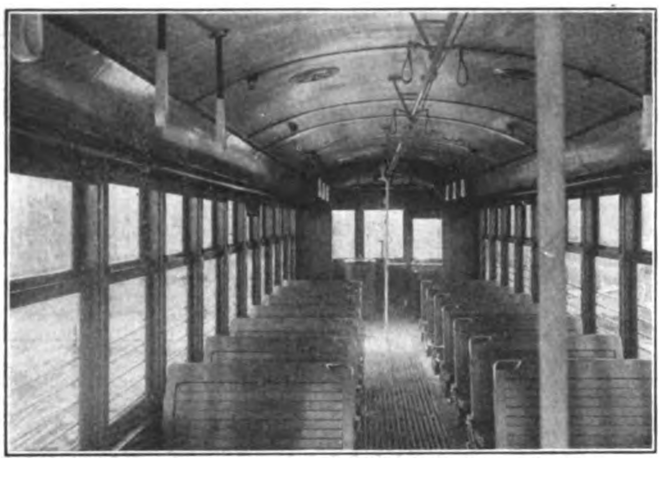
Structural Details of Ten New Double-Truck Cars Now Being Used in City Service

Flush platforms, arched roof, open arch ends instead of bulkheads, slat-type seats and 24-in. wheels are some of the characteristic features of the Jamestown Street Railway's ten new double-end, double-truck steel cars for city service. The car is 42 ft. long, 8 ft. 5 in. wide over side plates, seats fifty passengers and has a total weight of 39,697 lb. The doors are of the double folding type and swing inwardly, giving a 4-ft. opening, which is divided into two parts by a railing. This provides for two streams of passengers. From the street to the first step is 14⅝ in., from this step to the platform floor is 14½ in., and there is a 1½-in. ramp to the car-body floor, making the latter 30⅝ in. above the rail head or street surface. The general dimensions and weight of the car are as follows:

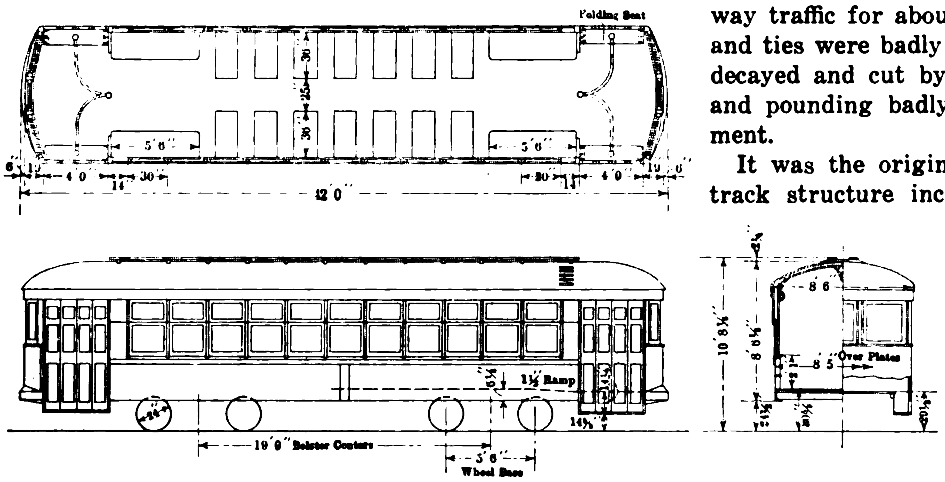
Length over bumpers	42 ft.
Distance between bolster centers	19 ft.
Wheelbase of truck	5 ft. 6 in.
Width over side girder plates	8 ft. 5 in.
Height, rail to top of running boards	10 ft. 8⅞ in.
Height, top of rail to top of floor	30⅝ in.
Height, top of rail to top of platform floor	29½ in.
Step height, rail to first step	14⅝ in.
Step height, first step to platform floor	14½ in.
Weight of car body	18.566 lb.
Weight of air brakes	1,020 lb.
Weight of electrical control	1,701 lb.
Weight of motors, 4GE No. 247B	6,960 lb.
Weight of trucks	11,450 lb.
Total weight	39,697 lb.



JAMESTOWN STREET RAILWAY'S NEW DOUBLE-TRUCK, FLUSH PLATFORM CAR FOR CITY SERVICE



INTERIOR VIEW OF JAMESTOWN CAR



SEATING ARRANGEMENT AND GENERAL DIMENSIONS OF JAMESTOWN CAR

Both car body and trucks were made by the St. Louis Car Company. The car body is framed for eleven windows on each side. The side posts are 2-in. x 1½-in. tees which run in one continuous length from side sill to side sill and thus form the carlines also. The post spacing is 30 in. center to center. The side sills are 5-in. x 5-in. x ⅜-in. angles, cross sills are 4-in., 5¼-lb. channels and the bolsters are of cast steel. Diagonal bracing is provided by 3-in. x ⅜-in. steel members laid across the sills and secured at the sides of the car to 3/16-in. gusset plates. The side knees are 7-in., 15-lb. I-beams, and the center plates are 4-in., 5¼-lb. channels. End sills are 6-in., 12¼-lb. I-beams, and side girders are 29-in. x ⅛-in. rolled plates.

The platform floor is flush with that of the car body and is made of ⅞-in. ship-lapped hard maple laid on stringers of yellow pine. The side knees are 7-in., 15-lb. I-beams, center knees 14-in., 5¼-lb. channels and bumper 6-in. x 4-in. x ⅜-in. angle. The crown beam is 2¼-in. white oak. The roof is of the plain arched type, having grooved poplar planking laid lengthwise and covered with No. 8 cotton duck laid in white lead. The car body flooring is a double layer of yellow pine under the seats and a single layer in the aisle, the aisle flooring being covered with longitudinal maple floor strips. The steps are of the boxed-in type and are fitted with 3-in. "Feralun" safety treads.

Cherry has been used for the interior finish, including the moldings, ceiling bands and curtain boxes, and "Nevasplit" for the headlining and the side lining below the window sills. There are fourteen reversible cross seats having cherry slats, pressed-steel ends and pedestals. The longitudinal seats at the ends of the car are also of cherry.

Saving $2,500 on a Half Mile of Track

Retaining the Old Concrete Foundation and Using Steel Ties Made This Possible

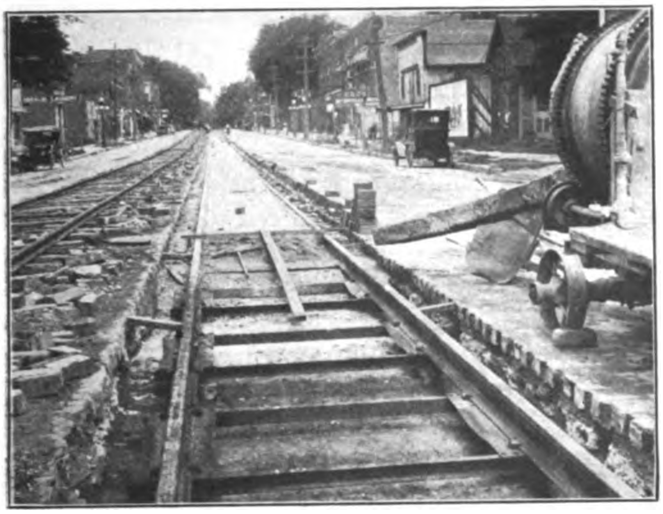
Economies in labor and material in track construction in these times are imperative. This idea governed the Cleveland, Southwestern & Columbus Railway in rebuilding 2600 ft. of single track in Oberlin, Ohio, this year. The old track was built with 7-in. girder rail on 6-in. x 8-in. x 7-ft. white oak ties spaced at 2-ft. centers and laid on a solid concrete foundation 6 in. thick. This track had been in service under interurban railway traffic for about eighteen years, and both the rail and ties were badly in need of renewal. The ties were decayed and cut by the rail, the rail joints were low and pounding badly, and the track was out of alignment.

It was the original plan to remove entirely the old track structure including the rail, ties and concrete foundation. On opening up the job, however, the foundation below the wooden ties was found in good condition, and as its removal would cost at least $300 in labor alone, it was decided to leave the old foundation in place, since this was possible by using International steel twin ties with the new rail.

The twin tie that was used on this work was 3½ in. in depth and 6 ft. 4 in. long. This permitted the use of a sufficient amount of concrete under and around the tie to make the work perfectly solid and absolutely first class. If wood ties had been used it would have been impossible to get any concrete whatever under them, and concreting would only have been possible between ties. This would have made a job that would not have been satisfactory to the company or acceptable to the city.

The old foundation after eighteen years of service

NEW TRACK BUILT ON OLD CONCRETE FOUNDATION, SHOWING TRACK HELD IN POSITION BY WOOD BLOCKS



CONCRETING WITH MIXER AT SIDE OF TRACK. TYPE OF PAVING AND FOUNDATION ALSO SHOWN

had reached a permanent bearing on the subgrade and, therefore, provided a better base for the new track than the subsoil could furnish. On the other hand, if wooden ties had been used it would have been necessary to remove this old concrete base. Accordingly, the city engineer was called and after inspecting the condition of the old concrete foundation, gave his consent to use it as a base for the new track.

The job was handled in the following manner. A temporary track built of old A.S.C.E. rail spiked to cedar ties was laid on the pavement at one side of the street. The old brick pavement was then torn up for a width of 7 ft. 6 in. and loaded into cars and taken to points along the private right-of-way where the embankments needed widening. The spikes were then pulled and the rail was cut into 30-ft. lengths with an acetylene torch. The cutting was done in one day at a contract price of $40. The reason for cutting up the rail was that the old rail was in 60-ft. lengths and had to be cut in two to load it. Much time was saved by cutting the rail also at one side of the joint bars instead of removing the rusted bolts. After the cutting, the rails and fastenings were loaded on cars and hauled to the store yard where they were sold as scrap. The wooden ties were then taken out of the concrete and the 16-in. sections of concrete between them were broken up and loaded on cars. This left the 6-in. concrete foundation on which the new track was constructed.

In the new work steel twin ties were laid at 6-ft. centers and 100-lb. A. R. A. rail was fastened to them with eight malleable clips and wedges. Ordinary six-bolt, 30-in. angle bars were used at the joints, and they were supported on the 13-in. x 36-in. tie plates. The track was blocked to surface on bricks and wooden wedges, one set being placed under every other tie. The manner of blocking up the track for concreting and the method of holding it to line are shown in the accompanying illustrations. The depth of concrete below the new tie plates varied from 7 in. to 9 in. As the concrete mixer was not moved over this track in concreting the amount of blocking required was greatly reduced.

The type of mixer used is shown in the illustrations. A chute from the drum deposited the concrete in the trench, where it was thoroughly spaded beneath the ties and rail. A relatively wet mixture was used so that this operation would be simplified. The cement, stone, brick and sand were delivered to Oberlin by the steam railroad and teamed to the job. The rail and ties were hauled to the job from the company's store yard at Elyria. The entire construction was handled by twenty men and a foreman. This gang averaged 300 ft. of completed track in an eight-hour day, including the concreting and paving. The entire job of rebuilding the 2600 ft. of track required seven weeks, including the ten days necessary to cure the concrete, before service was resumed.

By using the old concrete foundation rather than laying a new one not only was the finished job a better one, but an actual saving of about $2,500 was made. The old foundation contained about 362 cu. yd. and the concrete cost $6 per cubic yard. As it was estimated that the cost of taking out the old concrete foundation would have been about $300, the total saving made possible by substituting steel ties for wooden ones was as stated. This company has in service about 8 miles of track built on steel twin ties. The first was built in 1911, and mileage has been added each year since that date. The satisfaction given by the track built on these ties has resulted in their being made standard for track construction in paved streets by the Cleveland, Southwestern & Columbus Railway.

M. C. B. Coupler Head Designed to Fit Ordinary Draft Gear

Anticipating an increasing need for coupler equipment which will make possible the interchange of cars between steam and electric railways during the next year, the Van Dorn Coupler Company, Chicago, Ill., has developed a new type of M. C. B. coupler which has a shank designed to fit any draft gear using the Van Dorn No. 15 or No. 18 coupler. These couplers use the No. 100 swivel draft gear manufactured by that company which is in use on a great many of the interurban lines throughout the country. At the present time a number of companies are using an adaptor for coupling onto steam cars. The high cost of material and labor has increased the cost of M. C. B. couplers to a point which makes the average electric railway hesitate to place orders for a change of coupler equipment. This new coupler head designed to fit the draft gear already installed on a great many cars will provide a suitable equipment for interchange purposes at an expense less than one-half the cost of a complete M. C. B. coupler with draft gear. Instead of buying a complete coupler electric railways companies can now buy simply this special head and install it on their cars without removing the draft gear.

Since the publication of the article on the Connecticut Company's trolley express and freight service in the issue of the ELECTRIC RAILWAY JOURNAL for Nov. 3, the concrete car shown on page 804 has proved to be troublesome in operation. This car was designed by a local contractor for use in a road-building job to carry mixed concrete from the mixing plant to the job. As the bin bottoms slope from one side to the other the load is considerably out of balance, so much so in fact that the car tends to derail. At present a multiple-dump car is being used in its place.

News of Electric Railways

Traffic and Transportation
Financial and Corporate
Personal Mention
Construction News

$400,000 for Dallas Improvements

General Manager Meriwether Outlines Plans for Expenditure of This Amount for Work Under New Franchise

R. Meriwether, general manager of the Dallas (Tex.) Railway, operating the consolidated electric railways of Dallas, Tex., under the recently granted service-at-cost franchise, has outlined improvements proposed under the terms of the franchise requiring the expenditure of $1,000,000 in betterments and extensions, and has asked the approval of the city authorities for the improvements.

Three new car lines will be established, and tracks on two streets will be eliminated. The tracks on Exposition Avenue between Fair Park and Gaston Park will be eliminated, and the tracks on South Austin Street between Commerce and Cadiz Streets will be taken up. The present Second Avenue line will be extended from Forest Avenue to the city limits, a distance of about 1 mile. A new line will be constructed from South Lamar Street to Akard Street on Cadiz. The South Belt line that now runs on Austin Street will be eliminated. The Harwood line, which now has its terminus on Grand Avenue, will be extended to Forest Avenue.

PLANS OUTLINED TO CITY COMMISSION

The proposed improvements were set out in a communication from Mr. Meriwether to the City Commission. In presenting the list of extensions and improvements it was stated that formal requisitions covering the individual items, with detailed estimates of cost, would be presented to the commission in a few days. The company asked for the approval of this work to-day in order that material may be ordered and arrangements made for proceeding with the construction without further delay. After reciting the various track jobs totaling $274,253, which the company wished to have approved at this time, the statement to the commission was concluded as follows:

"We ask your approval and that of the commission of the purchase and construction of the following miscellaneous items, which will have an important bearing on the efficient operation of the road and the betterment of service to the public: Side destination signs for cars, construction equipment, twelve safety cars, trainmen's quarters at Oak Cliff, fare boxes, emergency tower truck, construction tower truck, wrecking truck, rehabilitation Oak Cliff trolley, three concrete pits at the Elm Street carhouse, controllers and trolley base for ten Oak Cliff cars, new G. E. air governors for 182 cars. The approximate cost of the above will be $162,095."

SKIP STOP ON IMPORTANT LINES

Permission is also asked for the right to purchase special work for Austin and Commerce Streets, for Cantegral and Bryan, and for Swiss and Bryan. New curves will be established and the present Oak Cliff lines will be rerouted, making cross-town lines. Later the Lake Avenue line will be extended to the Parkland Hospital and to Woodlawn Cemetery. Skip-stop service will also be inaugurated on a number of the more important lines.

Steel rails for the new lines were ordered in May and are now ready for delivery. The company purchased this steel for $57.60 per ton. The price at present is $80 per ton. The company will soon be called on to bear considerable expense in connection with street improvements to be undertaken by the city. The company will have to lay heavier rails, adjust street crossings, and put in concrete foundations for tracks, etc., on a number of streets.

Seattle Arbitration Award

$180,000 Added to Wage Expenditures in Seattle Alone—Review of the Award—Statements of the Arbitrators and the Company

The arbitration board sitting on the issues involved in the strike of the transportation employees of the Puget Sound Traction, Light & Power Company, Seattle, and the Tacoma Railway & Power Company, Tacoma, on Nov. 8 drew up a memorandum of awards covering wages and working conditions for the employees of both companies. The wage scale for conductors and motormen on the ordinary two-men cars was raised 4 cents an hour for each grade of employee. The old and the new scales of wages in cents per hour are as follows:

	Seattle Scale		Tacoma Scale	
Period	Old	New	Old	New
First six months	29	33	27	31
Second six months	30	34	28	32
Second year	31	35	29	33
Third year	32	36	30	34
Fourth year	33	37	31	35
Fifth year	34	38	32	36
Sixth year	36	40	34	38

OTHER CONDITIONS OF THE AWARD

This wage scale is to be in effect as of Aug. 1, 1917. The existing extra pay for the operation of one-man cars and cable cars, and for the instruction of student operators continues. Extra compensations are provided as follows: (1) Fifteen minutes of straight time to be paid by the company for extra time consumed in the preparation of accident reports. (2) Over-all time caused by split and swing runs which create unavoidable periods of rest in between trips is to be paid for at the rate of 6 cents an hour for every hour beyond eleven, the same to be paid for in fractions of ten minutes. This mode of payment does not apply to the work of extra men save when they are substituting on regular runs. These extra compensations will be put into effect the second half of November. Extra men will hereafter receive a guarantee of $80 a month during the apprentice period. Hitherto the guarantee has been only $65. This ruling is established for both the Seattle and Tacoma systems. Seniority is to determine the choice of runs, as hitherto, a man's seniority being determined by the date of beginning present service at the particular carhouse. Conductors and motormen in the employ of the company on maximum pay may re-enter the employ of the company on the following special system of pay, designed to credit previous experience: The first year of employment they shall be paid as first-year men, the second year as fourth-year men and the third year as sixth-year men. Hours of employment are to remain as at present. The uniforms of all platform men are to remain the same as at present. The company is to provide each man with $5 in change. The company is to abolish free family street car tickets in Seattle. The scale for non-platform operators in the shops, carhouses and track and roadway departments was revised so that an increase of from 5 to 10 per cent was given to a large number of employees.

HOW THE BOARD WAS ORGANIZED

The board of arbitration began its last series of sessions on Nov. 6. It was composed of Dr. Henry Suzzallo, president of the University of Washington; C. J. Franklin, a public utilities expert of Portland, Ore., representing the company, and James A. Duncan, secretary of the Seattle Central Labor Council, representing the employees. Mr. Franklin appeared for the company in conferences with the men even before the strike was called, while Mr. Duncan was a member of the strike committee. Dr. Suzzallo, the neutral arbiter, was practically assured of being chosen as the third man, during the negotiations, as his name was suggested by both sides.

NEUTRAL ARBITRATOR'S STATEMENT

Dr. Suzzallo on Nov. 8 issued the following statement: "The board of arbitration concluded its deliberations tonight. The three arbitrators have had an exceedingly difficult task. The great increase in the cost of living made it necessary to make a considerable increase in wage scales in a single award. The fact that both the Seattle and Tacoma companies are not paying concerns was a great restriction on the freedom of the arbitrators. We have arrived at the happiest compromise that could be made. All of the board of arbitration wished to reduce the hours of labor. This was unfeasible at the present time. It was the choice of increasing the wage scale to meet the increased cost of living or reducing the hours of service and keeping the present hourly rate of pay. The finances of the companies would not permit both, hence the available finances were allotted toward a living wage.

"The spirit of the whole arbitration has been excellent. The memorandum of award was signed by all three arbitrators, regardless of minor differences of judgment, in the belief that the awards represented the best possible progress at the present time. We have had remarkable cooperation from the officers of the company and from the advisory committees representing the unions. In addition we owe much to the twenty or thirty investigators who made special studies on the cost of living and on working conditions. All of us who wished to do much for the employees realized keenly that progress in alleviating the wage and working conditions of the workers is conditioned on the prosperity of the companies for which they work. Any refusal on the part of the public to permit a public utility to make a reasonable income is an indirect but inevitable obstacle to the bettering of the working conditions and wages."

EMPLOYEE, COMPANY AND PUBLIC MUST CO-OPERATE

C. J. Franklin, chosen as arbitrator by the companies, said:

"The fact that the award was unanimous makes it unnecessary for further comment as to its justice. It must be realized, however, by the public that they are partners with the public utility in this city, and that the interests of the company, the men and the public are beyond question. Public utilities are suffering from conditions imposed by franchises granted many years ago under conditions very different from those which prevail to-day, and under present abnormal conditions they have become a burden too heavy in many cases for the utilities to bear. Co-operation on the part of the employees, the company and the public is, therefore, necessary to secure relief from burdens without which the public utilities cannot prosper, and lacking this co-operation all three must suffer."

James A. Duncan, chosen by the employees as arbitrator, said that while the award did not represent the full attainment of union aims, he was satisfied that a good measure of justice had been obtained, that it was a progressive step in the relation of the men and the company, and that there was no reason why the passage of time should not bring a harmonious working together which would insure both peace in the electric railways of Seattle and benefit both to the company and the men.

PRESIDENT LEONARD'S PLEA

A. W. Leonard, president of the Puget Sound Traction, Light & Power Company, issued the following statement: "When the company agreed to arbitrate the questions of wages and working conditions with its men before this board it did so with faith in the fairness of its decision, and we accept the verdict with the expectation of living up to it to the best of our ability. Proof of its fairness is found in the fact that the award is unanimous, something almost without precedent in arbitration proceedings in matters of this kind. The members of the board of arbitration devoted a great deal of time, labor, energy and painstaking research to a study of wages, working conditions and costs of living, both here and elsewhere, in considering the large mass of evidence placed before them, and, we believe, did their work conscientiously, patriotically and unselfishly.

$355,000 MORE IN WAGES IN SEATTLE ALONE

"It was a difficult and trying task to undertake in these times of war and stress. The award puts upon the company an annual wage increase of approximately $180,000, in addition to the voluntary increase of $175,000 already made since the first of the present year, or a total of $355,000 more a year in wages in Seattle alone.

"The company will abide cheerfully by the result, and that it may not be hampered needlessly in putting its promises and the award of the board into effect, feels that it should have the co-operation of the public and all public officials. This co-operation should extend to relief not only from direct expenditures not absolutely necessary, but also from indirect expenditures which tend to increase the public's and the company's burdens."

MEN OUT SIXTEEN DAYS

The strike in Seattle lasted sixteen days. It was precipitated by the action of the men in Tacoma who on July 15 quit their cars after the company in that city had refused to grant their demands and had discharged seven of the men. On July 28 arbitration was agreed to under the State law. The agreement to arbitrate was signed on July 31. This proposal was ratified by both the Seattle and Tacoma men on Aug. 1. Service was resumed in both cities on Aug. 2.

Final Hearing in Rhode Island

Plea Made for Temporary Six-Cent Fare Pending Full Investigation

A final plea for the ordering of a 6-cent fare as a temporary measure to keep the Rhode Island Company's service in operation until a more complete investigation can be carried through was made at Providence on Nov. 9 before the special commission investigating the company's finances. George H. Huddy, Jr., represented the company. He summed up the evidence of the preceding hearings, saying that the nub of the whole question was whether the people of Providence expected to keep on getting something for nothing from the company, or were willing to pay enough for the service to keep the cars on the streets.

$200,000 DEFICIT THIS YEAR

Mr. Huddy declared that the deficit this year will be $200,000 and that part of the operating expenses is being paid out of borrowed money. The speaker expressed the belief that the city was disposed to be fair and that it was not unalterably opposed to a 6-cent unit. The data as to the company's condition have been compiled by the expert engineering firm of Sloan, Huddle, Feustel & Freeman, Chicago. The company was virtually in the hands of a receiver, five trustees appointed by the Federal Court being in charge. Unless these trustees could sell the road before 1919 it will be put up at auction. Mr. Huddy thought that the public would prefer to see present financial conditions improved rather than to have the ownership of the road pass outside the State, with resulting uncertainties of policy. The company needed to spend at least $250,000 to provide the facilities that the public demanded. The company was at the end of its rope in regard to borrowing.

In discussing the jitney situation Mr. Huddy said that the city ought to be willing to consider changes in the twenty-year franchise because the company, on account of the jitneys, was not getting an exclusive franchise. The company maintained that its own rentals were fair and reasonable, and emphasized the fact that no dividends had been paid upon the stock since 1913.

After hearing opponents, who urged an investigation of the company's efficiency of management, the commission took the case under advisement. If it finds that the institution of a 6-cent fare is the just solution of the problem before the company its recommendation that such a fare unit be adopted, when transmitted to the Public Utilities Commission, will be put into legal effect by the latter body.

Few Utility Questions in Election

Notes on Results in New York, Massachusetts, Cleveland and Toledo

The election results on Nov. 6 are generally regarded as being of little significance to the public utilities as a whole and only passing interest in most of the cities and other political subdivisions where questions affecting the utilities were injected into the campaigns.

In New York City the Tammany candidates won in a four-cornered fight in which the issues were confused. One of the planks in the Tammany platform was public ownership of utilities, but this did not become an active issue during the campaign, although Judge Hylan, who was successful at the polls, made it his practice in his speeches to dwell upon the advisability of the city taking over the utilities.

In Massachusetts the electorate sustained the war administration of Governor McCall by a majority of nearly 100,000. Mr. Mansfield, the defeated candidate for Governor, failed utterly in an attempt to gain a favorable decision by attacking among other things the 6-cent electric railway fare developments under the present régime.

CLEVELAND SUBWAY ORDINANCE PASSED

Mayor Harry L. Davis was re-elected mayor of Cleveland by a plurality of 15,343 and the subway ordinance advocated by him was approved by a vote of 56,242 against 39,961. This practically insures preparations for subways and an underground terminal in the congested section of the city. Mayor Davis will appoint a commission under the State laws and it will have almost sole power as to the location of the subways and the manner of their construction. This commission may employ its own counsel and engineers. This was the objection made by opponents of the ordinance. They hoped to keep the control in the hands of the city officials entirely, although they advocated subways for relief in the downtown district.

TOLEDO AND CINCINNATI RESULTS

Cornell Schreiber, non-partisan candidate, was elected Mayor of Toledo over Robert T. Haworth, Socialist. It is not known just what effect this will have on the proposed settlement of the railway question on the community plan. However, it is believed that the matter will be largely removed from politics by the submission of the franchise to a vote of the electors.

John Galvin, Republican, will be the next Mayor of Cincinnati. The rapid transit question there has been settled so completely that the result of the election will not enter into it. The whole matter is under the supervision of a commission which is not affected by changes in office.

INTERBOROUGH ONLY A TENANT

Following the election in New York Theodore P. Shonts, president of the Interborough Rapid Transit Company, issued the following statement:

"My attention has just been called to the rather heavy selling this morning of tractions and utility stocks, presumably in the case of the former on the theory of municipal operation.

"There can be no municipal operation of Interborough lines except under the terms of our contract with the city. The title to all subways in New York—those in operation and those in process of construction—now rest in the city of New York. The Interborough is only a tenant operating under a lease.

"Under the terms of this lease the city cannot take over the existing subway as a whole until the expiration of the lease fifty years hence, nor the new subways now building until at least ten years after they are completed and put into operation, and then only on a remunerative basis—the formula for which is stated in the lease.

"As the city's partner, the Interborough is now and always has faithfully carried out all its contractual obligations, and expects to continue so to do.

"The present earnings are greatly in excess of original estimates, and unless the growth of New York City should go below its former average of increase these earnings should continue to grow faster than our estimates."

War Bonus at Washington

Increase in Pay of Two Cents an Hour for Nine Hundred Men

The Washington Railway & Electric Company, Washington, D. C., has posted a notice at its carhouses and informed the Public Utilities Commission that beginning Nov. 15, and until further notice, it will pay a bonus of 2 cents an hour to its motormen and conductors. The increase affects approximately 900 men.

This is the third increase in its wage scale made by the company during the last year. It involves an addition to its annual payroll of about $50,000, as did each of the other two raises. The first increase in the wage scale took place last March, at the time of the strike, when contracts were entered into with the men calling for the payment of from 24 to 30 cents an hour. The previous wages had ranged from 23½ to 27 cents an hour. In July the contracts were altered by a further increase, by which the minimum pay was established at 26 cents an hour and the maximum at 32 cents. The new scale, just made public, ranges from 28 to 34 cents. The new scale is as follows: Less than one year in service, 28 cents an hour; second year, 29 cents; third year, 30 cents; fourth and fifth years, 31 cents; sixth and seventh years, 32 cents; eighth, ninth and tenth years, 33 cents, and more than ten years, 34 cents.

Clarence P. King, president of the company, in a statement which he made, said:

"In making this further advance the management of the company realizes that the high cost of food, clothing and all other living necessities makes it difficult for its employees to get along. No additional service whatever will be required of the men, the bonus being a voluntary gift by the company."

Request for Wage Increase

Cleveland Men, with Contract Expiring May, 1918, Request an Advance at This Time—Company's Offer Rejected

Notwithstanding the published statement that they would ask for no increase until May 1, 1918, when the present contract expires, motormen and conductors of the Cleveland (Ohio) Railway on Nov. 10 requested an advance to cover the rapidly increasing cost of living. A voluntary increase of 1 cent an hour was made on May 1 of this year, but the men claim that this is insufficient.

COMPANY MAKES OFFER

Conditioned on the consent of the city and Fielder Sanders, street railway commissioner, the company offered to make an increase of 3 cents an hour in the wages of the men dating from Nov. 1, and an additional 2 cents on May 1, 1918. The men voted to refuse the offer. It is said they expect to make a demand for an increase of probably 10 cents when the contract now in force expires on May 1, 1918. The men have told the company that if the present scale is maintained most of them will be compelled to go into other work. They hope to have the company increase the wages 3 cents an hour at once and then begin negotiations for a new scale to go into effect on May 1, 1918. First-year men now receive 32 cents an hour and all who have been in the service one year or more get 35 cents. The total membership of the union in Cleveland is 2300. About 1600 attended the meeting at which the company's proposition came up for consideration.

LOW FARE JEOPARDIZED

It is feared that even the 3-cent increase will make a change in the rate of fare necessary within a short time. At the present time the fare is 3 cents, with a 1-cent charge for transfers. The next raise, as provided in the Tayler franchise, will make the fare 4 cents cash and three tickets for 10 cents, with the 1-cent charge for transfers rebated. Company officials say that this will yield less than it is now receiving and that it will be necessary to add the charge for transfers, making two increases within a short period. Any disagreement between the company and the men on wages is subject to arbitration.

Wage Agreement in Kansas City

Offer of Vice-President of Kansas City Railways Accepted by All the Men Without Going to Arbitration

Employees of the Kansas City (Mo.) Railways voted on Nov. 13 to accept the increase in wages made on Oct. 15 in the offer of Clyde Taylor, vice-president of the company. This offer was as follows:

"To trainmen an average increase of 3½ cents, increasing the minimum from 22 to 25 cents and the maximum from 30 to 33 cents an hour, and reducing the time to reach the maximum scale from eleven years to six.

"To employees in the track, shops, carhouses and mechanical departments an increase of 3 cents an hour.

"To power house and substation employees an increase of 2 cents an hour.

"To all employees on a monthly basis receiving less than $100 a month an increase of $60 a year.

"In consideration of the fact that the men were willing to accept the offer without resorting to arbitration proceedings, a uniform bonus was given to trainmen. All those more than one year of service and less than five are to receive one uniform a year, and all those more than five years two uniforms a year. The increases were also dated back to Aug. 17 instead of Oct 1 as originally announced.

"These increases amount in round numbers to $360,000 a year and affect 3000 employees."

AGREEMENT WITH ALL EMPLOYEES

The agreement was not made with the Amalgamated but with a committee representing all the employees in accordance with the settlement made when the men went back to work following the August strike. The open shop contention, won by the company at that time, is to continue in effect. The men returned to work under an agreement stipulating that the company would take up the matter of wages and working conditions with committees representing the various classes of employees and in the event of failure to agree, these matters were to be left to a board of arbitration for settlement.

HISTORY OF CONTROVERSY

On Sept. 26 an Amalgamated Association contract was presented to the company, demanding a scale from 35 to 45 cents with a three-year grade and a number of other burdensome conditions, some of which implied direct recognition of the union. Mr. Taylor refused to enter into negotiations on this basis and sent the contract back to be properly presented in accordance with the agreement made in August eliminating the objectionable union features. He insisted that it be made in the form of a contract with the employees of the company as such and that committees to take the matter up with him should be committees of the employees and not of any organization.

VOLUNTARY INCREASE MADE DURING NEGOTIATIONS

Before meeting with these committees and in the face of pending negotiations and arbitration proceedings, Mr. Taylor made a voluntary wage increase in an announcement to the employees. At that time he told the men that in making the increase he had gone the limit of the company's ability to pay, and that he was offering them more than in his opinion they would secure from any fair board of arbitration. This increase was put into effect on Oct. 1. Following this Mr. Taylor spent three weeks in negotiations with the committee. This committee, after making a thorough investigation and becoming convinced that the company had given all that was possible under the present revenue, advised the men to accept the offer. This they did.

MEN TO HELP SECURE INCREASED REVENUES

The 3000 employees of the Kansas City Railways in their meetings have taken the stand that in order to better themselves individually it will be necessary to assist the company in every way to secure additional returns. As soon as the proper method is worked out a determined effort will be made to provide some means for increasing the revenue of the company.

Strike Declared in Akron

Trainmen of the Northern Ohio Traction & Light Company Tie Up Railway Lines in the Great Akron Manufacturing District

The motormen and conductors of the Northern Ohio Traction & Light Company, Akron, declared a strike early on the morning of Nov. 12. About 800 men are affected, and all the lines are involved with the exception of the local line in Canton and the portion of the interurban road between Akron and Canton. Cleveland, Bedford, Cuyahoga Falls, Kent, Ravenna, Barberton and Wadsworth are all discommoded by the suspension of operation of the road.

WHAT THE MEN DEMAND

The men have been receiving 28, 30 and 33 cents an hour. They have demanded an increase of 10 cents an hour. After an all-day conference on Nov. 11, A. C. Blinn, general manager, proposed a compromise under which the men would receive an increase of 3 cents at once and 2 cents additional on May 1, 1918. They refused to accept this, but stated that no further action would be taken for twenty-four hours, as they desired to have a union official from Detroit present. This promise, however, was not observed.

On Nov. 12 the cars on the Canton-Akron branch were operating only to the outskirts of Akron. It is said that employees on that portion of the road belong to a different union from the one with which the strikers are affiliated.

Mayor W. J. Laub and President C. I. Morgan of the Chamber of Commerce asked for a meeting of company officials and representatives of the strikers on the evening of Nov. 12, in order to tender their aid in bringing about a settlement of the trouble.

On the evening of Nov. 12 the men refused the company's offer of an increase of 5 cents an hour, because the contract provided that the new schedule of wages thus formed should continue until May 1, 1919. The men did not want to tie themselves up for a period later than May 1, 1918.

MEN VOTE ON COMPANY OFFER

Late on Nov. 15 the platform men of the company were voting on the company's offer of an increase of 5 cents an hour to date from Nov. 1, this year, to May 1, next year, with other slight modifications of the former offer of the same rate of advance. At the office of the company it was said to be very uncertain when the result of the vote would be known. J. V. Oliver, president of the retail merchants association, has offered his services as a mediator. Cars on the Canton division are still in operation, although the strikers assert the men on this branch will walk out if it becomes necessary in order to win their point. No men have been employed to take the places of the strikers. The men now out have placed pickets at vantage points.

On Nov. 13 Mr. Blinn said no attempt would be made to operate cars until the management was sure that a settlement could not be reached.

Proposal to Settle Wage Disputes

In the course of the deliberations of the arbitration board which recently settled the wage dispute between the San Francisco-Oakland Terminal Railways and its employees, it was decided to make certain recommendations to the Governor and to the California congressional delegates. It is suggested that state and national legislatures take up at once the creation of industrial courts for the settlement of all wage disputes. In commenting on this recommendation Mr. Sinsheimer, one of the board, formerly identified with the Railroad Commission of California, said:

"Hearings before us have served to emphasize that there is no jurisprudence in existence to-day for the adjustment of wage disputes, and the lack of it is a grave omission in our economic and industrial system. The creation of industrial courts, the board is convinced, would prove a boon both to employers and employees. It would then be possible for either side to a wage dispute to initiate proceedings just as any other form of litigation is now initated by a party with a grievance."

Municipal Railway Bond Bill

While the City Council of Seattle, Wash., on Oct. 30 passed an ordinance providing for the issuance of $400,000 of utility bonds for the extension of Division A of the Municipal Railway to Market Street and Leary Avenue, the introduction of an ordinance transferring $35,000 from the general fund to the Municipal Railway construction fund, in addition to the $20,000 already transferred from the general fund, revealed that it is not the intention of the Council at present to rely on the sale of bonds to extend the road. The committee of the whole recommended the passage of the ordinance transferring the $35,000 and the Council "accepted" the report, voting that action be deferred until the next meeting. With the temporary injunction obtained by T. N. Haller, of the Seattle Chamber of Commerce and Commercial Club, fresh in the minds of the councilmen, unusual precautions were taken to insure the legality of every step in the progress of the borrowing legislation.

In an opinion furnished by Assistant Corporation Counsel Walter F. Meier, one of the legal ways by which the municipal line may be extended was for the Council to authorize and sell utility bonds, and the action referred to above is the result of that opinion. Mayor H. C. Gill, who directed the superintendent of streets to build the line into Ballard from funds levied for the maintenance of streets and sewers, will approve the new plan of financing the railway.

$1,000,000 Bonds for Chicago Lines

The employees of the Chicago (Ill.) Surface Lines subscribed $825,400 to the second Liberty Loan. The number of employees who took bonds was 12,219, which represents 90 per cent of all the company employees. In the transportation department, 95 per cent of all employees, including practically all trainmen, subscribed to the loan. The company subscribed a balance sufficient to make up a total of $1,000,000. The turn-in on this campaign was not made until the last day, when the achievement received very favorable comment from the local press. The sale of bonds was made to employees on the basis of the payment of $1 a week for each $50 of bonds taken. The bond subscription by departments was as follows:

Department	Subscribers	Amount
Transportation	8,876	$558,750
Engineering	2,797	172,650
Electrical	276	17,450
Legal and claims	141	34,850
Executive	129	41,700
Total	12,219	$825,400

Strike on Ohio Electric Railway.—Service has been resumed on the lines of the southern division of the Ohio Electric Railway, Springfield, Ohio, following a strike of the trainmen which lasted a week. The differences between the management and the men will be settled by conciliation.

Men in Burlington Strike.—The line of the Burlington County Transit Company from Moorestown through Mount Holly to Burlington, N. J., was tied up on Nov. 13 by the motormen and conductors striking to enforce their demands for an increase in wages from 25 to 30 cents an hour. The directors of the company on Nov. 12 offered the men 27 cents, but this was not accepted.

Call for Technical Men for Army.—The government has issued a special call for technical men, *i.e.*, men skilled in any line of science or mechanical or electrical or mining or railroad building or that are handy men in any line. Such volunteers should be between the ages of eighteen and forty years. Any man who has not been called by a local examining board may volunteer. Major J. E. Bloom, U. S. A., recruiting officer, Newark, N. J., can give particulars.

Increase in Wages in Altoona.—The Altoona & Logan Valley Electric Railway, Altoona, Pa., on Nov. 8 announced a voluntary wage increase for motormen and conductors, effective from Nov. 1, being the fourth time this year the employees have received an advance in wages. An extra cent and one-half is provided for each man. First-year men now receive 25 cents an hour; second-year men, 27 cents; third-year men, 29 cents; fourth-year men, 30 cents, and fifth-year men, 31½ cents.

Exemption Granted on Transportation Grounds.—Lawrence Kerns, chief clerk in the transportation department of the United Railways, St. Louis, Mo., has been granted exemption from service in the National Army by the District Appeals Board in that city on industrial grounds. An affidavit filed by Bruce Cameron, superintendent of transportation for the company, declared that the electric railway is essential to the operation of munition plants and other factories in that it transports employees of such plants to and from work.

Increase for Springfield Men.—An increase will be made in the wages of the trainmen of the Springfield (Mo.) Traction Company in accordance with a voluntary agreement made on June 16 that employees receive an increase of 1 cent an hour, platform time, for each $100 daily receipts in excess of average receipts of $600 daily. At the settlement of the recent strike the company was unable to put the new plan in force, but it allowed the men an increase of 1¼ cents an hour at that time and offered them the bonus which the receipts for October now make possible.

Skilled Workmen Needed in Army Air Service.—The government needs many more skilled workmen for the army air service behind the lines abroad. These men must be recruited continuously from now until March 31, 1918. The men will receive special training consisting of practice work on airplane motors, trucks, airdrome construction, etc. The several trades from which the men are needed include electricians, machinists, draftsmen, painters and pattern makers. Applicants must be physically fit, white and from eighteen to forty years of age. Applications should be addressed to Volunteer Bureau, 119 D Street, N. E., Washington, D. C.

Hearing on Seattle Injunction Order.—The hearing on the order restraining the city of Seattle, Wash., from completing Division A of the Municipal Street Railway System began on Nov. 2 in Judge Calvin S. Hall's department of the King County Superior Court. The hearing of the case was ordered on Oct. 22 by Presiding Judge Kenneth Mackintosh, following the filing of a suit by T. N. Haller seeking to enjoin the city officials from extending Division A into Ballard. The Seattle Central Labor Council has adopted a resolution opposing efforts made to block by court injunction the extension of the line into Ballard. The Council voted to lend its moral support to Ballard taxpayers, who have employed an attorney to oppose the suit.

Programs of Association Meetings

New England Street Railway Club

The regular monthly meeting of the New England Street Railway Club will be held at the Quincy House, Boston, Mass., on Nov. 22, at 6 p. m. The speaker will be Frank Silliman, Jr., first vice-president of the Cumberland County Light & Power Company, Portland, Me., associated with E. W. Clark & Company, Philadelphia, Pa., as manager of their Eastern properties. Mr. Silliman has had extensive experience in power and lighting properties. His earlier work was done in Boston, representing the same company he is now with in Philadelphia. His subject at the meeting in Boston will be "Depreciation as an Unsettled Question in Fare Regulation."

National Safety Council

The executive committee of the National Safety Council has decided to accept the invitation from St. Louis, Mo., to hold the 1918 congress in that city. The headquarters of the congress will be at the new Statler Hotel. The Council and its members will practically own the hotel for the third week in October, 1918. The 1918 annual congress program committee has been appointed and preparations are already under way to shape the program. Many innovations are planned for this congress, including printing and distributing the formal addresses six weeks previous to the congress, so that each member will be prepared in advance to ask questions and participate in the discussions. Only synopses of addresses will be read at the meeting, so that more time will remain for discussions and questions. Another feature of the 1918 congress will be inspection trips over the electric railway and steam railroad lines, and visits of sectional members to leading industries in the city.

Financial and Corporate

Financing Under War Conditions

Bankers State that Government Business Should Have Right of Way, but Maturing Obligations and Imperative Betterments Must Be Cared For

With dropping bond prices, a flooded short-term note market and ethical considerations arising from government financial needs, the problem of raising money for corporate purposes is to-day very pressing. Views of different bankers on this subject, as currently stated in the financial journals, show a realization of the fact that government financing is of paramount importance, but they also indicate refunding and improvement needs of corporations that must not be forgotten.

MORATORIUM ON MATURING ISSUES

In the opinion of Craig Colgate of Colgate, Parker & Company, New York, N. Y., government loans will have to take absolute precedence over private and municipal financing for the duration of the war. As the demands of the government for money become more insistent, the financial undertakings in this country will have to conform more and more to the plan that has been put into execution in various foreign countries—namely, that private corporate financing, where it interferes with governmental, will have to be regulated.

Yet, Mr. Colgate avers, the maturing obligations of perfectly solvent railroad, municipal and public utility companies will have to be taken care of in some fashion or universal hardship will result. If the government should adopt the step of declaring an embargo on this form of financing, preventing bankers from taking refunding issues, there would be only one alternative and that is to declare a moratorium on all debts of this nature. The United States, however, is rich enough and its financial resources have been up to the present time so little called upon that it is perfectly able not only to supply the amounts needed for government loans but also to take care of all necessary corporate financing of a refunding nature. Hence Mr. Colgate does not feel that a drastic attitude toward all corporate financing is necessary at the present time.

PRIORITY BOARD MAY BE NEEDED

Charles H. Sabin, president Guaranty Trust Company, New York, N. Y., feels that all possible competition with government issues should be eliminated, and that to meet the pressing demands of war the government should have the right of way in its demands. He says:

"Both public and private needs which are not absolutely compelled by the exigencies of their situation should be held in abeyance, and no new financing encouraged which does not meet an absolute and immediate need. Municipalities, corporations and individuals should all be guided by this major consideration and should subject every proposition to the close analysis of war requirements. It may even be necessary to suggest the formation of a government board to pass on the priority of public financial offerings as is now being done in the fields of transportation and production."

FINANCING CORPORATIONS FROM NATIONAL TREASURY

Mortimer L. Schiff of Kuhn, Loeb & Company believes that the government must be prepared, if necessary, to monopolize the investment market. It may be said that other borrowers can tempt money out of the pockets of the people by the attractiveness of the terms they offer, but even if this is possible, it should not be permitted in the interest of the country at large.

But how then, asks Mr. Schiff, are corporations and political subdivisions to finance those needs, such as refunding and absolutely necessary additions, betterments and improvements, which are imperative and cannot be postponed, if they are unable or not permitted to sell their own securities? It seems to him that there is but one logical answer to this question. The national treasury may have to provide funds for this purpose, just as it is financing the needs of the Allies in this country. Continuing, Mr. Schiff says:

"Some may fear the acquisition by the government of corporate securities would be a step toward government ownership, but it does not appear that such reasoning is sound. These securities would be obligations, not stock; the relationship of the government would be that of creditor, not of owner, and the bonds and notes thus acquired would be in such form as to be readily saleable after the war. In fact, it is probable that this could be done at a profit, when normal conditions are again restored.

"If the time should come when such issues must be curtailed or even prevented, the most effective means of control and supervision would probably be through a central board, with power, possibly subject to review by the Secretary of the Treasury, to deal with this situation."

Annual Report

Commonwealth Power, Railway & Light Company

The income statement of the Commonwealth Power, Railway & Light Company, Grand Rapids, Mich., for the years ended June 30, 1916 and 1917, follows:

	1917	1916
Earnings on stocks owned of subsidiary companies	$2.629,631	$2,776.499
Interest and other earnings	624,032	580,811
Gross earnings	$3,253,663	$3,357,310
Expenses and taxes	$170,272	$149.948
Amortization of debt discount	28,932	28,932
Interest charges	598.103	630,182
Total deductions	$797,307	$809.062
Net income, available for dividends, replacements and depreciation	$2,456.356	$2,548 248
Dividends on preferred stock	1,066.485	971,075
Balance	$1,389,871	$1,577,178

The 1917 gross earnings of the holding company, though not so large as in 1916, were greater than in 1915, when they amounted to $2,985,541. The same statement holds true with regard to the net income available for dividends, replacements and depreciation, the 1915 figure in this case being $2,175,676.

Of the amounts standing to the credit of the surplus accounts of the subsidiary companies, there were accruing to the Commonwealth Power, Railway & Light Company on June 30, 1917, undistributed earnings amounting to $3,753,824.

Deficits for Edmonton and Regina Municipal Lines

According to Edmonton and Regina newspaper reports, the municipal electric railways in these cities are in a bad way. The Edmonton system is carrying 25,000 passengers a day and losing 1 cent on each passenger. If the number of passengers per day could be increased to 35,000 it is estimated that the railway would break even, but this is not regarded as possible while war conditions continue.

The alternatives, it is said, are to raise the rates, to cut down expenditures by cutting down service, or to go on ignoring the sinking fund which should be put aside to meet the bonds. The Edmonton *Bulletin* urges the taking of definite steps to make the system a self-sustaining business proposition, declaring that "a city with millions of back taxes cannot afford to run chances on the indefinite continuance of a loss of $250 a day on its electric railway system."

The showing in Regina is not as bad as Edmonton's. According to figures submitted to the City Council recently and certified to by the auditors, Regina's electric railway loss for the nine months ended Sept. 30 was $48,958, or an average loss of about $180 a day.

Service-at-Cost Plan Proposed

Details of Plan Suggested by Homer Loring in the Interest of Security Holders for Stabilizing Massachusetts Investments

Homer Loring, Boston, Mass., representing the Association of Owners of Massachusetts Street Railway Securities, on Nov. 7 addressed the special legislative commission on street railway financial problems and submitted a plan of service-at-cost which it is hoped will remedy the present situation in Massachusetts electric traction circles. The association with which Mr. Loring is connected represents securities totaling more than $60,000,000. He advanced the opinion that the present discouraging financial condition of the electric railways was not due to poor management or to errors in commission regulation, but to the fundamental weakness of the 5-cent fare as a fixed unit of compensation for railway service. He pointed out that the institution of the fixed fare unit of 5 cents was due in large part to a misconception of the economies to be anticipated from the electrification of horse railroads. Unforeseen expenses and the insatiable public demand for new cars, more rapid and more frequent service soon absorbed and offset the economies which the change in motive power had effected. The advent of the automobile and later of the jitney cut into the growth of traffic needed to pay the constantly increasing costs of operation, and the rise of supply prices resulting from the war (to say nothing of labor) capped the climax.

The speaker pointed out the impossibility of selling permanently any product at less than cost—a thing the electric railways had been attempting to do for some time. The industry had been trying to sell transportation at a fixed price in the face of ever mounting costs, and thus had gone against a simple but inflexible economic law. The only strange point about the whole matter was that the roads had withstood the economic onslaught so long. Poor credit invariably resulted in poor service. The demands of the public for more, larger and better cars and for increased trackage could not be met without good credit. Unless capital could be attracted, the public could not receive the service to which it was entitled. Mr. Loring said that the credit of the electric railways could not be revived until investors were assured that rates of fare would promptly fluctuate with changed conditions of operating cost. He asserted that the $200,000,000 invested in Massachusetts electric railways were largely the savings of the people of that State. Thirty-five millions were held by the Massachusetts savings banks and 25,000 security holders were vitally interested. These investors had proved their faith in Massachusetts by supporting home industries. A plan which would insure a reasonable interest return would encourage the investor to enter the field again.

DETAILS OF SERVICE-AT-COST PLAN

The service-at-cost plan proposed by the association is as follows:

"1. Enact a law which any electric railway in the State may elect to accept. Such law to provide for railway service-at-cost; cost to include operating expenses, maintenance, depreciation charges as fixed by the Public Service Commission, and 6 per cent on investment value.

"2. Investment values shall mean moneys honestly and prudently invested and shall be determined in the manner now provided by the orders of the commission.

FARE TO BE ADJUSTABLE

"3. Upon acceptance of the law each operating company shall provide a reserve fund equal to 3 per cent of its investment value, but in no event more than $1,000,000. Companies to be permitted to issue bonds beyond the present legal limit to obtain this reserve fund, such bonds to mature 10 per cent annually and to be paid from earnings. One-quarter of this fund to be cash and three-quarters invested in United States bonds. This reserve fund to be drawn upon only to pay interest and dividend charges and then only in the event that operating income is not sufficient to meet these charges.

"4. Any withdrawal from the reserve fund to be reported to the Public Service Commission within ten days. Any substantial withdrawals from the reserve fund shall be promptly investigated by the commission. Whenever withdrawals have reduced this reserve fund to the extent of 30 per cent of such fund, the company shall be permitted immediately to increase its revenues by such rearrangement of service, readjustment of fares or restriction of free transfers as may in the judgment of the commission promptly restore the reserve fund to its normal amount. Such increase in revenues may be permitted at the discretion of the commission before the reduction in the reserve fund reaches 30 per cent.

"5. The operating balance remaining each month after payment of the charges specified in Paragraph 1 shall be added to the reserve fund. Whenever the reserve fund reaches an amount of 15 per cent in excess of the normal amount the Public Service Commission shall require improvements in service, concessions in fares or transfer privileges requisite to reduce the reserve fund.

"6. All companies shall be required to set aside accident and snow funds to be fixed by the Public Service Commission so that rapid changes in the reserve fund due to unusual conditions shall be avoided.

STATE REPRESENTATION ON EACH BOARD OF DIRECTORS

"7. The Governor shall appoint a director to the board of directors of each electric railway, who shall be a resident of a city or town served by such company, but not an owner of its stock or bonds.

"8. The commonwealth shall be divided into ten electric railway districts and for each district the Public Service Commission shall appoint a resident electric railway supervisor for a term of three years, his salary and expense allowance to be fixed by the commission and paid by the companies. It shall be the particular business of this supervisor to see that the companies properly serve the public. He will consult with the management and State director and can appeal to the commission if his recommendations are not adopted.

"9. To prevent delays in the readjustment of fares, the commission shall continuously employ two examiners, who shall be experienced in the electric railway business. It shall be the duty of the examiners to supply the commission with information as to the condition and operating efficiency of the companies and to suggest such changes as may seem to them necessary or advisable.

"10. Any company accepting the plan shall be entitled to all of its benefits and provisions notwithstanding anything to the contrary contained in the laws and charters now in force.

"11. The Public Service Commission shall determine upon a program of gradual rehabilitation for each electric railway desiring to accept the plan, and shall reasonably assure itself before permitting the plan to become effective that this program will be undertaken."

Saved from the Scrap Heap

Providence & Fall River Property Taken Over by Local Interests and Service Resumed

The Providence & Fall River Street Railway, sold for junk recently, has been saved from the scrap heap. The residents of the towns through which the company operated were successful in exercising the option which they obtained on the property and service was resumed from the Swansea-Somerset town line to Masons turnout, North Swansea, on Nov. 8 after the road had been shut down for more than seven weeks. The fare through the town is 6 cents flat and for the present no transfers will be issued or accepted. The successor company is known as the Swansea & Seekonk Street Railway. Its right to operate the former property of the Providence & Fall River Street Railway has been approved by the Massachusetts Public Service Commission. The new company organized at a meeting on Nov. 6. The officials are as follows: Emery C. Kellogg, Swansea, president; Willard C. Gardner, Swansea, vice-president; Charles W. Greene, Warren, treasurer; Algernon H. Barney, Emery C. Kellogg, Arthur E. Horton, Willard C. Gardner, William E. Bowen, Thomas Lahey, Everett M. Marble, Joseph Luther, Louis Gray, Chester E. Horton and Jeremiah Wheeler, directors. J. H. Hearn, who had charge of the road when it was operated by the old company, has been engaged to act as superintendent of the line. The circumstances connected with the abandonment and sale of the road have been referred to at length previously in the ELECTRIC RAILWAY JOURNAL.

Another Road Abandoned

The stockholders of the Mexico Investment & Construction Company, which has been operating an electric railway from Mexico to Santa Fé, Mo., about 12 miles, have decided to dissolve the company and abandon the operation of the road. W. W. Botts, secretary and treasurer of the company, has issued a statement to the public in part as follows:

"We have now been operating the road from Mexico to Santa Fé for more than two years at a loss. It took a large part of the proceeds from the sale of the material in the south end of the road to pay the deficit in operating expenses and to replace worn-out equipment. There was no balance with which to pay taxes, interest or dividends. No stockholder of the company or officer has received any pay for his services and no return on his investment.

"We see no prospect for improvement. The only way to make the road self-sustaining is to extend it to Perry and then operate it with power from Keokuk. But we have not the capital with which to do this, nor can we get it. When this enterprise was started ten years ago, railroads were prosperous and railroad securities were regarded as good investments. Now they are not wanted at any price. We are convinced also that the road is not, under present conditions, of sufficient public utility to justify the expense of operation. We are therefore forced to the conclusion that, unless the road should be wanted as a part of a through line from Hannibal to Mexico, the enterprise is a failure and ought to be abandoned."

Change in Short Line Officers

At a meeting of the directors of the Kansas City, Clay County & St. Joseph Railway, held in Kansas City, Mo., on Nov. 6, J. R. Harrigan was elected vice-president of the company and W. S. Tuley, secretary and treasurer. Mr. Harrigan had been general manager of the company since six months before the road was placed in operation. He retains the title of general manager. T. A. Reynolds, who has been vice-president as well as chairman of the board of directors, retires from the office of vice-president. The following directors were present at the meeting: W. T. Kemper, John S. Downing, E. F. Swinney, C. F. Enright, J. G. Schneider, W. S. Tuley and J. R. Harrigan. W. S. Tuley became auditor and assistant treasurer of the company in March, 1915. He succeeded H. F. Mayer as treasurer in June, 1916. As secretary he succeeds Inghram D. Hook, who is now with the National Army.

Last-Minute Effort to Save Road

Another community has become alarmed at the prospect of losing its local railway line. It is the city of Catskill, N. Y. At that place on Oct. 24 the property and franchises of the Catskill Traction Company were sold under mortgage foreclosure to Joseph Joseph & Brothers Company, New York. The road consists of 5 miles of line between Catskill and Leeds. Confronted with the prospect of the road being dismantled and torn up, George B. Austin, president of the Chamber of Commerce of Catskill, appointed a committee consisting of Herman C. Cowen, Percival Golden, Howard C. Smith and L. Carleton Austin for the purpose of interesting local capital in taking over the road and continuing it in operation. Figures submitted by Mr. Austin at a meeting of the Chamber of Commerce showed that the road some years ago was a paying proposition. He expressed the belief that with an increase in fare and with the village board of trustees co-operating in the way of regulating the automobile service which parallels the electric railway, the road could be again made to pay.

Barre & Montpelier Traction & Power Company, Barre, Vt.—Judge L. P. Slack has been asked to appoint a receiver for the Barre & Montpelier Traction & Power Company in a chancery suit brought by Henry M. Deavitt, Chicago, a bondholder who alleges that bonds of $100,000 which matured on Nov. 1 have not been paid. Judge Slack set Nov. 22 for the date of hearing. A controlling interest in the company is held by the Montpelier & Barre Light & Power Company. The total issue of bonds which matured on Nov. 1 is for $100,000. They are secured under a first mortgage dated 1897 running for twenty years, under which the American Trust Company, Boston, is trustee.

Bluffton, Geneva & Celina Traction Company, Bluffton, Ind.—Judge Eichhorn at Bluffton has ordered the sale of the property of the Bluffton, Geneva & Celina Traction Company under foreclosure.

Bristol County Street Railway, Taunton, Mass.—The property of the Bristol County Street Railway will be sold under foreclosure at public auction on Nov. 28. The company's lines run from Attleboro to Taunton, with a branch to Pawtucket, about 17 miles.

Columbus, Delaware & Marion Electric Company, Columbus, Ohio.—The Columbus, Delaware & Marion Electric Company has made a mortgage to the Cleveland Trust Company as trustee to secure an issue of $7,500,000 of twenty-year 5 per cent bonds, dated July, 1917. The Columbus, Delaware & Marion Electric Company is the successor to the Columbus, Delaware & Marion Railway, the property of which was sold at receiver's sale on June 11. As announced in the ELECTRIC RAILWAY JOURNAL of July 7, page 34, it is proposed that the new company will have outstanding at the present time $1,900,000 of 5 per cent bonds, $650,000 of 7 per cent preferred stock and $700,000 of common stock.

Danbury & Bethel Street Railway, Danbury, Conn.—A hearing upon the confirmation of James E. Walsh, Greenwich, Conn., as receiver of the Danbury & Bethel Street Railway and for the appointment of two appraisers will be held before the Superior Court in Danbury on Nov. 20. The appointment of Mr. Walsh as temporary receiver of the company was noted in the ELECTRIC RAILWAY JOURNAL of Nov. 3, page 835.

Dallas (Tex.) Railway.—The Dallas Railway, the consolidated company that has taken over the electric railways in Dallas, has filed with the City Commission a map of all electric lines leased from the Northern Texas Traction Company, a Stone & Webster property, that had been operating the Oak Cliff lines. A schedule of all properties and equipment was also filed. The lease contract shows that the Dallas Railway will pay to the Northern Texas Traction Company an annual rental of $115,000 for the first three years, $120,000 during the fourth year, $125,000 during the fifth year, $135,000 during the sixth year, and $150,000 a year thereafter. The lessee reserves the right to purchase the property outright at a fixed price of $2,000,000.

Gary & Interurban Railroad, Gary, Ind.—The Indiana Public Service Commission has authorized Charles D. Davidson, receiver of the Gary & Interurban Railroad, the present owners of the Goshen, South Bend & Chicago Railroad, to discontinue service on the road. The railway runs west from Laporte 20 miles without touching a town and terminates at Goodrun, a railway junction. The commission has authorized the city of Laporte to buy that part of the line which lies within the city limits.

Grafton Light & Power Company, Grafton, W. Va.—The United States District Court at Philippi, W. Va., has adjudicated the Grafton Light & Power Company as bankrupt. John T. McGraw is said to be an unsecured creditor to the amount of $150,000. The company was incorporated in West Virginia in April, 1914, with $500,000 authorized capital stock and funded debt reported as $300,000, as a consolidation of the Grafton Traction Company and the Grafton Gas & Electric Company. A. W. Burdett and G. W. Ford, Grafton, are the receivers of the company.

Illinois Traction Company, Peoria, Ill.—Subsidiaries of the Illinois Traction Company have filed applications with the Illinois Public Utilities Commission for permission to increase stock as follows: Bloomington & Normal Railway &

Light Company, $53,000 preferred; Urbana Light, Heat & Power Company, $35,000 common; Decatur Railway & Light Company, $180,000 common; Danville Street Railway & Light Company, $49,000 common; Danville, Urbana & Champaign Railway, $550,000 preferred; Urbana & Champaign Railway, Gas & Electric Company, $32,000 common.

Los Angeles & San Diego Beach Railway, San Diego, Cal.—The Los Angeles & San Diego Beach Railway has filed with the California Railroad Commission an application for an extension until Nov. 15, 1918, of the time in which it may sell bonds previously authorized by the commission. The company was authorized to issue $375,000 of bonds, and says that so far it has sold only $29,000 of the bonds, and that it may be necessary to sell more of them. The company says that it owes $218,329 on notes and a running account, and that for the past six months its operating expenses have been more than its gross revenue.

Mahoning & Shenango Railway & Light Company, Youngstown, Ohio.—The Mahoning & Shenango Railway & Light Company has sold to Lee, Higginson & Company $500,000 of first and consolidated mortgage 5 per cent bonds, due November, 1920. The proceeds will be used to complete the 20,000-hp. addition to the Lowellville power house, which the company expects will be ready to operate about the first of the year. The company now has an application pending before the Ohio Public Utilities Commission for permission to issue $3,700,000 of its 7 per cent preferred stock to be sold at not less than $90 a share.

Mansfield Railway, Light & Power Company, Mansfield, Ohio.—The Mansfield Electric Light & Power Company, a subsidiary of the Central Ohio Gas & Electric Company, which in turn is controlled by the Cities Service Company, has completed arrangements which have been pending to acquire the property and franchises of the Mansfield Railway, Light & Power Company. Application to consolidate the two properties has been filed with the Ohio Public Utilities Commission. The Mansfield Railway, Light & Power Company operates the electric railway in Mansfield and an interurban line to Shelby. It also has an electric plant, but this will be shut down and power for the traction lines supplied from the Melco station of the Mansfield Electric Light & Power Company. When united with the Mansfield Electric Light & Power Company, the new property will be operated with the old, under the management of R. E. Burger, manager of the original Mansfield properties.

Minneapolis, St. Paul, Rochester & Dubuque Electric Traction Company, Minneapolis, Minn.—C. E. Warner has succeeded Charles T. Bratnober as receiver of the Minneapolis, St. Paul, Rochester & Dubuque Electric Traction Company. The new receiver has been acting as attorney for the receiver and as operating manager ever since the road was thrown into receivership. It is said unofficially that plans are under way by the Patron's Protective Association and by the civic and commerce committee to rehabilitate the road and continue it in operation as a going concern. Under the ruling by the court the date for the sale of the road has been advanced to Dec. 1. Hope is expressed that it will be possible in the meantime to arrange some plan under which the receivership will be lifted.

Northern States Power Company, Chicago, Ill.—The Northern States Power Company has sold to the Harris Trust & Savings Bank, Chicago; H. M. Byllesby & Company, Chicago; Bonbright & Company, New York, and the Guaranty Trust Company, New York, an issue of $500,000 of 5 per cent first and refunding mortgage bonds, due in 1941.

Richmond & Rappahannock River Railway, Richmond, Va.—Thomas B. Love, Richmond, Va., has been appointed receiver of the Richmond & Rappahannock River Railway. Mr. Love is also president of the road. Interest on the bonds was in default. The principal stockholder and also the holder of a majority of the bonds, it is stated, is Joseph E. Willard, United States Minister to Spain, to whom is owing $53,000 for interest.

Third Avenue Railway, New York, N. Y.—At the annual meeting of the stockholders of the Third Avenue Railway on Nov. 14, James F. Seeley was elected a member of the board of directors, succeeding James A. Blair. The remaining members of the board were re-elected. The principal point of discussion at the meeting was the question of increased fares. Edward A. Maher, president of the company, made a statement explaining the action which the management had taken in seeking the permission of the Public Service Commission to charge 2 cents for transfers. Mr. Maher said he was advised that the subway and elevated lines would not make any request for a 6-cent fare and it was deemed inadvisable for the surface lines to seek relief through such an increase on account of the greater competition that would result with the elevated and subway lines. In reply to a question by a stockholder concerning municipal ownership, Mr. Maher said: "I am not in favor of municipal ownership. I am able to say this impartially, as I am retiring at the first of the year from the active management of the company, after more than a half century. I shall step aside to permit younger men to take my place, but I am firmly convinced that municipal ownership does not afford the solution of the problem which confronts the Third Avenue system." A review of the report of the company for the year ended June 30, 1917, was published in the issue of the ELECTRIC RAILWAY JOURNAL for Oct. 20, page 736.

Electric Railway Monthly Earnings

Period		Operating Revenue	Operating Expenses	Operating Income	Fixed Charges	Net Income
ATLANTIC SHORE RAILWAY, SANFORD, ME.						
1m., Aug.,	'17	$24,863	$12,408	$12,455	$430	$12,025
1 " "	'16	53,860	29,350	24,510	650	23,860
AURORA ELGIN & CHICAGO RAILROAD, WHEATON, ILL.						
1m., July,	'17	$220,802	*$143,462	$77,340	$35,790	$41,550
1 " "	'16	209,030	*129,436	79,594	36,117	43,477
7 " "	'17	1,218,890	*885 051	333,839	250,385	83,454
7 " "	'16	1,155,862	*771,002	384,860	254,627	130,233
KEY WEST (FLA.) ELECTRIC COMPANY						
1m., Aug.,	'17	$12,405	*$8,082	$4,323	$2,479	$1,844
1 " "	'16	10,161	*7,023	3,138	2,525	613
12 " "	'17	132,089	*86,870	45,219	30,061	15,158
12 " "	'16	114,801	*77,249	37,552	30,363	7,189
NORTHERN TEXAS ELECTRIC COMPANY, FT. WORTH, TEX.						
1m., Aug.,	'17	$210,459	*$123,538	$86,921	$29,149	$57,772
1 " "	'16	155,378	*97,617	57,761	28,916	28,845
12 " "	'17	2,178,387	*1,271,677	906,710	349,938	556,772
12 " "	'16	1,844,384	*1,131,646	712,738	341,845	370,893
PADUCAH (KY.) TRACTION COMPANY						
1m., Aug.,	'17	$23,298	*$18,663	$4,635	$7,546	†$2,911
1 " "	'16	26,157	*17,627	8,530	7,163	1,367
12 " "	'17	305,834	*227,882	77,952	77,952	†9,936
12 " "	'16	307,276	*198,215	109,061	87,692	21,369
PENSACOLA (FLA.) ELECTRIC COMPANY						
1m., Aug.,	'17	$34,399	*$19,932	$14,467	$7,833	$6,634
1 " "	'16	24,398	*13,379	11,019	7,712	3,307
12 " "	'17	319,397	*185,338	134,059	93,221	40,838
12 " "	'16	278,596	*154,295	124,301	89,934	34,367
PUGET SOUND TRACTION, LIGHT & POWER COMPANY, SEATTLE, WASH.						
1m., Aug.,	'17	$774,847	*$490,870	$283,977	$196,691	$87,286
1 " "	'16	671,861	*421,667	250,194	184,963	65,231
12 " "	'17	8,837,724	*5,388,166	3,449,558	2,275,183	1,174,375
12 " "	'16	7,775,272	*4,988,526	2,786,746	2,204,547	582,199
SAVANNAH (GA.) ELECTRIC COMPANY						
1m., Aug.,	'17	$86,570	*$57,580	$28,990	$24,369	$4,621
1 " "	'16	69,891	*47,833	22,058	23,713	†1,655
12 " "	'17	914,212	*605,435	308,777	287,627	21,150
12 " "	'16	795,821	*535,472	260,349	260,350	†20,164
TAMPA (FLA.) ELECTRIC COMPANY						
1m., Aug.,	'17	$79,321	*$48,306	$31,015	$4,652	$26,363
1 " "	'16	74,194	*43,219	30,975	4,398	26,577
12 " "	'17	1,006,862	*551,913	454 949	52,482	402,467
12 " "	'16	966,144	*522,216	443,928	52,334	391,594
TWIN CITY RAPID TRANSIT COMPANY, MINNEAPOLIS, MINN.						
1m., Sept.,	'17	$849,506	$556,756	$292,750	$167,620	$125,130
1 " "	'16	854,747	504,810	349,937	149,828	200,109
9 " "	'17	7,732,106	5,104,861	2,627,245	1,356,714	1,270,531
9 " "	'16	7,594,988	4,692,777	2,902,211	1,292,995	1,609,216
UNITED LIGHT & RAILWAYS COMPANY, GRAND RAPIDS, MICH.						
12m., Sept.,	'17	$2,029,465	*$165,565	$1,863,900	$665,301	$1,198,599
12 " "	'16	1,855,886	*139,385	1,716,501	571,087	1,145,414
NORTHERN OHIO TRACTION & LIGHT COMPANY, AKRON, OHIO						
1m., Aug.,	'17	$545,039	$350,725	$194,314	$71,486	$1[illegible].828
1 " "	'16	473,434	245,684	227,750	93 615	134,135
8 " "	'17	4,183,053	2,565,681	1,617,372	627,863	989,509
8 " "	'16	3,334,077	1,647,168	1,686,909	767,403	919,505

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*Includes taxes. †Deficit.

Traffic and Transportation

Inquiry Into Heat in Vestibules

Connecticut Company and Shore Line Each Directed to Equip Four Cars and Report Before March 15, 1918

The Public Utilities Commission of Connecticut has handed down its finding with respect to the petition of the Connecticut Joint Conference Board of Electric Railway Employees filed on April 3 for an order requiring the heating of the vestibules of electric railway cars from Nov. 1 to April 1. The commission says it seems desirable before any mandatory order shall be issued that a series of experiments be conducted under the observation of the commission with the idea of developing a solution of the question satisfactory to the companies and to the men. With this end in view, the commission has directed the Connecticut Company and the Shore Line Electric Railway to make immediate preparations to install a heating device or heating devices on at least four cars of each company in active operation on interurban or long-distance routes and to make final report to the commission upon the results of the trial on or before March 15, 1918. The commission has also directed all the electric railways in the State to equip the vestibules of their closed cars with suitable battens or such other weather protection as may be necessary to assure the maintenance of reasonably tight joints and the absence of large cracks or openings through which drafts could enter.

The matter of heating the vestibules of cars has been before the Legislature of Connecticut at various times, but that body has declined to pass any act covering the matter because it considered that the Public Utilities Commission was the proper body for investigating the claims of the railway men. Upon the failure of the last Legislature to enact favorable legislation, the Connecticut Joint Conference Board representing the motormen and conductors brought a petition before the commission. At the hearing the claims of the men and the counter-claims of the company were presented.

Case Presented for the Men

The men urged that the car vestibules were so uncomfortable in cold weather as to endanger health and that many of the vestibules were not sufficiently weather-proofed. Men who had operated cars on interurban runs where the arc headlights were installed stated that the resistance coil in use in connection with the arc headlights at one end of the car served to take the chill from the vestibule in which the resistance was located, and from this the suggestion developed that similar coils if installed in all cars might be sufficient to meet the needs of the motormen.

The companies claimed that the heating afforded by the arc headlight resistance coil was serviceable only at night, on cars equipped with such lights, and in sections where arc headlights were permitted to be used, and they objected generally to any system of heating the vestibule, whether by resistance coils or other electric heating devices, based upon grounds of expense involved, partially in the original installation and principally in supplying the necessary additional current. A further objection was the fear that if the already-inclosed and storm-protected vestibules were heated there might be a tendency to drowsiness on the part of the motormen which would lead to inattention to duties and endanger the occupants of the car. It was further stated by the representatives of the several companies that in some instances the men themselves objected to the heating of the vestibules, preferring to depend upon extra clothing for warmth rather than to pass from heated vestibules into the cold air outside and incur the danger from colds which frequent passage from warm vestibules to cold outside air might present. It was also noted that most of the closed cars purchased recently were of the type in which the warmth of the whole car was shared by the motormen, there being no partition to set off the vestibule at each end.

Following the public hearing on this matter the commission undertook an investigation and inquiry into methods of heating car vestibules, with a view to determine the feasibility of installing heaters or devices for increasing the motormen's comfort, and to ascertain the cost thereof. It appeared that the practice of heating vestibules was so limited that practical operating illustrations were unavailable, and few if any devices were on the market subject to comparison and examination. In this particular the commission says:

"Certainly there is nothing to which the attention of the commission has been directed which offers a clear solution to this question."

Texas Interurbans Increase Fares

One-Quarter Cent a Mile Added to Present Tariffs to Meet War Tax and Increased Costs

An increase in the rates for passenger travel on all the interurban electric railways operated by the Texas Electric Railway and the Northern Texas Traction Company has been announced. The rate heretofore has been approximately 2½ cents per mile. The new rate is approximately 2¾ cents per mile. In discussing the advance, and the causes that led to it, James P. Griffin, passenger agent for the Texas Electric Railway, said:

Reasons for the Increase

"The rate increase is to cover the Federal war tax and the increased cost of operation. The increase, however, will hardly cover the added expense of the company on account of the war. Hereafter we will sell round-trip tickets with a thirty-day limit instead of a ten-day limit, as in the past. Effective at once all cash coupon tickets issued will be usable by the purchaser and family, instead of purchaser and wife, as heretofore.

"The announcement of the increase in rates came after an exhaustive survey of the traction situation. The upward trend in the prices of all materials and the high cost of living, which has caused the company to raise the salaries and wages of practically all employees, foreshadowed the necessity for an increase in passenger rates. The levying of the 8 per cent war tax had made the addition of a tax levy on transportation rates necessary. At the same time a serious shortage of cents was faced, which made impracticable an odd-cent increase in the rates. The rates becoming effective to-day will make the fare between all points on the three interurban lines in even change and obviate the inconvenience of using cents. The company is unable to obtain cents in large quantities.

"Everything we buy in large quantities has become costlier. There is no exception to this. Even the tickets we sell are being printed at a much higher cost. The rate increase is hardly commensurate with the added cost of operation."

Auto Stages and Trucks Regulated

The Railroad Commission of California on Nov. 7 issued an order establishing regulations for the operation of public automobile stages and trucks engaged in passenger or freight transportation in California. This affects all stages operated outside cities or towns, but not the local jitneys running entirely within municipalities. The order was made after a complete investigation into the automobile, stage and jitney business in the State. The commission says it has had in mind the convenience and safety of the public and also the rights of the transportation companies.

Public hearings were held by the Railroad Commission in its investigation of the public automobile business under its jurisdiction and an exhaustive study made of the subject by experts during the past year. The commission says that the hearings revealed a universal spirit of co-operation by all interested parties in the matter of the successful regulation of this comparatively new and fast increasing mode of transportation. It is the opinion of the commission that this form of transportation has come to stay and that properly developed it will become a very necessary public convenience.

Fare Increases Asked in Indiana

Necessity for Increased Rates of Fare for Indiana City and Interurban Roads Reflected in Petition Filed Within Last Few Days

The Indianapolis Traction & Terminal Company presented a petition on Nov. 15 to the Public Service Commission of Indiana setting forth that if the company was to continue to furnish efficient service in the city of Indianapolis, and to do any further improvement and maintenance work on its property, it would be absolutely necessary to secure greater revenue. This could only be done by increasing the rates of fare in Indianapolis over those at present existing. The company asks for a uniform rate of fare of 5 cents, eliminating the tickets now sold at the rate of twenty-five for $1 or six tickets for 25 cents.

PRESIDENT TODD'S STATEMENT

Robert I. Todd, president of the company, issued a statement in explanation of the causes which necessitated the petition for an increase in the rate of fare. He said in part:

"In applying to the authorities for relief from the extraordinary financial burdens imposed on all electric railway properties by the existing war conditions, the Indianapolis Traction & Terminal Company is obliged to follow the lead of more than 100 city and interurban railways that have asked and are now receiving additional rates of fare over those prescribed in their franchises.

"The conditions of increased cost of operation that led the proper authorities to grant additional revenue to the companies referred to above exist in Indianapolis. In fact, in some respects the local situation is even more acute, as in addition to the increased costs of operation results show that in the first ten months of 1917 the company carried 1,396,579 fewer revenue producing passengers than for the same period in 1916. The petition asks only for sufficient additional revenue to enable the company to meet increased operating costs brought about by the present extraordinary conditions.

NO DIVIDENDS SINCE 1913

"The Traction & Terminal Company has not paid a dividend since 1913. Prior to that time its payment of dividends since its organization amounted to only 1.56 per cent per annum. In 1914 the deficit of the company amounted to $128,611. In 1915 the deficit amounted to $117,556. In 1916 there was a deficit of $68,413. In the first nine months of 1917 there has been a deficit of $139,888. With a positively indicated decrease in the number of revenue producing passengers, and with the costs of operation and maintenance continually soaring with taxes increased, earnings decreased, and an accumulated deficit of $480,981, to be increased to at least $980,981 in 1918 if the present rate of fare is maintained, the company faces a situation that makes some immediate relief absolutely necessary.

"We believe that the citizens of Indianapolis prefer satisfactory electric railway service at a reasonably increased fare to inevitable curtailment of the present service at the present rate of fare. The directors of the company have therefore petitioned for the right to discontinue the sale of tickets at a rate that makes the fare less than 5 cents. It is not expected that the relief sought will do away entirely with the anticipated deficit of 1918, but such relief is asked with the expectation that with the utmost economy the company will be able to operate satisfactory schedules and keep the property in such a condition of repair as to enable it to maintain efficient service."

I. U. T. REQUESTS INCREASE IN CITY AND SUBURBAN FARES

The same day that the Indianapolis company presented its request to the commission the Union Traction Company of Indiana filed a petition asking for a 6-cent fare on its city lines in Anderson, Marion, Muncie and Elwood and an increase from 5 to 7 cents on the Indianapolis-Broad Ripple suburban line. The petition says that the base rate of 2 cents per mile under the copper zone system should be increased, but pending action toward that end the company asks that certain special interurban fares be increased. A request has also been made for authority to increase the round-trip rate between Indianapolis and Fort Benjamin Harrison from 25 to 35 cents. The petition states that the operating costs for the nine months of 1917 are 26.6 per cent higher than for the same period in 1916, not including $139,730 expended for improvements during the first nine months of 1917. The gain in revenues for the same period was only 11.42 per cent.

On Nov. 13 the Louisville & Southern Indiana Traction Company, as lessee of the property of the New Albany Street Railway and the electric railways in Port Fulton and Jeffersonville, asked the commission for authority to charge a straight 5-cent fare in those cities, cancelling the rates under which tickets were sold six for 25 cents. The petitioner also proposes to change the schedule of tickets for school children in Jeffersonville and Port Fulton from forty tickets for $1 to thirty-five tickets for $1, which is the rate now in effect in New Albany. The commission is also asked for authority to make changes in the routing of cars in New Albany and also for changes in the transfer system which has been used on the lines between New Albany, Jeffersonville and Port Fulton.

Reducing Traffic and Load Peaks

Public Service Companies Take Steps to Conserve Equipment, Labor and Materials

On Nov. 12 the Public Service Railway and the Public Service Electric Company appointed a committee to plan for the redistribution of the traffic and power loads as far as possible so as to reduce the "peaks." This action is in line with the general tendency to conserve labor and material and to make the most of existing equipment. The purpose of the committee is thus to assist the companies in their effort to co-operate with the manufacturers and others in their territory, a large proportion of whom will be engaged in the production of war materials. The committee will endeavor to co-operate in a helpful way with all interests concerned in the hope that opening and closing hours will be adjusted so as to eliminate all preventable congestion.

The committee comprises P. S. Young, vice-president, both companies; H. C. Donecker, assistant general manager Public Service Railway; Farley Osgood, general manager Public Service Electric Company, and J. L. O'Toole, assistant to the president, both companies.

The situation which makes it especially necessary for Public Service to study the matter at this time is the present and prospective concentration of government work, particularly near Newark and Camden. The line between Newark and Jersey City on the Lincoln Highway is already heavily taxed and will be much more so in the near future. At Port Newark the Submarine Boat Corporation is building an enormous plant for the construction of ships, under contract with the Emergency Fleet Corporation. It is probable that 16,000 men or more will be employed. At this point also the Quartermaster's Department of the United States Army has under construction a group of at least ten buildings 1100 ft. long and 165 ft. wide.

On the Lincoln Highway also the Engineers' Depot is putting up a number of light buildings, requiring about 700 men on construction work. On the east bank of the Passaic River south of the Lincoln Highway the Foundation Company is erecting a plant for the construction of wooden ships, and is at present employing from 2000 to 2500 men.

On the west bank of the Hackensack River south of the Lincoln Highway a subsidiary of the United States Steel Corporation is installing a permanent plant, employing from 2500 to 3000 men at present. This is known as the Federal Shipbuilding Company. The whole aspect of Avenue R, on the west shore of the Passaic River and Newark Bay, has changed remarkably during the recent past.

Those mentioned are among the most important of the local developments in the vicinity of Newark and are cited to indicate the general nature of the transportation problems now confronting the Public Service Railway. In the southern territory, at Gloucester, the New Jersey Shipbuilding Company is equipping an enormous plant, and the Pennsylvania Shipbuilding Company will also have a plant on one of the islands in the Delaware River between Philadelphia and Camden. At Camden the New York Shipbuilding Company has increased its force from 4000 to 8000 men. At Elizabeth the John Stevenson car building plant has been taken over by an airplane manufacturing concern and will also require special electric railway facilities.

Taken as a whole, the handling of the men for the above-mentioned plants will tax the local transportation facilities to the limit, and it will be to the interest of the public and the manufacturers to facilitate in every possible way the solving of the electric railway company's problems.

New One-Man Cars for Dallas.—The Dallas (Tex.) Railway has ordered twelve one-man cars of the same type as those now operated on the Summit Avenue line in Fort Worth. The new cars will be smaller and lighter than those now operated in Dallas. Their use in Dallas is in the nature of an experiment.

Conductors in Cleveland Will Have Seats.—In accordance with a law enacted last winter the cars of the Cleveland (Ohio) Railway are now being equipped with seats for the conductors. They are of the folding type and are attached to the farebox frame so that they may be moved out of the way when not in use.

Round-Trip Tickets to Be Withdrawn.—The Atlantic City & Shore Railroad, Atlantic City, N. J., proposed to withdraw the sale of round-trip tickets between Atlantic City and Ocean City by way of Pleasantville on Nov. 8. The Board of Public Utility Commissioners will hold a hearing on the matter at the State House, Trenton, to decide whether the change should be approved.

Increase Asked in Chartered Car Rates.—The Fort Wayne & Decatur Traction Company, Decatur, Ind., has filed a petition with the Public Service Commission of Indiana asking an increase of $10 for the chartering of special cars between Fort Wayne and Decatur. The present cost is $25 and the company asks that it be raised to $35, stating that the present price is below the cost of operation.

Policemen Must Show Their Badges.—Policemen in Knoxville, Tenn., in order to ride free on the cars of the Knoxville Railway & Light Company, must show their badges to the conductors. This is according to an order of the chief of police, who announced to the patrolmen that the railway was under no obligation to let policemen ride free and that free transportation to the men was an act of courtesy on the part of the railway.

Request for Use of One-Man Cars Exclusively.—The Texas Electric Railway, which owns and operates the electric railways in Sherman, Tex., has petitioned the City Council of that city for permission to employ one-man cars exclusively, with the promise that the number of cars in operation will be increased. H. W. Head, manager of the lines in Sherman, has announced that flagmen will be employed at all grade crossings during the hours that electric railway cars are in operation.

New York Fare Hearings Postponed Two Weeks.—At the request of the companies, the fare hearings for electric railways in New York City, scheduled for Nov. 12, were postponed by the Public Service Commission for the First District until Nov. 26. The general reason was that complete data had not yet been prepared by the companies or their engineering experts. At the annual meeting of the Third Avenue Railway, however, President E. A. Maher said that it would be wise to defer further hearings until the full commission was in session. The places of Commissioners Hayward and Hodge, who are absent on war duty, are to be filled.

How Lexington Company Advertised the War Tax.—In announcing to the patrons of its interurban lines the terms of the federal war tax on railway transportation the Kentucky Traction & Terminal Company, with headquarters at Lexington, Ky., used display advertisements in the local papers and in papers in towns which are reached by the lines of the company. In addition to the display advertising the company also received reading notices further amplifying the paid announcements. There has been little difficulty in making the collections, except that a severe dearth of cents in central Kentucky has been an annoyance. Some of the business men of Lexington, Ky., are giving a dollar for 90 cents.

Cincinnati Commission Seeks Transportation Information.—In an address before the Federated Improvement Association on Nov. 8 W. C. Culkins, street railroad commissioner of Cincinnati, Ohio, said that 15 per cent of the passengers on electric railway cars stood by preference. He said that in Wisconsin the standard recognized for loading was sixty-seven seats for 100 passengers, and in Illinois eighty seats for 100 passengers. The skip-stop problem was also discussed. Mr. Culkins said that in general people spent too much time on cars. Local cars were being checked up to learn just what measures were needed for relief. He asked for information, but stated that mere expressions of opinion would be of no practical value.

One-Man Car System at Calgary Praised by Transportation Expert.—W. G. Murrin, assistant general manager of the British Columbia Electric Railway, and W. M. Rae, tramway inspector at Vancouver, B. C., after an inspection of the one-man car system at Calgary, stated that they were very favorably impressed by the methods followed in the operation of this type of car by the Calgary (Alta.) Municipal Railway. They were convinced as to the efficiency of the one-man car and propose to advocate the use of cars of this type in British Columbia. The one-man car is being used exclusively in Calgary and is saving the company $250 a day. The system as operated there was described fully in the ELECTRIC RAILWAY JOURNAL of Sept. 22, page 516.

Soldier Traffic and the Smoking Rule.—Visiting days at Camp Zachary Taylor, the National Army cantonment just outside of Louisville, Ky., bring many thousands of people to the city, and the camp line of the Louisville Railway is taxed to capacity in handling the crowds. The demand from the soldiers for transportation comes mostly on Wednesday afternoons and Saturday afternoons, which are known as "recreation" periods. No insurmountable difficulties have been encountered by the company in this service, except perhaps that of enforcing the no-smoking rule. When the cars fill up at the camp with town-bound soldiers, all regulations are duly observed except the one which prohibits smoking. Every car is a smoking car so far as the khaki-clad lads are concerned. With the car full of the soldiers and no room for anybody else, the proposition is just a little out of reach.

New Publication

Street Railway Accounting. By Irville A. May, C. P. A., comptroller The Connecticut Company, New Haven, Conn. The Ronald Press Company, 20 Vesey Street, New York, N. Y. 454 pages. Half leather, $5.

Mr. May has, through this book, done a service of inestimable value to the electric railway industry. Not in the field of accounting theory, which has been well standardized under official classifications, but in the realm of systems that have been built up in the application of such classifications to daily work, does he find his subject-matter. As a practical work the book is most heartily recommended to those interested in electric railway accounting.

Mr. May has covered the ground well. The organization of the accounting department; its work outside in connection with passenger traffic, freight and express traffic, purchasing and the like; its work inside with the general and subsidiary books of account, and statements; statistical and auditing work; the use of forms—all these and many other pertinent topics are discussed in detail and liberally illustrated.

The book, Mr. May says, is not designed as an encyclopedia of all existing electric railway accounting practices. In his thorough and analytical treatment of the practical work of several large companies, however, he has covered important points, points peculiar to the industry and points difficult in practice in such a way that the reader cannot fail to obtain a most comprehensive idea of the extent to which electric railway accounting procedure has been developed. Local conditions, of course, have their effect in diversifying the accounting systems of particular companies, but to all accounting officers in the industry this book will certainly be useful for purposes of comparison, and to many it will be suggestive.

Personal Mention

J. Summerhayes has resigned as superintendent of the International Transit Company, Sault Ste. Marie, Ont.

Alva E. Moore has resigned as freight and passenger agent for the Anderson division of the Union Traction Company of Indiana.

C. C. Weldon has been appointed superintendent of the International Transit Company, Sault Ste. Marie, Ont., to succeed J. Summerhayes, resigned.

B. B. Greer has been elected president of the Colorado Springs & Cripple Creek District Railway, with offices at Denver, Col., to succeed E. S. Koller, deceased.

W. M. Fraser, electrical superintendent of the British Columbia Electric Railway, Ltd., Vancouver, B. C., has been given full charge of the operating end of the business.

F. S. Easton, hydroelectric engineer of the British Columbia Electric Railway, Ltd., Vancouver, B. C., has been given full charge of the power-producing plants of the company.

T. A. Reynolds, who has been vice-president and chairman of the board of directors of the Kansas City, Clay County & St. Joseph Railway, Kansas City, Mo., has retired from the office of vice-president.

A. H. Roberts has been appointed assistant to the superintendent of railways of the Charleston Consolidated Railway, Charleston, S. C. Mr. Roberts entered the employ of the company four years ago as a conductor. He has been chief inspector for some time.

Horatio Adams of Dallas, Tex., has been appointed by J. F. Strickland, president of the Dallas Railway, as his assistant. Mr. Adams' work will be largely that of an industrial and publicity agent. He is now a member of the Dallas City Health Board and has had much experience in industrial work.

A. J. Witchell has been appointed assistant to the general superintendent of the Spokane, Portland & Seattle Railway, including the Spokane & Inland Empire Railroad, the Oregon Electric Railway, the Pacific & Eastern Railway, the United Railways and the Oregon Trunk Railway, with headquarters at Portland, Ore.

A. L. Linn, Jr., has been elected treasurer of the United Gas & Electric Corporation and the United Gas & Electric Engineering Corporation, New York, N. Y. Mr. Linn was formerly assistant to Horace E. Andrews, president of the New York State Railways and the Mohawk Valley Company, controlling the electric railways and the electric lighting and gas companies in Rochester and vicinity.

Thomas Dreier, assistant to the president of the Bay State Street Railway, Boston, Mass., is the subject of an article by Donald Lowrie in the October-November issue of the *National Magazine*. The article, which is entitled "The Sermon on the Mount in Business," presents various interesting views of Mr. Dreier in regard to the necessity of injecting human feeling into the methods of modern business.

J. K. Brassill, superintendent of motor and marine equipment for the Northwestern Pacific Railroad, has been appointed superintendent of the southern division with headquarters at Sausalito, Col. Mr. Brassill succeeds W. N. Neff, who resigned to become vice-president and general manager of the St. Louis & Southwestern Railroad. G. H. McMullan, chief train dispatcher on the southern division, has been named as Mr. Brassill's assistant.

Maj.-Gen. William A. Bancroft, who has been connected with the Boston (Mass.) Elevated Railway for nearly twenty-seven years, retired as chairman of the board on Nov. 6. The resignation was read at the annual meeting of the stockholders. Major-General Bancroft, in his letter of resignation, said that he hoped the community would so understand the needs of the company that the Legislature would place the business on a sound basis and enable it to render to the community the service which it has always been the aim of the company to give, and permit the company to receive a proper return upon the investment. Major-General Bancroft retired as president of the Boston Elevated Railway in September, 1916, after having served in that capacity since 1899.

M. P. Groftholdt, who has been superintendent of the eastern division of the Pacific Electric Railway, Los Angeles, Cal., has been appointed general traffic inspector of the entire system, reporting to J. McMillan, general manager. Mr. Groftholdt was superintendent of the San Bernardino Valley Traction Company and has been superintendent of the eastern division of the Pacific Electric Railway ever since the Southern Pacific bought the Huntington electric railway interests.

E. Burt Fenton, formerly publicity manager of W. S. Barstow & Company, has been appointed publicity agent of the Northern Ohio Traction & Light Company, with headquarters at Akron, Ohio. Mr. Fenton entered the utilities field from the editorial desk of a daily newspaper, after serving eighteen years in that field. His first connection in the utility field was with the Sandusky Gas & Electric Company, for which he did the publicity work through two "municipal ownership" campaigns, the latter of which was followed by a very productive campaign of "good-will" advertising. In 1915 he was appointed publicity manager of W. S. Barstow & Company, New York, in charge of the publicity work of the utility properties controlled by that company. He became temporarily associated with the Northern Ohio Traction & Light Company in August, 1917, and on Nov. 1 was appointed to his present position. Mr. Fenton is the author of "Snuggling Up to John Smith" and "The Missing Link," papers which have attracted wide attention in the utility field. He is a member of the Jovian Order and, until his removal to Ohio, was on the entertainment committee of the New York Jovian League.

G. H. MC FEE

G. H. McFee, as noted briefly in the ELECTRIC RAILWAY JOURNAL for Nov. 3, has been appointed superintendent of transportation of the Boston & Worcester Street Railway, Framingham, Mass., effective from Nov. 1. Mr. McFee was connected with the Boston & Maine Railroad from 1894 to 1901, serving as telegraph operator and train dispatcher. From 1901 to 1903 he was connected with the Boston (Mass.) Elevated Railway as a towerman on the elevated division of that company. In accepting his present appointment as superintendent of transportation of the Boston & Worcester Street Railway Mr. McFee is returning to the service of that company, he having been connected with it as chief dispatcher for the ten-year period from 1903 to 1913. Since his resignation from the company in 1913 he has been connected with the United Fruit Company, Bocas Del Toro, Panama. Mr. McFee is a Canadian by birth.

H. C. Eddy, formerly engineer of the Public Utilities Commission of the District of Columbia, has been appointed to the position of senior traffic inspector of the Board of Public Utility Commissioners of New Jersey, as the result of a competitive civil service examination. The duties of this position include the supervision of the regulation of the maintenance and operation of all the electric railway properties within the State. Mr. Eddy has had a wide experience in the construction, regulation, operation and maintenance of electric railway properties, having been engaged during the greater part of the last twenty-five years in this line of work. Among the positions which he has occupied are the following: Assistant superintendent and electrical engineer for J. G. White & Company, Inc., in connection with the construction of a complete and extensive electric railway system in the city of Auckland, New Zealand; superintendent of overhead construction in connection with the construction of the Rochester, Syracuse & Eastern Railroad; in charge of the remodeling of the power station of the Navy Department at Indian Head (Md.) proving grounds, and the installation of several boilers, coal conveyor, auxiliary apparatus, etc.; executive officer and secretary of the District Electric Railway Commission, and engineer for the Public Utilities Commission of the District of Columbia.

C. A. HOUGHTON

C. A. Houghton has been appointed general manager and purchasing agent for the Southern Cambria Railway, Johnstown, Pa. This follows his previous appointment as appraiser for this road. Mr. Houghton was born in Woodstock, Vt., in 1881. In 1902 he entered the electrical test course of the General Electric Company at Lynn, Mass. Later he was detailed to the newly organized steam turbine department and was actively associated with the subsequent development work of the Curtis steam turbine. In 1904 he was loaned to the Pennsylvania Railroad, where he was successful in completing some important experimental steam turbine work for the motive power department of that company. In 1905 he returned to the General Electric Company to enter the construction department, and during the following three years was in charge of several important turbine installations. In 1908 he accepted a position as chief engineer for the Pittsburgh, Harmony, Butler & New Castle Railway, the first road to adopt a potential of 1200 volts direct current for motive power, and continued in that position until 1912, when he resigned to become assistant electrical engineer for the Indiana Steel Company at Gary, Ind. He continued with the Indiana Steel Company until 1914, when he resigned to take charge of extensive rehabilitation work for the Pittsburgh & Butler Railway and its affiliated companies, the Butler Passenger Railway and the Butler County Light Company. In 1916 the latter was sold to the West Penn interests, and Mr. Houghton became district superintendent for the West Penn Power Company, with headquarters at Butler, Pa., serving in that capacity until his appointment to the Southern Cambria Railway.

C. L. CADLE

C. L. Cadle, electrical engineer of the Rochester lines of the New York State Railways, has been promoted to chief engineer of those lines following the resignation of Edward J. Cook as chief engineer of the New York State Railways System. Mr. Cadle has been electrical engineer of the Rochester lines for the last ten years. He went to Rochester from Cleveland, Ohio, where he had been for two years general manager of the Electric Railway Improvement Company. For about a year previous to that time he was engaged in the power department of the Cleveland Railway. Mr. Cadle has been very active in association work. He has been a member of the power distribution committee of the American Electric Railway Engineering Association since 1910, the last two years as chairman, and has also been on the executive board of the Engineering Association in 1916-1917. He was a member of the American Association committee to confer with the Bureau of Standards on the Electrical Safety Code in 1915 and 1916 and is now chairman of the committee of the Engineering Association to confer with the Bureau of Standards on the Electrical Safety Code 1917 and 1918. Mr. Cadle is at present a member of the national joint committee on overhead and underground line construction. He is also a member of the American Institute of Electrical Engineers.

W. S. Tuley, elected secretary-treasurer of the Kansas City, Clay County & St. Joseph Railway, Kansas City, Mo., on Nov. 6, has had long experience in accounting and auditing work in connection with construction and operation of railroads. He joined the Bion J. Arnold forces about 1905 and acted as auditor on the construction of many large railroad and electric railway properties. The last three years of his connection with the Arnold company were spent chiefly in valuation work on public utilities. In 1914 Mr. Tuley had a leave of absence of several months from the Arnold company, during which he had charge of the accounting work on the Metropolitan Street Railway, Kansas City, Mo. He also represented the Kansas City Electric Light Company in the appraisal of its property by the Public Service Commission of Missouri. In the latter work he handled the accounting department, while Philip J. Kealy, later made president of the Kansas City Railways, had charge of the appraisal. Mr. Tuley became connected with the Kansas City, Clay County & St. Joseph Railway as auditor and assistant treasurer in March, 1915, and succeeded H. F. Mayer as treasurer in June, 1916. Since I. D. Hook left Kansas City several months ago for the officers' training camp, Mr. Tuley has been performing the duties of secretary.

J. R. HARRIGAN

J. R. Harrigan, who has been general manager of the Kansas City, Clay County & St. Joseph Railway, Kansas City, Mo., was in addition elected vice-president of the company at a meeting of the directors on Nov. 6. Mr. Harrigan on Oct. 31 was also elected president of the Kansas City Interurban Freight Terminal Company, the station of which was opened for business on Oct. 10 for use by the interurban electric railways entering Kansas City. Immediately after he was graduated from the high school at Eau Claire, Wis., in 1886, Mr. Harrigan entered street railway work as manager of the Eau Claire Street Railroad, operating a horse-car line. Two years later he went into other business, but returned to Eau Claire in 1897 to assist in the electrification of the street railroad property, and to act for four years as general manager of the road, the Chippewa Valley Electric Railway. In 1901 he went to Ohio as general superintendent of the Dayton, Springfield & Urbana Railway. In 1902 he became general manager of the Columbus, Buckeye Lake & Newark Traction Company and the Columbus, Newark & Zanesville Railway, in which capacity he continued for years, until the roads were purchased by the so-called Widener-Elkins syndicate. In 1906 he assumed the management of the Canton-Akron Railway, and was general manager of the company until it was absorbed by the Northern Ohio Traction & Light Company. In January, 1907, Mr. Harrigan was appointed assistant general manager of the Buffalo & Lake Erie Traction Company, Buffalo, N. Y. After a year in Buffalo he became, in 1908, general manager of the Columbus, Delaware & Marion Railway, Columbus, Ohio. He resigned this position in the fall of 1910 to become vice-president and general manager of the Des Moines (Iowa) City Railway and the Interurban Railway, Des Moines. On July 4, 1912, he left Des Moines to take charge of the Kansas City, Clay County & St. Joseph Railway as general manager. During the following six months he completed the arrangements for placing the road in operation, service starting on Jan. 1, 1913. His election as vice-president of the Kansas City, Clay County & St. Joseph Railway is considered a well-merited recognition of his valuable service to the company. The additional office will, it is obvious, give Mr. Harrigan greater prestige especially in local affairs.

T. W. Passailaigue, superintendent of the railway department of the Charleston Consolidated Railway & Lighting Company, Charleston, S. C., was recently elected vice-president of the Charleston Consolidated Railway, Gas & Electric Company, a subsidiary property to succeed J. G. Bradley, resigned. Mr. Passailaigue entered street railway work in Charleston in 1876 as an office boy and has therefore seen forty-one years of continuous service with the street and electric railways in that city. He assisted in promoting most of the horse car systems in the city and helped to build many of them, and also lent his aid later on in electrifying the lines and in consolidating the various systems in 1897. He was for a time president of one of the companies now included in the system of the Charleston Consolidated Railway & Lighting Company. In the early days of street railroading in Charleston passenger receipts were small, but a very large business was done in handling freight. At that time the steam railroads operating into Charleston were not extended to the waterfront and all freight was handled by flat cars hauled by mules for transfer from the different lines of steamers to the railroad freight station. Ever since his entrance into railway work Mr. Passailaigue has been interested in the American Electric Railway Association and its predecessors. He dates his first attendance at a meeting of the association back to the time that William J. Richardson became secretary and treasurer of the association at its organization in 1882. Impressed with the fact that the repeated absence of Philip H. Gadsden, president of the Charleston Consolidated Railway & Lighting Company, from Charleston made it imperative that the duties of the president should in his absence devolve upon a vice-president located permanently in the city, the board of directors of the company decided that Mr. Passailaigue was best qualified for the office by his long experience with the company and his intimate knowledge of local affairs.

T. W. PASSAILAIGUE

Obituary

Charles Edward Brown, treasurer of the Washington Railway & Electric Company and the Potomac Electric Power Company, Washington, D. C., died on Nov. 9. Mr. Brown was born in New Concord, Ohio, forty-four years ago. He entered electric railway work as paymaster with the Nassau Electric Railroad, Brooklyn, N. Y., and later occupied a similar position with the Brooklyn Rapid Transit Company, which took over the Nassau property. Mr. Brown went to Washington in 1900 as paymaster of the Washington Railway & Electric Company and the Potomac Electric Power Company. In 1910 he was elected treasurer.

John D. Crimmins, well known as a contractor, died at his home in New York on Nov. 9 in his seventy-fourth year. Mr. Crimmins was educated in the public schools and St. Francis Xavier's College, New York, and at the age of sixteen became a clerk in the office of his father, Thomas Crimmins, a contractor. At twenty he was taken into partnership by his father. The Crimmins firm built a large part of the first elevated railway in the City of New York, and acted as contractor for the Broadway, Columbus Avenue and Lexington Avenue cable lines and many other important pieces of work. Mr. Crimmins was considered an authority on labor questions and was often called upon to act as arbitrator or expert in disputes of this character. He was a director in many companies, including the Pennsylvania Tunnel & Terminal Company, which is a subsidiary of the Pennsylvania Railroad. He was at one time president of the Metropolitan Street Railway, New York, and for several years was a director of the Consolidated Traction Company of New Jersey.

Construction News

Construction News Notes are classified under each heading alphabetically by States.

An asterisk (*) indicates a project not previously reported.

RECENT INCORPORATIONS

Alabama Interurban Corporation, Birmingham, Ala.—Incorporated to construct an electric railway from Birmingham or Bessemer to the Warrior River, about 20 miles. Capital stock, $50,000. Officers: Thomas L. Cannon, president; Roy McCullough, secretary; Job Going, treasurer; B. M. Allen, general counsel, and H. M. Gassman, chief engineer. [Sept. 8, '17.]

FRANCHISES

New York, N. Y.—An extension of time on the construction of the new trolley line of the Manhattan & Queens Traction Corporation, extending from Manhattan over the Queensboro Bridge to Jamaica, has been granted by the Board of Estimate in so far as the extension from Jamaica to St. Albans is concerned. The residents of the Jamaica South Side and St. Albans sections have been clamoring for the completion of the work, but war-time conditions make it impossible to proceed as fast as the officials of the company would like.

Cincinnati, Ohio.—An agreement has been reached between Street Railway Commissioner Culkins and City Solicitor Groom, acting for the city of Cincinnati, and Stanley Shaffer, attorney for the Cincinnati, Lawrenceburg & Aurora Street Railway, as to the proposed new twenty-year franchise to be granted the company for a private right-of-way through a portion of the city. Its present franchise has eight years to run, but the company proposes to abandon it and accept a new one based on the laws governing interurban railways. Should the new franchise be granted, Mr. Shaffer said that the company, which is now in the hands of a receiver, will be refinanced and needed improvements will be made to the service.

Amarillo, Tex.—The City Commission of Amarillo has adopted an ordinance forfeiting the franchise of the Amarillo Street Railway, which operates about 8 miles of track in Amarillo. This action by the city commission was due to the recent suspension of the operation of cars by the company.

TRACK AND ROADWAY

Los Angeles (Cal.) Electric Railway.—An extension will be built by the Los Angeles Electric Railway up Tenth Street, thence through a short private street in the Bowers tract to the new Los Angeles High School.

San Diego & Southeastern Railway, San Diego, Cal.—Plans are being made by the San Diego & Southeastern Railway for the construction of an extension from Lakeside to Santa Ysable.

Jacksonville, Miami & Tampa Interurban Railway, Jacksonville, Fla.—It is reported that surveys will soon be made of the proposed electric railway of the Jacksonville, Miami & Tampa Interurban Railway from Jacksonville to Miami and from Melbourne to Haines City and thence to Tampa. It is expected that construction will be begun this winter. Contracts have not yet been let. True Davis, president. [Sept. 29, '17.]

Caldwell (Idaho) Traction Company.—Resolutions have been passed by the City Council of Caldwell to request the Boise Valley Traction Company and the Caldwell Traction Company to reconstruct their tracks within the city limits to conform to the franchise under which they operate. It is understood that the action is taken to compel the railroads to lower their respective tracks to the street grades. In several places, it is said, the tracks are higher than the surrounding streets.

Rockford (Ill.) City Traction Company.—Owing to the refusal of military authorities to allow the Rockford City

Traction Company permission to extend its tracks farther into the camp, officials of the company believe that they will have to seek the advice of the State Public Utilities Commission in extending the line into closer touch with the buildings of the cantonment. At present the line terminates before the cantonment buildings are reached, which causes dissatisfaction both among the soldiers and among the general patrons.

Indianapolis Traction & Terminal Company, Indianapolis, Ind.—This company will construct a 1-mile extension to its Bismarck Avenue line.

Thibodaux, La.—It is reported that rights-of-way have been obtained for the major portion of the proposed electric railway between Donaldsonville and Lockport and that work will soon be begun on the first link between Donaldsonville and Thibodaux. Walter Ohlmeyer, Plattenville, is interested. [Aug. 22, '14.]

Boston & Maine Railroad, Boston, Mass.—This company has ordered materials for an electro-pneumatic interlocking machine at tower C, East Somerville, Mass., from the Union Switch & Signal Company, Swissvale, Pa.

Public Service Corporation, Newark, N. J.—Work has been begun by the Public Service Corporation on the improvement of its Park Avenue line in East Rutherford. The company is tearing up its tracks preparatory to laying one track only from Paterson Avenue to Main Street. The improvement, including the laying of a granite block pavement, will cost about $10,000.

New York Municipal Railway, Brooklyn, N. Y.—In order to prevent an undue delay in construction, owing to inability to obtain necessary steel, the Public Service Commission for the First District has decided to have Section 3 of the Culver rapid transit line in Brooklyn, from Avenue X to Coney Island, built for the most part as a reinforced concrete structure. The commission last summer received bids for the construction of this portion of the line, but on account of the high prices quoted for steel and the twenty months required for delivery of this material, rejected the bids and took the possibility of an alternative scheme under consideration. A reinforced concrete structure has now been determined upon as a solution of the problem, in view of the fact that steel manufacturers could not promise definite deliveries on any new considerable orders other than government work for many months or possibly a year or more. It is estimated by the commission's engineers of design that the cost of the reinforced concrete structure will be substantially the same as though steel were used, and construction can begin forthwith.

Cincinnati, Lawrenceburg & Aurora Street Railroad, Cincinnati, Ohio.—Street Railway Commissioner Culkins is endeavoring to reach an agreement with the Cincinnati, Georgetown & Portsmouth Railroad, the Interurban Railway & Terminal Company and the Cincinnati, Lawrenceburg & Aurora Electric Street Railroad for the use of certain sections of their tracks for extensions of the local street railway service. Extension to the Pleasant Ridge and Kennedy Heights, Mount Washington and Sedamsville routes are desired, and to provide for this joint use of the tracks is necessary. The interurban companies are expected to raise the question of charge for using the street railway tracks for entrance to the city, when this matter is put up to them.

Niagara, St. Catharines & Toronto Railway, St. Catharines, Ont.—This company has practically completed the reconstruction of about 4½ miles of its line in Niagara Falls.

Toronto & York Radial Railway, Toronto, Ont.—Officials of the Toronto & York Radial Railway have been making a general study of the operation of the Mimico division between Toronto and Port Credit and propose to make a number of improvements in the line within a short time. It is also proposed to lay additional tracks to permit a closer headway than the present twenty-minute service.

Altoona & Logan Valley Electric Railway, Altoona, Pa.—This company has issued bonds to the amount of $53,000 to provide for improvements to its line.

Dover-Rossville Transit Company, Dover, Pa.—The project to construct a trackless trolley line between Dover and Rossville by the Dover-Rossville Transit Company is being revived. A petition asking State Highway Commissioner J. Denny O'Neil, Harrisburg, to grant a permit to erect poles along that portion of the State highway between Dover and Rossville is being signed by residents of Dover and vicinity. [Jan. 20, '17.]

Seattle (Wash.) Municipal Street Railway.—The Board of Public Works of Seattle on Nov. 2 opened two bids for track construction and special work, etc., for the Loyal Heights extension of the Seattle Municipal Railway. Both were submitted by Meacham & Babcock, local contractors, who offered to build a new line for $117,146 with new material or for $114,146, using second-hand trolley to be bought from the city. At this meeting of the board, H. W. Treat, president of the Loyal Railway, offered to sell that line, covering practically the same ground to be served by the proposed extension, for $70,000, payment to be made in utility bonds, interest and principal to be met from the revenues of the Seattle Municipal Railway.

SHOPS AND BUILDINGS

Connecticut Company, New Haven, Conn.—This company will reconstruct its carhouse in New Britain which was recently badly damaged when a heavy trolley car struck a supporting pole. The company will not build the second story, which was entirely destroyed, but extensive repairs are contemplated.

Salina (Kan.) Street Railway.—The carhouse of the Salina Street Railway on North Street will be abandoned to make way for paving and a widened street.

Regina (Sask.) Municipal Railway.—The City Council of Regina contemplates the erection of a railway station at the corner of Hamilton Street and Eleventh Avenue, to cost about $15,000.

POWER HOUSES AND SUBSTATIONS

Georgia Railway & Power Company, Atlanta, Ga.—Plans are being made by the Georgia Railway & Power Company for the extension of its high-tension transmission line from Emory University to the Decatur plant, about 2 miles. The company has a contract to furnish electricity to operate the pumping station of the municipal water works system.

Missouri & Kansas Interurban Railway, Kansas City, Mo.—Plans are being made by the Missouri & Kansas Interurban Railway for installation of coal-burning equipment, and when this is done the company will generate current for the operation of its line outside the city limits of Kansas City. At present the line gets its current, both inside and outside the city, from the Kansas City Railways, putting into service itself in emergencies a gas-burning plant at Overland. As the cost of gas has increased, the use of this plant has diminished.

Mansfield Electric Railway, Light & Power Company, Mansfield, Ohio.—The property of the Mansfield Electric Railway, Light & Power Company has been taken over by the Mansfield Electric Light & Power Company, controlled by the Cities Service Company. The power plant of the former company will be discontinued and power for the operation of the line will be obtained from the recently completed Melco plant of the Mansfield Electric Light & Power Company.

Mahoning & Shenango Railway & Light Company, Youngstown, Ohio.—This company has sold $500,000 of bonds, the proceeds to be used for the completion of the 20,000-hp. addition to its Lowellville power house, which the company expects to place in operation about Jan. 1, 1918.

American Railways Company, Philadelphia, Pa. — This company has been compelled to again place in operation the old electric plants in both Salem and Bridgeton because of the failure to get enough electric current from the plant at Wilmington, across the Delaware River.

Rutland Railway, Light & Power Company, Rutland, Vt.—Plans are being made by the Rutland Railway, Light & Power Company for the immediate installation of two new 1000-kw. transformers in its West Rutland station. The company is completing the installation of a new water wheel at its Pittsford station.

Manufactures and Markets

Discussions of Market and Trade Conditions for the Manufacturer, Salesman and Purchasing Agent

Rolling Stock Purchases Market Quotations Business Announcements

Purchasing Agent's Advice on Market Conditions Invaluable

Co-operation Between Superintendents, Storekeepers and Purchasing Agents Will Largely Overcome Difficulties of Present Materials Situation

E. E. Stigall, purchasing agent, Kansas City Railways, issues a letter about once a month, or more frequently if conditions warrant, to the various department heads which is in the nature of a warning to them to watch the materials situation closely. If they are soon to be in need of supplies other than those which can be obtained from local dealers, they are advised to figure ahead so many months for electrical equipment, so many months for rails, etc. The letter tabulates the approximate delivery which may be expected on a large number of the most important supplies. Mr. Stigall believes that if the department heads do not know the trend of the market and are not fully advised as to how early they should anticipate their needs, it is the purchasing agent's fault. If they are properly informed by the purchasing agent and do not observe the warning, then it is their own fault. This is the system which is followed on the Kansas City Railways and it is proving helpful in avoiding shortages of materials and delays in securing equipment.

CO-OPERATION WITH MANUFACTURERS PREVENTS SHORTAGES

As further protection against shortages Mr. Stigall secures information from the manufacturers from time to time on what deliveries they can make. In accord with this information, the storekeeper marks up on a temporary record what the maximum and minimum quantities of each supply should be to correspond with these delivery possibilities. If three or six months is the delivery period on a certain supply, then the minimum stock indicating the time at which a new order should be placed, should be that quantity which will satisfy the need for three months or six months, respectively. If it takes three times as long to get a certain supply as it does under normal conditions, then the minimum quantity should be three times as great. By ordering more frequently than customary, it will not be necessary to have any particular increase in the size of the order or in the amount of the carrying charges.

Purchasing agents and storekeepers should insist, Mr. Stigall says, that the master mechanic, the superintendent of overhead and the superintendent of track, should report to them any contemplated work which will require more than the usual amount of supplies, so that they can prepare for the requirements. If an extra number of cars are to be overhauled, or if a section of overhead line is to be rebuilt, etc., the department heads should let the storekeeper know as soon as they know, and thus avoid later delay through lack of co-operation. This is simply a matter of the departments working together as a company instead of departments working individually as departments.

ANOTHER INSTANCE OF VALUABLE ADVICE FROM A PURCHASING AGENT

The foresight of a purchasing agent of another system two years ago, led him to advise the heads of the various departments of the condition of the markets and what he thought the future would be and requested that they anticipate their needs as far in advance as possible. By so doing, this road has been able to make all necessary repairs promptly and thus maintained its usual good service, thereby avoiding unfavorable comment by the public.

Cars and rail are the only products which this company has been unable to secure in a reasonable amount of time. A number of cars have been on order for eleven months and delivery of the first of these is expected within a week or two. Although delivery of this equipment was to commence within 150 days it was one year from the date of order before the first car was received. This is evidence of the scarcity of materials and the inability of the car manufacturers to secure satisfactory deliveries from the supply manufacturers. Ten thousand tons of rail were ordered in April, 1916. The first delivery, consisting of 2500 tons, was made early in September.

Better Deliveries in the East on Railway Supplies

Track, Line and Rolling Stock Equipment Generally Steady in Price, Although Some Advances Are Expected

While the majority, if not every one, of the car-building plants temporarily are almost wholly engaged in governmental work, the supplies, accessories and appliances contingent are doing some business. Even if development work is halted, the maintenance of the track and transmission equipment cannot be entirely neglected; and though the quantity of new commitments for rails, special work, bonds, rail joint equipment, etc., are not so important nor as large as in normal periods, still some of the orders represent fairly sizable quantities in the aggregate. Poles, overhead line material, insulators, section insulators, etc., are also being sought, with prices still as firm as previously noted. In certain material the statement is made that no surprise should be occasioned if advances occur. Generators, motors, controllers, etc., are in slightly better position on deliveries, with no change in quotations. Repair equipment and motor maintenance material are mentioned as being in steady demand.

With the release of pressure for early deliveries on quite a few lines of car equipment supplies, shipments on staple requisites have been shortened, and a decided improvement for the better is acknowledged. On fabric for upholstering and curtains the market is reported as extremely difficult, not only rigid in price but as likely to go from bad to worse. This, according to a prominent manufacturer, is owing to fluctuations and uncertainties in cotton. Deliveries, however, on these goods are said to be of a satisfactory shape, for special reasons. Though the consumption of car headlinings is just now limited and held firm, they are likely to change in price to a higher level. Car-heating devices and appliances, according to reports, are slow in delivery, although a rush order might be pushed through in quick time if strong enough pressure was put behind it. On some types, rumors of an advance are heard. In addition to the order for 20,000 strap hangers, now under way, placed by an Eastern railway company, to which reference was made in last week's ELECTRIC RAILWAY JOURNAL, several other important orders are pending and may be placed in the near future with the same manufacturer. An advance of 10 cents each on certain types of these goods is announced, effective Nov. 1. Orders for fare boxes, pending for a month, have been closed and deliveries arranged. No price changes are noted in ventilators, safety brakes, roller bearings, etc.; but, in not a few instances, deliveries are easier.

Freights remain an element of disturbance in all lines, especially on shipments coming from the Middle West into Eastern and the seaboard territory. Labor is also unsettling many calculations, and it is to be reckoned with on future deliveries and prices in connection with a majority of articles listed in railway supplies.

The Asbestos Market Situation Improving

Prices Are Generally Lower than Last Year, While Production Has Caught Up with Demand in Some Lines of Material

Asbestos in the various forms employed by the trade is and has been for some time, as a market proposition, in an unsettled condition. Prices are up and down, but as a rule are on a lower scale than a year ago. Changes have occurred in the meantime, and in some instances the advances are sharp. Deliveries are reported as good as might be expected under the present abnormal circumstances, but few delays, more than two weeks, are heard of, according to the shippers—including jobbers, distributers and manufacturers. When shipments fail to reach destination at a later date than prescribed, freight congestion, which is a nightmare to many, is blamed for non-deliveries.

The situation is improving, though governmental commitments, which are given primary consideration at every stage, have interfered with the prompt attention usually accorded orders from private sources. The demand has greatly increased, and a wider use is found for stock or standard goods. The call for specialties to meet specified requirements is also expanding in a marked degree. Recently business has been caught up with in some lines, orders have been filled and shipment completed, and the future, an unknown quantity in several respects, is now being considered. Labor troubles are a factor of importance, but the visible supply of material seems to be ample.

Listing or woven tape, 0.015 grade, is selling for from $4 to $6 a pound, according to deliveries, the latter being figured as a controlling condition. Asbestos paper for fireproofing and switch boxes, formerly quoted at 4 cents a pound, is now 13 cents, with a strong stock available. Tubing, flexible and rigid, commands a special price, dependent upon diameter and quantity, ranging from $2.85 to $3 a pound. This represents an advance of 100 per cent as against normal figures.

Buying Quieter in Southeast

Much of the Additional Equipment Required for Cantonments Now Largely Purchased—Good Business Still Reported in Some Lines

Reports from a number of sources covering the Southeast indicate a tendency toward dullness in nearly all lines, after the abnormal activity in cantonment transportation. At that time the manufacturers and representatives handling electric railway material were literally "snowed under" with inquiries and orders, but the demand has settled down now on a more definite basis, which accounts, no doubt, for the apparent slackening off in the trade. The various electric railways in the Southeast have ordered this year considerable new equipment, which is already in operation or being installed, but with the exception of scattered buying very little equipment of note has been ordered during the last month. The general conditions with reference to money, material and labor is not conducive to liberal purchases, and many companies which need new equipment badly are buying from hand to mouth, hoping to tide over the present conditions. With the exception of orders for new equipment placed recently the air-brake business is dull and shipments average about six months.

There was more or less activity in headlights during the early summer months, but this line has also had a temporary setback.

Manufacturers report a very good business in armature coils, with a growing tendency toward longer deliveries. The volume of coil sales was especially heavy during the "second-hand" flurry, when neither reasonable deliveries nor new equipment could be obtained. The owners of good second-hand motors are in velvet, as prices now received are 25 per cent in advance of those prevailing for new motors before the war. A quantity of second-hand motors has been purchased in this section, a fact which has reflected the long deliveries for new motors.

The gear and pinion market shows very little life, and shipments are not improving. Rail bonds are fairly active. The demand for rails, ties and spikes is strong in limited areas and where army camp extensions are being made. The extensions under way are progressing rapidly. The Georgia Railway & Power Company has completed its single track to within 2000 ft. of the main entrance to Camp Gordon, Atlanta. Trolley wire and feeder cable remain active in the face of discouraging conditions.

Rail Bond Deliveries Better

Stocks Being Accumulated and Prompt Shipments Now Can Be Obtained

A reduced demand for rail bonds is probably accountable for the improved deliveries. The heaviest buying is during the spring, when new construction work is contemplated or is under way. Several orders of importance are reported as pending but as yet not closed. With some concerns prompt shipments are being made, as the raw material had been arranged for or is in hand, and with the factory in a position to accept business at least on standard goods and promise of delivery. Special bonds are not in so favorable a position.

Buying, it is felt in the trade, should be good; but there is a noticed hesitancy in placing orders, and this is contributing to the quietness now characteristic of the current rail-bond market. A manufacturer operating on a large scale stated to a representative of the ELECTRIC RAILWAY JOURNAL that so far as his company could figure, the evident sluggishness was due to the reluctant buying of all railway material by the traction companies. He added that prices were 10 per cent less than a month ago, when a discount of 10 to 17½ per cent was announced as the controlling quotation.

The same authority was also quite emphatic in making a statement to the effect that prices on rail bonds were now made for immediate acceptance; in other words, by return mail. Otherwise an advance may be made without further notice, as is mainly the case with all metal products. Possibly the price might hold for a week, but that, it was stated, is a chance to be considered by the buyer.

Production of Spelter

As the result of a canvass by the United States Geological Survey to ascertain the production of spelter in the United States during the third quarter of 1917, C. E. Siebenthal estimates, on the basis of returns of more than 95 per cent of the production, that the output of primary spelter from domestic ores was 132,700 short tons and from foreign ores 23,900 tons, a total of 156,600 tons, as compared to an average of 180,569 tons per quarter during the first half of 1917, 175.502 tons per quarter during the last half of 1916, and 158,226 tons per quarter during the first half of 1916. In addition to the primary spelter, the amount distilled from skimmings, drosses, etc., was 4400 tons, as compared with 6000 tons in each of the two quarters preceding. The total production for the first nine months of 1917 was 444,267 tons from domestic ores, 73,457 tons from foreign ores, and 16,550 tons from secondary materials. The stocks of spelter at smelters on Sept. 30 amounted to 47.186 tons, as compared with 33,147 tons on June 30 and 17,598 tons on Jan. 1.

Lumber Production Falls Off Slighty

The National Lumber Manufacturers' Association reports that during the month of September, 707 sawmills cut 1,297,400,000 ft. of lumber and shipped 1,247,300,000 ft. The cut in September this year was 10 per cent less than that during the same month last year on account of labor shortage and unsettled conditions, but shipments were only 4 per cent less. During the last twelve months the mills reporting to the association have shipped 16,000,000,000 ft. of lumber, or nearly 3 per cent more than was produced. The cut since Jan. 1, 1917, has been approximately 4 per cent less than during the same period of 1916. This indicates a total production by all sawmills in the United States of 40,000,000,000 ft. of lumber in 1917.

ROLLING STOCK

Rockland, Thomaston & Camden Street Railway, Rockland, Me., is expecting to purchase one snow plow.

Sheridan (Wyo.) Railway Company is in the market for a second-hand trailer, to be used in its interurban service.

Dallas (Tex.) Railway Company has ordered twelve one-man street cars at a cost of $5,000 each similar to the ones in use in Fort Worth.

Beaver Valley Traction Company, New Brighton, Pa., which is reported as having ordered twelve new double-truck, center-door, pay-as-you-enter cars within a few months, has just received and placed in operation another one of the lot.

Panama Electric Company, Panama, C. Z., owing to climatic conditions, has rebuilt a number of its regular size cars. The work was done in the company's shops. A committee has been appointed to look into the advisability of buying and installing one-man cars some time in the future.

Buffalo & Lake Erie Traction Company, Buffalo, N. Y., reported as having ordered four new cars for use on its Dunkirk-Fredonia line, put the one which was received from the builders on the track recently. The car is of the pay-as-you-enter type and seats fifty passengers. It is electrically heated.

TRADE NOTES

Ward Leonard Electric Company, Mount Vernon, N. Y., is now represented in San Francisco, Cal., by the Electric Material Company, 589 Howard Street.

Wagner Electric Manufacturing Company, St. Louis, Mo., has opened a sales office, No. 15, at 116 Auburn Avenue, Atlanta, Ga. Charles M. Welch, formerly office manager of the company's branch in Indianapolis, Ind., will be in charge.

General Electric Company, Schenectady, N. Y., is having plans prepared for the construction of a new two-story drop-forge factory, about 85 ft. by 100 ft. The company will also build a new one-story and basement substation, 48 ft. by 100 ft.

Smith-Sewell Company, Inc., New York, N. Y., is giving preference in shipment to all orders which either directly or indirectly help in the production of munitions and other necessary war supplies, providing they are so designated and their use specified.

Westburg Engineering Company, Chicago, Ill., announces a change in its corporate name from that of the Badt-Westburg Electric Company, which handles the line of the Ward Leonard Electric Company, Mount Vernon, N. Y. This involves no change in management.

Nagle Corliss Engine Works, Erie, Pa., has opened an office at 39 and 41 Cortlandt Street, New York, N. Y., with Frank W. Richardson in charge. This gives direct representation and immediate personal attention to all inquiries on factory prices and delivery promises.

Gurney Ball Bearing Company, Jamestown, N. Y., announces the appointment of H. C. Marsh as electric railway representative. He was formerly employed in the railway departments of the General Electric and Westinghouse companies, and also in the railway department of the Ohio Public Service Commission.

H. T. Heath has accepted a position with the Economy Electric Devices Company, Chicago, and will be engaged in engineering and sales work. Mr. Heath has been with the Westinghouse Electric & Manufacturing Company for the last six years, having taken the apprenticeship course at the Pittsburgh plant and later working in the engineering and sales departments there. For the last two years he has been working from the St. Louis office of the Westinghouse Company. He graduated from Ohio State University in 1911 with degrees from the mechanical and electrical engineering departments.

Root Spring Scraper Company, Kalamazoo, Mich., reports that its heavy No. 6 track and devilstrip snow scraper is in great demand, and that this year's sales of this type of scraper has exceeded those of all previous years. In many cities, like Lansing, Jackson, Battle Creek, Grand Rapids, Saginaw and Bay City, these scrapers have been found so efficient in handling snow and ice that they have permanetely replaced the rotary sweepers. Six scrapers of this type with wing attachments were just shipped to the Northern Ohio Traction & Light Company, Akron, Ohio, for use in keeping the tracks open on the Akron city lines. Other shipments have recently been made to the following companies: Muskegon Traction & Lighting Company, Muskegon, Mich.; Winnipeg Electric Railway Company, Winnipeg, Canada; Jackson Railway & Light Company, Jackson, Tenn., and Indianapolis Traction & Terminal Company, Indianapolis, Ind. An unusually large number of other standard types of spring scrapers have been shipped this month.

NEW ADVERTISING LITERATURE

Ohmer Fare Register Company, Dayton, Ohio: Eight-page pamphlet on fare registering system entitled "An Acre of Diamonds."

Root Spring Scraper Company, Kalamazoo, Mich.: Eight page leaflet giving list of parts and instructions for installing Root spring scrapers.

Walter A. Zelnicker Supply Company, St. Louis, Mo.—Bulletin 228, now ready for sale, offers an "extra special" in storage tanks for immediate shipment.

Ingersoll-Rand Company, New York, N. Y.—Several new advertising leaflets which include Form 859, a full-page leaflet describing a pocket oil flask; Form 85-J, descriptive of steam-condensing plant; Form 3118, a thirty-two-page catalog on compressors and vacuum pumps for extraction of gasoline from natural gas; and Form 4302, a twenty-page catalog on Sergeant rock drills.

Carnegie Steel Company, Pittsburgh, Pa.—Sixth edition of the Carnegie Shape Book. In this edition the book has 265 pages devoted to profiles of rolled sections, an increase of thirty-eight pages over the number in the edition issued two years ago. This increase is attributed to the extensive use of steel cross ties for industrial and railway purposes, to the expansion in the automobile and shipbuilding industries and particularly to the great development in the use of steel in modern factory buildings. The book is bound in green leather as heretofore and can be obtained at any of the district offices of the Carnegie Steel Company at $1 per copy.

NEW YORK METAL MARKET PRICES

	Nov. 7	Nov. 12
Prime Lake, cents per lb.	23½	23½
Electrolytic, cents per lb.	23½	23½
Copper wire base, cents per lb.	31	31
Lead, cents per lb.	6¼	6½
Nickel, cents per lb.	50	50
Spelter, cents per lb.	7.87½	8
Tin, Straits, cents per lb.	68	73
Aluminum, 98 to 99 per cent, cents per lb.	35	36

OLD METAL PRICES—NEW YORK

	Nov. 7	Nov. 12
Heavy copper, cents per lb.	22	22
Light copper, cents per lb.	19½	19½
Red brass, cents per lb.	17½	17½
Yellow brass, cents per lb.	16	15¼
Lead, heavy, cents per lb.	4¾	4¾
Zinc, cents per lb.	5¾	5¾
Steel car axles, Chicago, per net ton	$41.00	$41.00
Old car wheels, Chicago, per gross ton	$28.00	$28.75
Steel rails (scrap), Chicago, per gross ton	$33.00	$34.50
Steel rails (relaying), Chicago, per gross ton	$55.00	$55.00
Machine shop turnings, Chicago, per net ton	$16.00	$17.00

RAILWAY MATERIALS

	Nov. 7	Nov. 12
Rubber-covered wire base. New York, cents per lb.	34	32–35
Rails, heavy, Bessemer, Pittsburgh	$38.00	$38.00
Rails, heavy, O. H. Pittsburgh, per gross ton	$40.00	$40.00
Wire nails, Pittsburgh, per 100 lb.	$3.50	$3.50
Railroad spikes, 9/16 in., Pittsburgh, per 100 lb.	$5.50	$5.50
Steel bars, Pittsburgh, per 100 lb.	$5.00	$5.00
Sheet iron, black (24 gage), Pittsburgh, per 100 lb.	$5.80	$5.80
Sheet iron, galvanized (24 gage), Pittsburgh, per 100 lb.	$4.85	$4.85
Galvanized barbed wire, Pittsburgh, cents per lb.	$4.85	$4.35
Galvanized wire, ordinary, Pittsburgh, cents per lb.	$3.95	$3.95
Cement (carload lots), New York, per bbl.	$2.22	$2.22
Cement (carload lots), Chicago, per bbl.	$2.31	$2.31
Cement (carload lots), Seattle, per bbl.	$2.65	$2.65
Linseed oil (raw, 5 bbl. lots), New York, per gal.	$1.18	$1.18
Linseed oil (boiled, 5 bbl. lots), New York, per gal.	$1.20	$1.21
White lead (100 lb. keg.), New York, cents per gal.	11	11
Turpentine (bbl. lots), New York, cents per gal.	54	53

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The Lesson to Manufacturers, Dealers and Workmen

THERE has never before been a war in which those who are not actually enrolled in the military or naval forces have so much responsibility laid upon them. Our ultimate success is certain because of our preponderance in resources of all kinds, but each day by which the war can be shortened means a saving in men and money to this country and to its allies. It is to emphasize this fact that we publish this week a supplement entitled "Is This My Boy?" prepared by the art department of the McGraw-Hill Publishing Company, Inc. Every manufacturer or retailer who unduly raises the price of the goods which he has to sell and every workman who reduces the output of necessities by striking during this critical period helps to add to the difficulties of our winning the war. It is the duty of each individual to think first of those at the front, where many of those whom he knows, including perhaps his own son or brother, are in a position of bodily danger. This will help him to do all he can to win the war and thus make the world safe for democracy.

The Union Freight Terminal as a Means to Greater Service

WE HAVE already emphasized in these columns that in addition to the benefits in increased revenue that would accrue, the railways, by developing an express or freight business, can perform a significant patriotic service. It is therefore gratifying to note any improvements in electric freight-handling facilities which will relieve the already congested steam roads. A noteworthy step in this direction is the opening of a union freight terminal at Kansas City, described elsewhere in this issue, being used by several interurban roads which were already hauling a considerable amount of freight. These roads have thus made it as convenient for many shippers to use the interurbans as the competitive steam roads—no doubt a factor in acceptable service from the shipper's standpoint—and thereby have acquired business that they could not command individually. This supplies further evidence of the fact that the business should be obtained by superior service and not through lower rates. While the location of Kansas City as a center for the meat and grain industries offers a field unusually favorable for the development of freight traffic, there are many untried opportunities elsewhere. Roads where the union terminal idea has not materialized should not overlook the chance to co-operate and to extend the limits of their service which interchange freight handling affords.

Right of State to Fix Rates Is Paramount

THERE is no legal reason why the applications for higher electric railway fares in New York State should not be considered and decided upon their merits. This is the important meaning of the decision just rendered by the Second District Commission, granting a 6-cent fare to the Huntington Railroad. In other words, the commission has ruled that when the maximum fares chargeable under the old railroad law or under local franchises are insufficient to yield reasonable compensation for the service rendered, an increase in fare may be authorized. To be sure, in thus recognizing the supreme rate-making power of the State acting through its delegate, the Public Service Commission, the New York body has merely followed the Court of Appeals in the Ulster & Delaware case and the Appellate Division for the Third Department, New York State, in the New York & North Shore Traction case. Every new supporter for such a sound rate-making policy, however, is a distinct gain and increases one's hope that such a policy will be sustained in any court appeal. In this connection it may be interesting to recall that the Oregon Public Service Commission, in the Portland decision abstracted in our issue of Oct. 27, similarly recognized the sovereign power of the State "under a well-established line of authority." Although not every commission or court has such a sound understanding of rate-making theory, such bodies seem to be learning. Let us hope that the time will soon come when the right of commissions to exercise their full powers will not be subject to obstruction in any locality.

The Advertising Value of Attractive Substations

THE power substations on electric railway properties are in many cases located in residence districts in cities or near well-kept highways lined with attractive country homes. While the function of these substations is usually not understood by the public, they are known to have some relation to the railway and hence play a part in forming the reputation of that utility. That this fact is appreciated by railway managers is indicated by the increasing attention given to the architectural features of the substation buildings. The slight extra expense necessary to make a small building accord with the general architectural tendencies of a neighborhood, or even to dominate them if need be, is not great compared with the results achieved. A dignified, harmonious building suggests good management elsewhere on the property and a desire to lend a hand in civic improvement. Where a substation must be placed in a closely built-up neighborhood, it is often not enough to house the machinery with regard to appearance only. The hum of rotary converters might prove objectionable in such cases. It is possible by suitable design of foundations and walls, largely to confine the necessary noise to the buildings themselves. Quietness is, therefore, sometimes an element of attractiveness. Both these principles are illustrated in a recent Chicago substation on which the leading article this week is based. The plant contains many features of interest to the electrical engineer, but it is to the structural and architectural side that we wish to direct particular attention. The Chicago building is a far cry from the simple structures built to protect the early rotary converters from the weather, but it emphasizes the fact that as the power side of the electric railway has developed the substation has gradually grown from insignificance to a position of the greatest importance. The substation serves to transform alternating current to direct current power with almost negligible loss, but it still provides many problems for the electrical engineer to solve. At the same time it furnishes an opportunity for the building expert to act as a medium for making and maintaining a favorable impression on the public.

Fitting Up Service Cars for Snow Fighting

THESE are the days when the snow plows and sweepers are conspicuous in the shops in many parts of the country, as the prudent transportation and way department managers prepare for the mighty conflicts to come. Records of the weather bureau in New York show that up to date this year there has been a deficiency of about 5 in. in the normal precipitation, which is usually about 40 in. up to this time. Whether or not this fact portends a heavy snowfall there is always the possibility that the snow which comes will fall in a few heavy storms, taxing resources to the limit. A liberal snow-fighting equipment is, therefore, a highly desirable asset, especially in view of the labor shortage.

In spite of the great amount of attention which has necessarily been given to removal of snow there is a surprisingly small amount of literature on the subject. This fact was recently brought to our attention by the librarian of one of the large electric railway companies who had taken the trouble to assemble a set of references for the benefit of the engineers of his company. Realizing the demand thus indicated, the ELECTRIC RAILWAY JOURNAL has printed a number of articles on the subject during the past few years and adds to the list this week one giving the results of the study and experience of the Connecticut Company's engineering and operating departments. The suggestions contained in this article are the result of the work of a committee appointed to make such recommendations as would enable the company to cope with its own problems successfully, utilizing existing equipment effectively and considering carefully the item of expense. The recommendations of this committee are being carried out.

An important conclusion stated in the article, which appears to be sound because it is the same as other companies have reached, is that service cars can be utilized satisfactorily as snow fighters by fitting them up in the fall with plows and scrapers, thus permitting them to be kept in use through a much greater part of the year. A natural corollary to this is that with a large number of such snow-fighting units kept moving continuously during a storm, accumulation of snow on the tracks can be prevented so that it will not often be necessary to buck large drifts. Big plows will, of course, always be needed on many properties and especially in the country where the snow drifts violently, but even on interurban lines service cars can be used to supplement the work of the plows.

Last but not least, greater use can be made of the sewers in cities, utilizing the sewage efficiently as a snow conveyor. Surely a municipality is as much interested as the railway in keeping the streets clear and it ought not to withhold permission for the use of the sewers when once convinced that snow will not cause stoppage of the flow in the sewer system.

Install Skip-Stops Where Interurbans Pass Through Towns

THE value of an interurban line is dependent largely upon the speed with which its cars can be safely and economically operated. The attractiveness of this service to the public is primarily dependent upon the quickness with which the journey between any two points can be completed. It has been found, moreover, that the ability of the interurban to withstand successfully the competition of privately-owned automobiles operating on state highways is directly proportionate to the speed of operation of the electric car. The interest of the security holder, therefore, points clearly to speeding up interurban service, wherever possible, within practicable limits.

An analysis of the schedule of the average interurban shows that most of the time which is lost is consumed by unnecessary stops within the limits of cities and villages. The average village has written into its franchise requirements concerning the speed of operation within the corporate limits and a provision that interurban cars must stop at every street when signaled by a passenger desiring to board or alight. In consequence, the interurban car crawls slowly through the villages and the amount of time thus spent, in proportion to the total running time, bulks very large.

In most villages the size of the average block is comparatively small, and the street intersections are therefore numerous. Attempts by interurban operators to introduce skip stops usually meet with vociferous opposition. The public fails to see that such changes are in its interest. The argument that skip stops are being used in Cleveland and other cities with populations running into the hundreds of thousands fails to move the village fathers, who obdurately hold to the view that to require passengers to walk a distance not to exceed a block and a half is unreasonable. If there is sufficient short-distance riding in the village to warrant a shuttle service, it can be supplied by a one-man car. But whether this is the case or not, through passengers should not be delayed.

We have come to the time when the whole matter of municipal franchise regulation of electric railways must be subjected to a most searching test. The incongruity of creating public service commissions with jurisdiction over rates and service, and then endeavoring to handicap them by allowing municipalities to exact all sorts of unreasonable requirements, must eventually be clearly seen by the public. The question as to how many stops should be provided in a given community is a matter which must be determined not only with reference to local convenience, but also with due regard to the interests of the entire area served by the interurban road. The interests of the associated communities are obviously larger than that of any single village or town, and as each community receives equal benefit, the proposed change is really in the interests of all. But as the simplest way of effecting this reform is for the order to come from a central authority, it is obvious that public service commissions should possess the unequivocal right to prescribe skip stops in villages in order that interurban service may be made as useful as possible.

What "Standing In" with the Newspapers Really Means

ONE of the needless worries of the electric railway man is over how he is going to "stand in" with the newspapers. If in the management of his company he is doing the very best he can the public will appreciate that fact, and the newspaper must in turn reflect that appreciation. If it does not, it will be the sufferer, for no newspaper can permanently run counter to the prevailing public sentiment. No one knows this better than the intelligent publisher. A utility that has the public's good-will and deserves it need never worry over the attacks by any newspaper. In the first place such a paper will soon run out of ammunition, and in the second place its attacks will react upon itself. There is no other business so utterly dependent upon public good-will as the newspaper business.

On the whole there is little to be gained from intimate association with the newspapers. If you have news for them which they regard as news, they will be only too glad to print it. Simply see that they get it. That's a favor to the paper. But don't ask that it be printed. Nothing will turn a newspaper man against one so quickly as to ask him, as a favor, to print something that he would not gladly print on its news merits.

The real good-will of a newspaper cannot be gained by buying advertising space. That may work with an occasional paper but not with newspapers as a class. The relationships of a public utility with newspapers should be on a basis that admits of no question. They should pay for what they get and demand pay for what they give. The old idea that giving passes to newspaper men was a good practice belongs to an earlier and less wholesome understanding of such relationships. The public doesn't approve of this system. Similarly with handling of the newspapers' output as freight. The public believes in such service being paid for, and for that reason if no other it should be paid for. But there is another reason, the reason of the self-respect and conscious rectitude that arises out of relationships that are wholly "on the level." Nothing is more marked among newspapers as the years go by than the gain in influence, power and prestige of the really responsible press—the newspaper that refuses to print doubtful advertising, that keeps its news columns clean, that never willingly or knowingly prints unfounded statements. This section of the press—which is growing larger and larger—is highly jealous of its reputation. Such a newspaper would resent it if the statement were made that any particular corporation or interest "stood in" with it.

Public utility managers know that newspapers as a rule are fair, though newspaper publishers and editors have the same human frailties that electric railway men and others have.

The only "standing in" a public utility should work for is this: do the best you can in the way of service; then let newspapers be made to feel that they can always get the facts from the company, even if those facts are unpleasant ones. The manager's door should always be open to the responsible press.

If a newspaper prints something unpleasant about an electric railway company or its service, real progress will be made if, instead of wondering "what the newspaper's game is," the management will find out whether what the newspaper has printed is justified. An ingrown habit of always attempting to justify "what is" is far too prevalent among electric railway managers and the managers of most other public utilities.

An electric railway may rest assured that if its case is sound and honest it will fare better with both newspapers and public by a policy of outspoken frankness, standing up for its rights and admitting its faults, than by choosing the Bourbon policy of secretiveness and silence and attempting by "standing in" with the newspapers to blind the public to the real responsibility for poor service.

No set of men has more respect for a straight-from-the-shoulder policy than newspaper publishers, editors and reporters. Once they are convinced a company really lives such a policy, its managers are sure of fair play. That's the only kind of "standing in" with the newspapers that is of any real value. It is a kind that will invariably come from a company's living a life that is like the proverbial "open book, that he who runs may read."

A Model Substation for a Chicago Residence District

New Commonwealth Edison Substation Embodies Special Features of Design to Reduce Investment, Promote Operating Efficiency, and Guard Against Disturbance to Surrounding Residents

CHICAGO SUBSTATION—PLEASING ARCHITECTURE AND ATTRACTIVE LAWN AID IN OVERCOMING STIGMA OF SUBSTATION

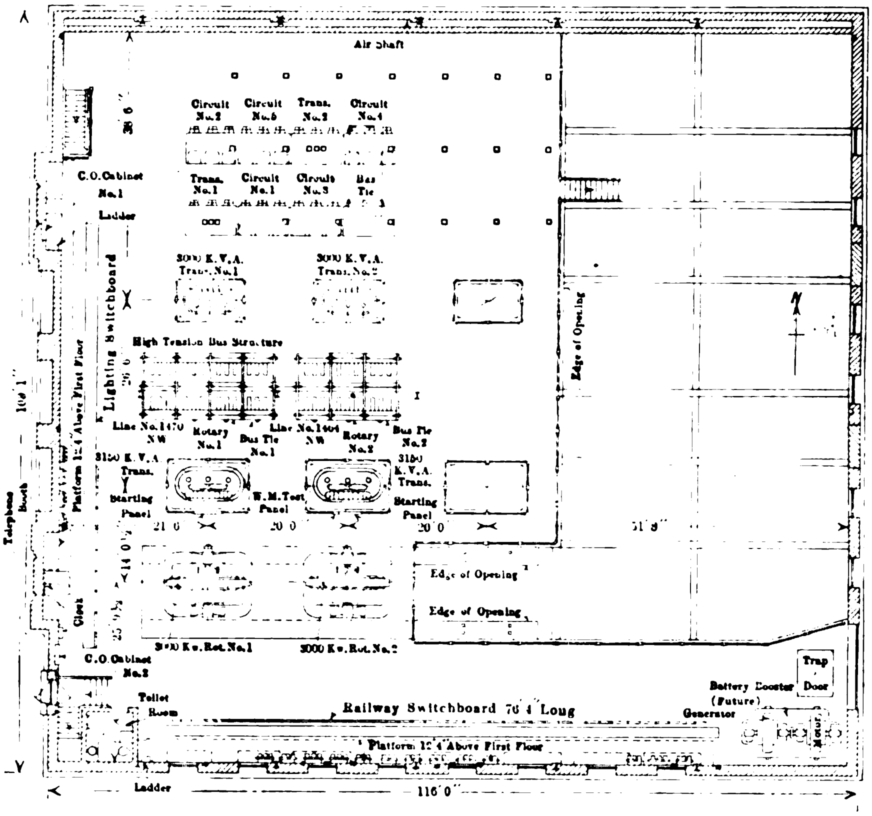
THE Commonwealth Edison Company of Chicago has completed in the Wilson Avenue residential district a new combination railway and lighting substation, known as the Clifton Avenue station, which embodies many special features of building and electrical design intended to meet the particular requirements of the locality and to introduce certain operating economies. It is to supply 600-volt direct-current energy to the Chicago Surface Lines and the Northwestern Elevated Railroad, and power at 4000 volts to the lighting and power customers in the vicinity. By using 60-cycle rotary converters for the railway work, it was possible to serve both the railway and the lighting customers off the same alternating-current transmission lines and thus materially reduce the investment in line copper, and at the same time effect better operating economy on these high-tension cables by improving the load factor. This is the first time the Commonwealth Edison Company has adopted the combination use of high-tension lines. The location of the substation in the midst of a fairly high-grade residence section made it necessary to erect the building with special care to muffle the noise of the converters in order that the station might not be disturbing to the near-by residents. The company also used a style of architecture embodying a simple, dignified beauty in its endeavor to make the building an attractive addition to the neighborhood, and one which would not detract from the value of the surrounding property.

In general, the station is a one-story, steel and brick structure with basement, and has concrete floors and roof. It is laid out in five bays or units, each bay to contain a railway rotary converter and transformer and a lighting transformer with its group of outgoing feeders. Only two bays are equipped at present, but the remainder of the building, excepting the concrete floor and the machine foundations in the last two bays, is completed. The fact that no crane was installed, despite the large size of the machinery units, permitted a much lighter building construction and greatly reduced the necessary investment.

SPECIAL FEATURES OF BUILDING TO BEAUTIFY EXTERIOR AND MUFFLE NOISE

The exterior walls of the substation which face the two streets on the west and south were constructed of red vitrified ornamental brick with a tile insert frieze. The concrete base was carried up to the first floor level, which is about 4 ft. above the sidewalk grade, and on this was laid a belt of coarse cut stone. The front entrance to the building was beautified by placing bronze fixtures on the stone portals. Cut stone cornices were used and a number of alabastine globes were inserted in the walls near the roof line for the installation of decorative lighting units. Special pockets were built in at the bottom of the recessed arches in the front wall for installing X-ray floodlighting reflectors to illuminate the front of the building. These features, together with an ornamental fence, lawn, window boxes and shrubbery, will result in a building which will improve rather than detract from the appearance of the community.

The matter of confining the noise of the rotary converters within the station constituted one of the principal problems. To this end, the machines were installed on a concrete foundation which was built entirely separate from the building foundation, steel work and floors. The machines were supported on two parallel walls constructed in an opening in the substation floors and separated from them by a space approximately ½ in. wide. This construction was utilized to prevent the vibration of the machines from being taken up by the building steel and concrete and transmitted to the outer walls. Any cable or conduit which passed through the machine foundations was wrapped with felt paper or burlap to avoid a bond which would transmit vibration to the building.


Air Shaft
Circuit No.2
Circuit No.6
Trans. No.2
Circuit No.4
C.O.Cabinet No.1
Ladder
Trans. No.1
Circuit No.1
Circuit No.3
Bus Tie
3000 K.V.A. Trans. No.1
3000 K.V.A. Trans. No.2
Lighting Switchboard
High Tension Bus Structure
Edge of Opening
100' 1"
Platform 12' 4" Above First Floor
Line No.1470 NW
Rotary No.1
Bus Tie No.1
Line No.1404 NW
Rotary No.2
Bus Tie No.2
3150 K.V.A. Trans.
Starting Panel
W.M.Test Panel
3150 K.V.A. Trans.
Starting Panel
Telephone Booth
21' 0"
20' 0"
20' 0"
51' 9"
14' 0"
Clock
Edge of Opening
Edge of Opening
3000 Kw.Rot.No.1
3000 Kw.Rot.No.2
C.O.Cabinet No.2
Toilet Room
Railway Switchboard 76' 4" Long
Battery Booster (Future)
Trap Door
Generator
Motor
Platform 12' 4" Above First Floor
Ladder
116' 0"

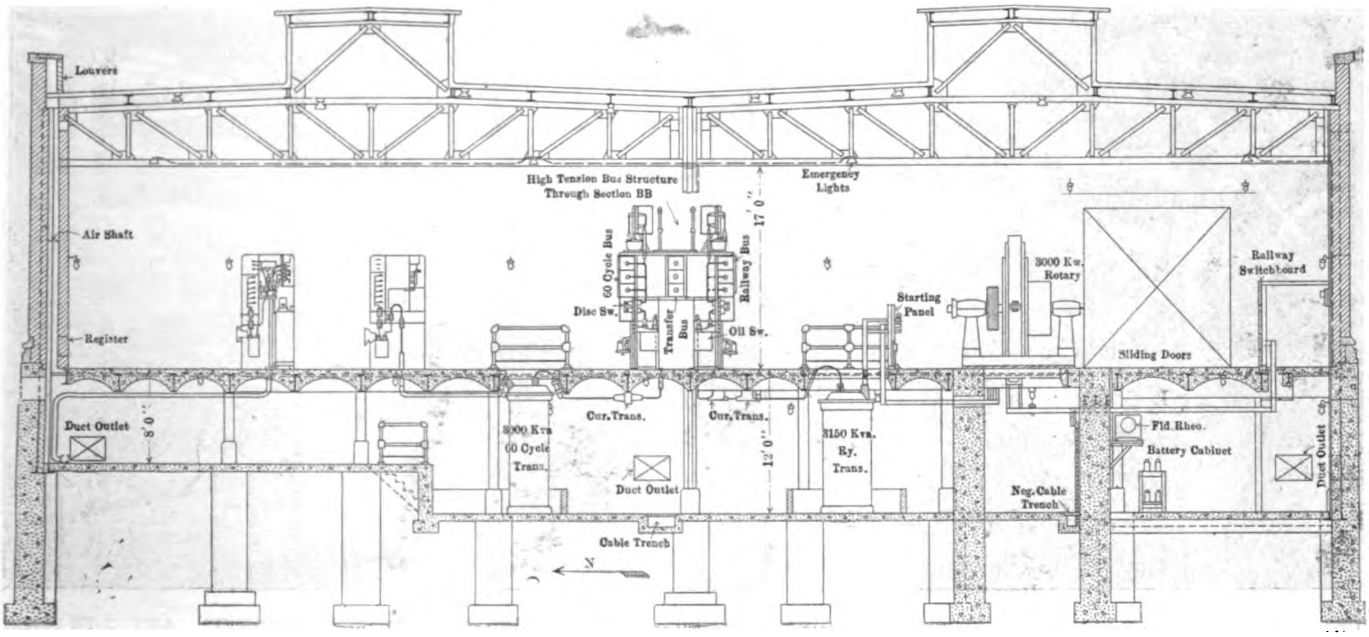
CHICAGO SUBSTATION—FIG. 1—PLAN SHOWING LAYOUT OF EQUIPMENT

The north and the west walls, which face residences, have no windows. The north wall was made double with a space between walls which is used as an air intake for the machine ventilation. In the penthouses over the machines the windows on the north side are made so that they cannot be opened. Only those on the south side, which tend to throw the sound away from the surrounding residences, can be used for ventilating purposes. The windows on the north and west sides of the basement are made double and kept permanently closed. These special features have proved very successful in muffling the noise.

PRESENT EQUIPMENT IN SUBSTATION

At the present time the equipment in the Clifton Avenue substation includes two 3000-kva., 12,000/4000-volt lighting and power transformers, and two 3150-kva., 12,000/445-volt railway transformers. These are oil-insulated, water-cooled transformers of General Electric Company manufacture with sheet-steel tanks. The circulating water is taken from the city water mains on two different streets for reliability, and a Bristol recording thermometer is connected with each transformer. In addition to the double water feed precaution the Edison Company transformer specifications require the ability to carry 50 per cent full load continuously without any cooling water. A 4-in. concrete dike, 2 ft. 6 in. high, is built around the base of each transformer to keep the oil from spreading over the basement in case of damage to the tank. Space is provided for an ultimate installation of ten transformers.

The two rotary converters installed at present are 60-cycle, 3000-kw., 5000-amp., 360-r.p.m. interpole machines, also made by the General Electric Company. The layout includes five of these or larger machines,


Louvers
Air Shaft
Register
Duct Outlet
8' 0"
High Tension Bus Structure Through Section BB
Emergency Lights
60 Cycle Bus
Railway Bus
17' 0"
Disc Sw.
Transfer Bus
Oil Sw.
Starting Panel
3000 Kw. Rotary
Railway Switchboard
Sliding Doors
Cur. Trans.
Cur. Trans.
3000 Kva 60 Cycle Trans.
12' 0"
3150 Kva. Ry. Trans.
Duct Outlet
Fld. Rheo.
Battery Cabinet
Neg. Cable Trench
Duct Outlet
Cable Trench
N

CHICAGO SUBSTATION—FIG. 2—SECTIONAL VIEW SHOWING EQUIPMENT IN ONE BAY

CHICAGO SUBSTATION—WEST FRONT AND SOUTH SIDE OF SUBSTATION

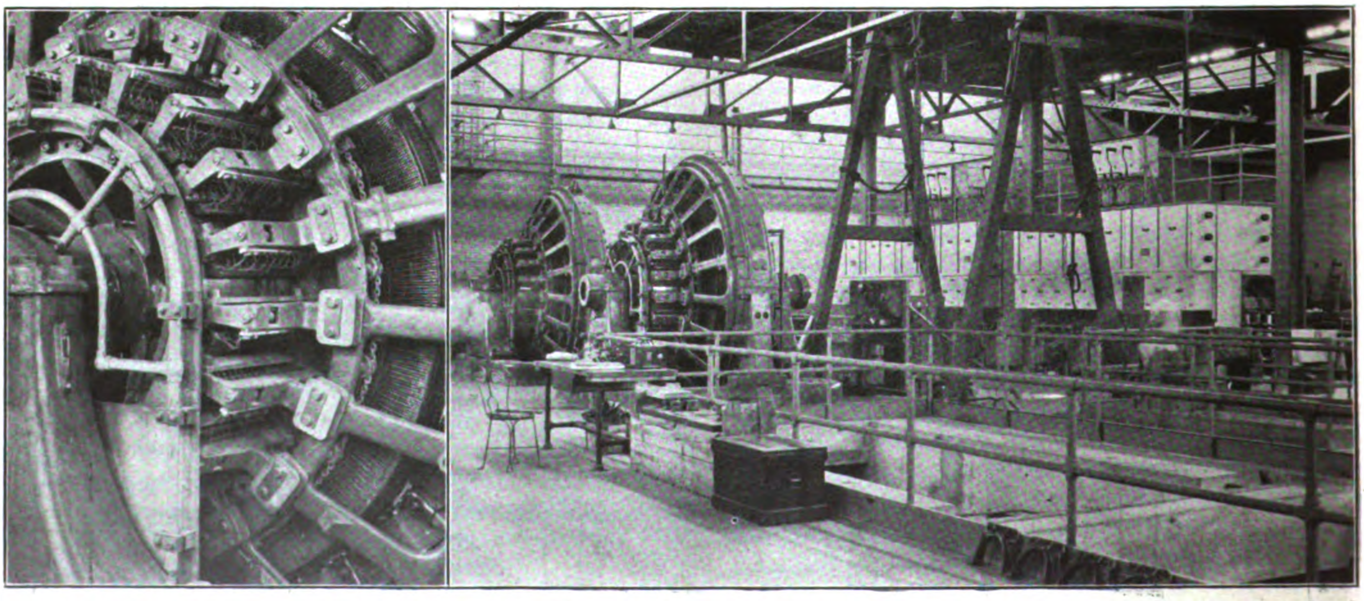
giving an ultimate total railway capacity of at least 15,000-kw. The machines are set on two 4-in. x 6-in. timbers placed on each of the foundation walls in order to insulate them from ground. Men working on these machines are in a measure protected from flashover burns by special asbestos-board barriers. These are placed around the outer periphery of the commutator, on one side of each set of brushes as close to the commutator surface as possible without touching and around the inside periphery of the commutator against the commutator radials. These barriers are installed to break up and deflect the flames in case of a flashover, and to protect the commutator, brushes, holders and brackets as far as possible from the burning, pitting and fusing action of the flash. The outer guard serves especially to deflect the flame from a course directly off the end of the commutator and hence to protect operators or other persons who may be in front of the unit.

As protection against the occurrence of flashovers, a flashover relay for each machine is installed on the switchboard and connected between non-current-carrying parts of the machine and the railway negative bus. This acts instantaneously in case of a flashover to open the circuit breakers and oil switch and entirely isolate the machine on both the alternating-current and direct-current sides. It has been found that where the machine frame is thoroughly insulated from ground, as by means of the wood base, except for the connection through the flashover relay, which will take only a very small current, very little of the flashover carries to ground. This arrangement has greatly reduced if not entirely eliminated the heavy sustained flash with its destructive and dangerous forces, such as is experienced with machines having the frames solidly grounded.

Aluminum cell arresters, one for every 500-kw. capacity, are connected, one-half directly across the armature and the other half from the positive to the negative terminals of the machine. These are intended more to take up any high static charge on the machine than for current surges. On the alternating-current side of the machines, six carborundum resistance cells used in conjunction with the knurled-spool adjustable spark gap are connected across each phase. Separate field excitation is used in starting these units by taking one-tenth shunt-field current from the 600-volt bus. This insures the fields building up to correct polarity.

LAYOUT OF SUBSTATION EQUIPMENT

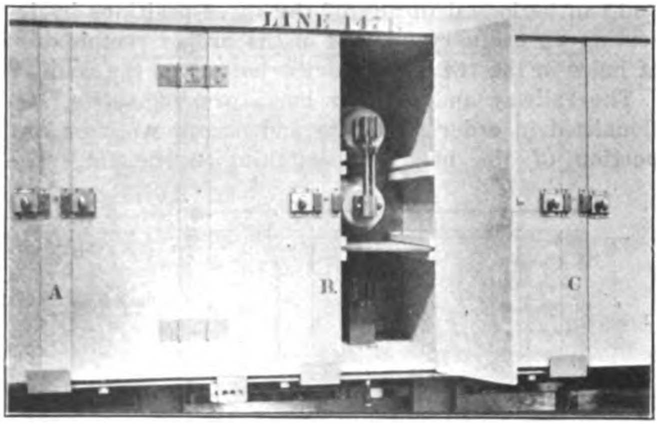
The 12,000-volt lines supplying the station enter the basement at the center of the front wall, extend along a trench in the basement floor and rise through the high-tension bells and current transformers to the oil switches and disconnect switches and high-tension railway and lighting buses directly above on the main floor. This double-bus structure is so located that it divides the floor space into two approximately equal parts. The space on the south side is utilized by the railway apparatus and that on the north side by the lighting and power equipment. One deviation from this segregation of the lighting and railway equipment, however, was expedient. The lighting and power switchboard was placed along the front or west wall of the building, while the railway board was placed along the south side. If the two switchboards had been installed along the opposite walls, one or the other would not have been within view of the operator and the distance between boards to be covered in case of emergency would have been considerable. These features, of course, are bad from the standpoint of efficient operation. With the present arrangement an operator can stand at the cor-



CHICAGO SUBSTATION—FLASHOVER BARRIERS ON CONVERTERS—CONVERTERS, HIGH-TENSION BUS STRUCTURE AND A-FRAMES USED TO LIFT HEAVY PIECES ner of the building and be within view of all the principal meters and other apparatus in the station requiring close observation, and all switchboard equipment is comparatively close together.

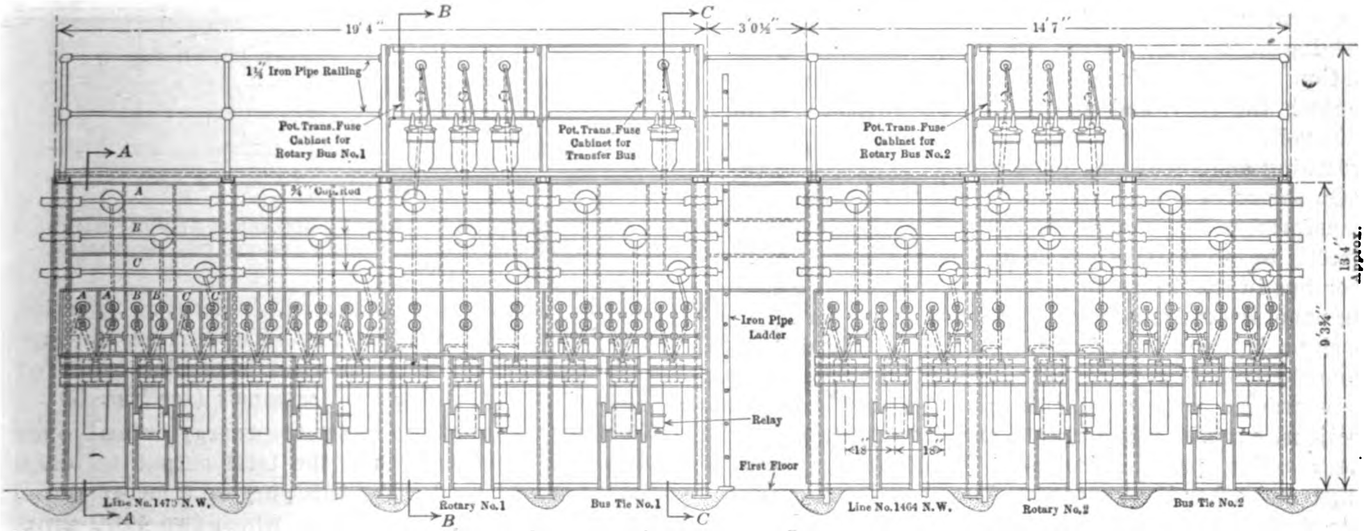
In laying out the entire electrical equipment, the governing consideration was to locate each piece of apparatus so that the most efficient and convenient operating conditions could be secured. The joint use of high-tension cables for both railway and lighting loads, already touched upon, eliminates one 12,000-volt line and makes possible a corresponding saving for the remaining three bays of the station when they are equipped in the future. It also eliminates one set of buses and one set of indicating and recording instruments on the incoming side, as compared with previous practice which required a separate set of unit buses and transfer buses for both the lighting and railway service. The high-tension cable and bus connections are so arranged that it is possible, when desired, to segregate any cable for connection to one rotary or one set of secondary feeders only; or by means of the one transfer bus common to both the railway and lighting connections, any combination of lighting and railway load desired can be placed on any high-tension cable. This permits tying all buses together for parallel operation of the 12,000-volt lines and provides for the installation of reverse energy relays on all the lines as a further protection to the transmission service to the substation. This one transfer bus extends through the center of the bus structure with the railway rotary buses on one side and the lighting transfer buses on the other. The oil switches for both services are directly underneath these buses on the station floor, leaving a 3-ft. aisle between the two rows in which to work on the switch units. The Sweitzer-Conrad high-tension fuses and the potential transformers are placed above their respective lines on top of the bus compartment, and here also an aisle is railed off between the two rows of equipment. This arrangement is clearly shown in Fig. 5 on page 940.

The 12,000-volt bus structure is made up with 4-in. channel-iron framing, cross-braced with channel and angle-iron members. Asbestos board, $\frac{1}{2}$ in. thick, is placed on each side of the vertical and horizontal channels, and the bus-support insulators are installed through the two boards. Marble slabs are installed for the vertical barriers on which the various disconnect switch supports are mounted.



CHICAGO SUBSTATION—HIGH-TENSION BUS COMPARTMENT SHOWING LOCKING AND GROUNDING PROTECTION

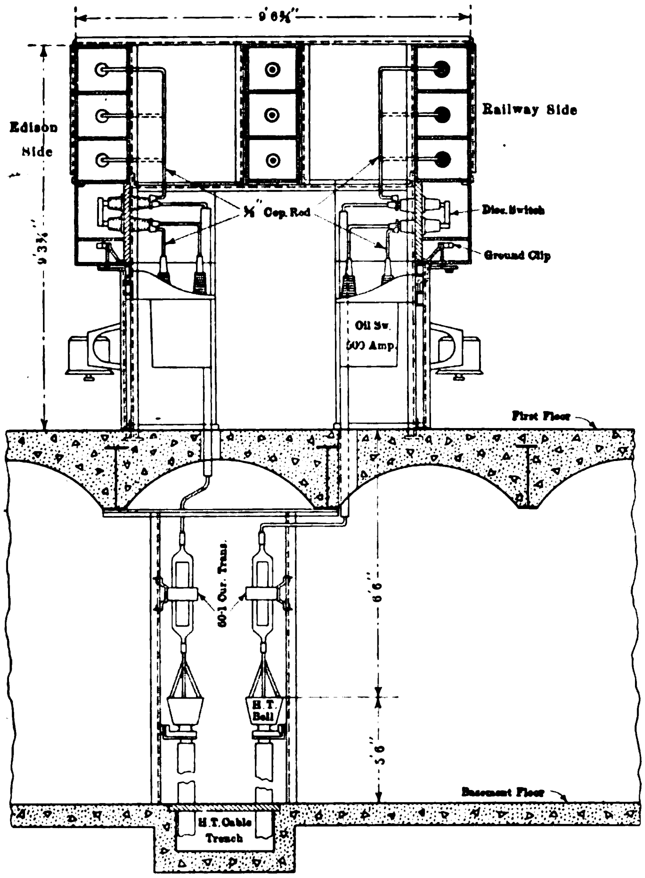
The special features of the bus compartment are the provisions for the protection of men in the station while installing new equipment and repairing and cleaning switch apparatus and buses, and also for grounding transmission lines while work is being done on them outside. Grounding of any bus or transmission line for protection is accomplished by throwing the disconnect switch over to a lower contact which is connected to ground through an oil switch. By grounding through the oil switch, the operator is removed from any possible zone of danger, as the last operation performed is the closing of the oil switch from the control handle on the switchboard. This scheme eliminates the use of jumper cables and clips for the purpose, which are generally recognized as unsightly and awkward to handle, if not dangerous. An asbestos-barrier board is slipped in grooves between the hinge, or live side, of the disconnect switch and the terminal on which it is desired to work. When this switch has been placed in the grounded position a special locking scheme, shown in an accompanying illustration, enables the workman to lock the compartment to prevent any other person changing the switch. This locking mechanism can be shifted to prevent opening of the doors of either set of disconnects, or both, for that line,



Looking North from Railway Side

CHICAGO SUBSTATION—FIG. 3—ELEVATION OF HIGH-TENSION BUS STRUCTURE and can be locked in any of the three positions by inserting an ordinary padlock in the proper combination of holes in the two plates at the bottom of the cabinet.

The railway and lighting buses are, of course, sectionalized in order to isolate and permit work on any portion of the bus and switching equipment. The railway buses are sectionalized for each rotary. From the lighting and railway buses the connections pass through the oil switches, down through the floor in fiber pipes and across in opposite directions underneath the floor to the transformers (see Fig. 2). Both the lighting and the railway transformers are placed in the basement with the terminals projecting through an opening in the floor above. On the lighting side of the station the connections extend from the transformer beneath the floor and up through oil switches to the 4000-volt, three-phase buses and secondary feeder, switching and regulating apparatus.

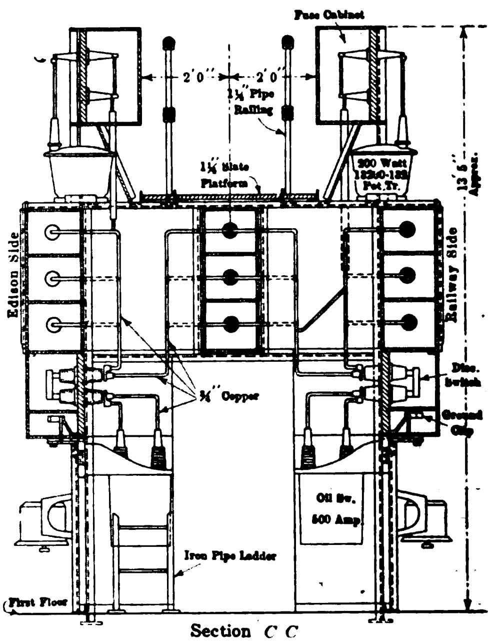


CHICAGO SUBSTATION—FIG. 4—INCOMING HIGH-TENSION CABLES AND CONNECTION TO BUSES

On the railway side, the low-tension terminals of the transformers are connected, by means of bar copper, directly to the starting panels located at the edge of the openings in the floor over the transformers. The starting panel for each machine is thus placed in front of the machine it controls and the shortest possible distance from the transformer, making the copper runs as short as expedient with good clearances. Bar-copper connections, extending underneath the floor again, connect the starting panel switches to the rotary collector rings, and other bar copper conducts the direct-current output of the machines to the railway switchboard along the south wall of the building. Where these positive machine leads pass up through the floor behind the switchboard they are incased in ebony asbestos board for protection. The main negative copper bus is installed on wall brackets in the space beneath the converters, and all return feeder cables are extended over to this bus instead of the negative busbar being carried by long extensions over to a point near the negative-cable entrance, as is usually done.

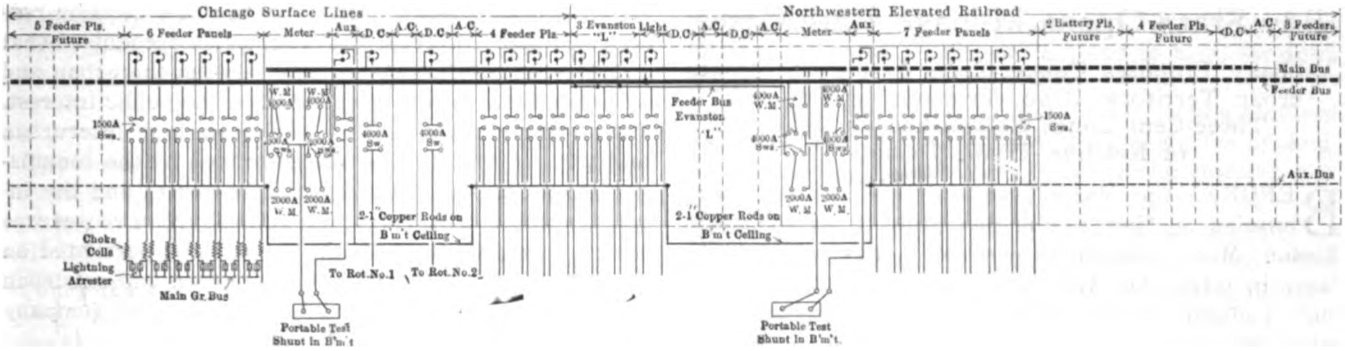
ARRANGEMENT OF RAILWAY SWITCHBOARD

The railway switchboard is arranged to serve the two customers which purchase energy at 600 volts, namely, the Chicago surface and elevated lines. It is set on a wood beam placed in the concrete floor and extending above it about 4 in. The entire framework is insulated from ground. The machine panels are located in groups of two in the switchboard at points nearest the two machines controlled. This arrangement saves the long runs of copper necessary from some of the machines to the switchboard when all machine panels are grouped together. By partially distributing the copper along the entire board it facilitates repair and avoids the concentration of the very heavy 600-volt buses at one point. These buses are supported on iron and marble brackets on the switchboard framework. The rotary converters are connected to the main bus on the back of the switchboard through 4000-amp. knife switches. This main bus extends along the board to include meter panels for the two companies and will eventually be extended to include a third future machine panel, the second pair of machine panels being already included though not installed. From this main bus, which places all rotaries in parallel on the direct-current side, current is supplied to each of the two sections of feeder bus, one for each customer, through the meter panels (see Fig. 6).



CHICAGO SUBSTATION—FIG. 5—SECTION THROUGH BUS STRUCTURE SHOWING TRANSFER BUS TIE CONNECTIONS

No attempt is made to meter the energy output over each outgoing feeder. Only the total output to each customer is measured. For this purpose a meter panel for each company is provided on which two 4000-amp. and two 2000-amp. Thomson watt-hour meters and one-half hour recording demand meters are mounted. On


Chicago Surface Lines
Northwestern Elevated Railroad
5 Feeder Pls. Future
6 Feeder Panels
Meter
Aux.
D.C.
A.C.
D.C.
A.C.
4 Feeder Pls.
3 Evanston Light "L"
D.C.
A.C.
D.C.
A.C.
Meter
Aux.
7 Feeder Panels
2 Battery Pls. Future
4 Feeder Pls. Future
D.C.
A.C.
3 Feeders Future
Main Bus
Feeder Bus
Aux. Bus
1500A Sws.
W.M. 4000A
4000A Sws.
2000A W.M.
4000A Sw.
Feeder Bus Evanston "L"
2-1" Copper Rods on B'm't Ceiling
To Rot. No. 1
To Rot. No. 2
Choke Coils
Lightning Arrester
Main Gr. Bus
Portable Test Shunt in B'm't

CHICAGO SUBSTATION—FIG. 6—BUSES AND FEEDER CONNECTIONS ON REAR OF RAILWAY SWITCHBOARD

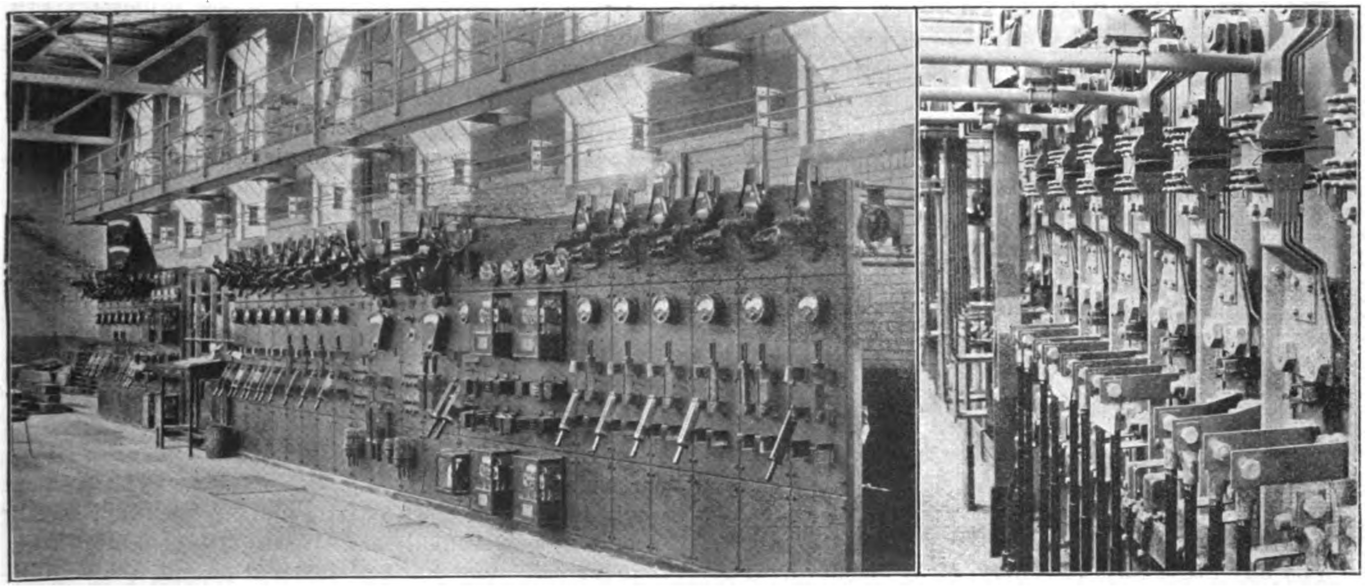
this same panel are four 4000-amp., single-pole, double-throw switches which are inserted in the circuit between the main bus and the feeder bus. They are so connected that their position governs the amount of wattmeter capacity from 2000 amp. to 12,000 amp. in 2000-amp. increments. This concentration of the meters in large units on one panel makes it possible for the operator to vary the number of meters cut in the circuit according to the load carried and thus to keep the meters working nearly at their capacity and obtain the most accurate record of output. It also greatly facilitates the testing of meters, and for this purpose a special test panel is installed in the basement and leads are run down to it from one pole of each of the double-throw switches on the meter board. Any meter can thus be quickly placed in the test circuit and readily tested. The former practice of placing a meter on each feeder panel necessitated the location of meters very low on the panels, making them hard to test and read, and also making it necessary that the individual meters operate at low efficiency a large part of the time.

An auxiliary feeder panel which, by means of the auxiliary bus, Fig. 6, may be put in place of any feeder panel, is installed for each customer. This auxiliary bus is carried along the switchboard behind the feeder panels but is connected across the intervening meter and machine panels by means of two 1-in. copper rods. These are carried on the basement ceiling in order to keep the rear of the switchboard as accessible as possible. The auxiliary panels are equipped also for use as part of the meter test circuits and connected with the portable test shunts in the basement.

All feeder-cable risers at the rear of the switchboard come up through the slate floor pieces in a vertical position without any bends above the floor level, making a very neat wiring layout. Any lateral offset necessary to dodge the floor beams is taken care of by a right or left-hand bend in the bar connecting the riser to the panel.

On the short outgoing railway feeders an arrester, magnetic blowout and choke coil are installed for protection against any kind of heavy surge. No protection is provided on the long cables or on cables which extend 600 ft. or more from the station underground. The outgoing cable sheaths are bonded and connected to the stray current bus installed along the south wall of the basement. The circuit from thence leads through the stray-current testing panel, also installed in the basement.

A 115-volt Edison storage battery in the basement furnishes energy for the control apparatus and emergency station lighting. On the switchboard feeder panels a spring plunger switch, which extends through the board and projects underneath the knife switch, furnishes an automatic means of cutting out the circuit breaker alarm bell when the particular feeder is not in use. When the knife switch is closed the plunger is forced back, closing the circuit through the alarm bell so that the latter will ring whenever the circuit breaker kicks out and will stop when the switch is opened.



CHICAGO SUBSTATION—RAILWAY SWITCHBOARD AND VERTICAL RISERS AND METER SHUNTS ON BACK

Bay State Opens Mileage Rate Case

Company Proposes Copper-Zone System for Interurban Territory—Two, Two and a Half and Three-Cent Zones Established on Basis of Relative Traffic Density

BEFORE the Massachusetts Public Service Commission on Nov. 19 the Bay State Street Railway, Boston, Mass., opened its case for a new schedule of fares in interurban territory. In opening S. H. Pillsbury, counsel for the company, said that the proposed rates are based upon a "copper-zone" or "mileage" system. In this connection he called attention to the recent report of the committee on public utility rates of the National Association of Railway Commissioners. This report, which was abstracted in the ELECTRIC RAILWAY JOURNAL of Oct. 27, page 765, ended with the statement that "a rate on a mileage basis with a minimum charge seems to be the most promising resource available" to prevent the crippling or destroying of street railway service.

Continuing, Mr. Pillsbury said that matter of particular interest in relation to the electric railway situation in Massachusetts is the report of the investigation carried on by the research division of the electrical engineering department of the Massachusetts Institute of Technology in relation to electric railway fares. This report, which has just been published in book form, was reviewed in the issue of Oct. 13, page 706. The general conclusion in the book Mr. Pillsbury quoted as follows:

> The flat-rate fare system as used on practically all of the street railway lines in this country as an inheritance from the horse-car days, is not now the proper or the best system for the present and the probable future street railway conditions. It is in many cases inadequate (at 5-cent rates) to meet the total cost of good service; it is too inflexible to meet changing conditions in the costs of labor and material or to provide for an increasing average length of haul, and it is discriminatory between long and short rides. It appears that the only reasonable, just and generally satisfactory way to take proper care of present conditions and to prepare for future conditions is for the street railways to revise their fare systems on a basis more nearly approximating distance or zone rates. The system need not be an exact mileage rate, nor even duplicate the European method of very short stages, but some modification of fares involving the element of distance is becoming increasingly necessary.

This system, Mr. Pillsbury said, establishes a small increment of fare so that the charge can be made to vary in accordance with the length of ride, and does away with discrimination in that the ride over one zone and into another does not result in doubling the fare as at present, but simply adds a proportionate part of the fare. For example, the ride through one fare limit and into a second at the present time would cost 12 cents, where with the mileage system the fare would probably be 8 cents or 10 cents. Moreover, the latter system provides a more flexible plan whereby in relation to cities the central portion may be enlarged or contracted to suit varying conditions; that is, instead of making a person on the border of a large city pay 12 cents when it is necessary to increase fares, a zone may be inserted to include this suburban territory and make the fare something like 8 cents.

MILEAGE SYSTEM FOR ONLY INTERURBAN TERRITORY

The Bay State Street Railway, Mr. Pillsbury averred, is not now attempting to apply a mileage system to all of its lines in Massachusetts. In the rate decision rendered on Aug. 31, 1916, the commission recognized that a distinction in the rate of fare between the urban and suburban sections was proper and in the public interest. The system serves urban, suburban and interurban territory. A 6-cent fare was permitted by the commission in general upon the interurban routes and the increase requested for the urban and suburban routes was denied. On July 3, 1917, the commission permitted an extension of the 6-cent fare to the urban and suburban communities, with the qualification that the company should sell twenty tickets for $1.

The proposed mileage schedule deals only with the territory in which the 6-cent fare was first established. The reasons for this are two: (1) Because the commission, in the last order relating to the urban and suburban territory, required that the fares authorized should remain in force for a trial period of six months, namely, until Jan. 15, 1918. (2) Because the copper zone system is probably not workable in the densely populated centers, and the company is confident that it is workable in the territory now attempted to be covered.

BASIS OF LAYING OUT TWO, TWO AND ONE-HALF AND THREE CENT ZONES

Density of traffic as represented by revenue per mile of track and revenue per car-mile were the factors considered in determining whether the rate should be 2, 2½ or 3 cents per mile upon a particular route. In general, Mr. Pillsbury explained, those sections having a light density of traffic were put upon the 3 cents a mile basis; those with more heavy density of traffic upon the 2½ cents a mile basis, and the remaining ones, which constitute the larger portion, upon the 2 cents a mile basis. It was necessary to consider the two items representing density of traffic because revenue per mile of track shows the use that is made of the permanent investment, while the revenue per car-mile, while indicating this to some degree, also represents in a more direct way the operating charges incident to providing the service.

There were some exceptions made to this general plan of determining the proper fare where the routes of light traffic density were adjacent to larger communities. An instance of this is the Salem Willows-North Saugus route, which, on account of its proximity to Lynn, was put upon a 2-cent basis. It is not pretended that the rates established in the various zones are accurately based upon allocated investment. They are, in the aggregate, not sufficient to yield an amount equivalent to the cost of the service rendered and are based in relation to each other upon the relative density of traffic.

The minimum of 2 cents a mile was established largely on account of precedent. This rate has been generally recognized as a fair minimum for light territory, both in electric railway and steam railway fares. In many cases where the 3-cent maximum has been established, it would be out of the question to put into effect a rate which would be sufficient to establish those particular routes upon a paying basis. Such a rate would be so high as to be prohibitive and would result in tremendous traffic losses. It was thought, therefore, that the maximum was best taken at 3 cents a mile. The large amount of time and great expense which would be involved, Mr. Pillsbury said, in an attempt to subdivide more accurately the various routes for the purpose of rate-making were prohibitive.

RECORD OF EARNINGS

The financial results of the last few years of operation show in general an increase in gross revenue but an alarming decrease in net, owing to corresponding increases in material and labor costs. The application of this copper-zone system to the territory in question, it was said, is expected to result in an increase of revenue, although in many instances fares for particular rides will be reduced.

Stated in terms of percentage increase or decrease in comparison with the year 1914, the income record for 1915, 1916 and 1917 is as follows: In 1915 operating revenues decreased from 1914 by 0.79 per cent. In 1916 they increased over 1914 by 3.97 per cent. In 1917, to June 30, they increased 9.67 per cent, and to Sept. 30, 11.83 per cent. Operating expenses in 1915 increased over 1914 by 3.62 per cent, and in 1916 they increased over 1914 by 14.16 per cent. In 1917, to June 30, they increased 37.68 per cent, and to Sept. 30, 32.02 per cent.

Computing by years the additional revenue required on the basis of the decision of the commission of Aug. 31, 1916, Mr. Pillsbury gave the following results: For 1914, additional revenue required over that received, $588,816; for 1915, $872,432; for 1916, $1,052,740, for year ended June 30, 1917, $1,529,398; for year ended Sept. 30, 1917, $1,621,706; for 1917 (last three months, estimated), $1,618,151.

The cost of coal for the years ended June 30, 1914 to 1918, inclusive, was as follows: 1914, at $3.70 a ton, $618,000; 1915, at $3.55 a ton, $600,000; 1916, at $3.80 a ton, $637,000; 1917, at $4.50 a ton, $758,000; estimate for 1918, 180,000 tons at $8.16 a ton, $1,469,000. The estimated cost for 1918, it was stated, will undoubtedly be raised by the increases in miners' wages now authorized, and further by the increases in railroad freight rates now being considered by the Interstate Commerce Commission.

Union Freight Terminal at Kansas City for Interurban Lines

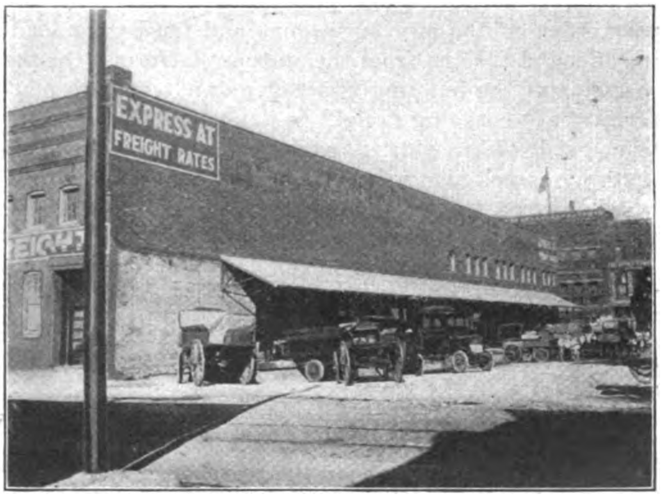
Four Roads Operating Into Kansas City, Mo., Will Use Union Freight Station Opened Recently by Separate Company—Unification of Roads' Facilities Attracts Freight Business and Overcomes Competition

A UNION freight and express station for the use of several interurban electric railways entering Kansas City, Mo., was opened for business in that city on Oct. 10. The station is being operated by the Kansas City Interurban Freight Terminal Company, which has an authorized capitalization of $100,000 in stock and $100,000 in bonds. All the stock and $75,000 of bonds are outstanding. The following permanent and operating officers of the company were elected on Oct. 31, to succeed those who were in temporary charge of the organization of the property and the building of the station: J. R. Harrigan, president; J. F. Holman, vice-president; E. S. Bigelow, secretary and treasurer. These gentlemen, together with J. J. Heim, W. S. Tuley, C. F. Holmes and F. P. Dickson, were elected to the board of directors, all of whom are actively engaged in the electric railway business.

The stock of the company is owned by interests associated with the Kansas City, Clay County & St. Joseph Railway, Kansas City, Mo., and the Kansas City, Kaw Valley & Western Railway, Bonner Springs, Kan. These two interurban roads and the Kansas City & Western Railway, Kansas City, Kan., and the Kansas City, Lawrence & Topeka Railroad, Kansas City, Mo.,

EXPRESS
FREIGHT

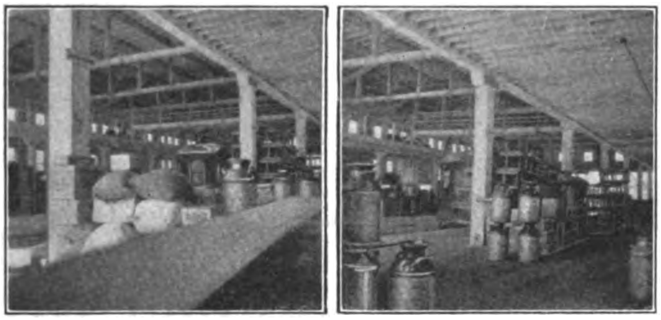
KANSAS CITY FREIGHT TERMINAL—NORTH END OF UNION STATION



KANSAS CITY FREIGHT TERMINAL—TEAM SIDE OF STATION FOR OUTGOING FREIGHT have entered into contracts for the use of the union terminal. The expenses of operation will be pro rated, a charge for a minimum tonnage per year being required, based on the present volume of freight business. One interurban road, the Strang line, which has a freight depot about five blocks from the union terminal, is doing a considerable express business but will operate independently.

LAYOUT OF TERMINAL FACILITIES

The terminal building is 180 ft. long, extending north and south from Third Street to Fourth Street and is half a block wide, the west side being flush with the property line on Wyandotte Street. The structure consists of two brick buildings, each 27 ft. wide, covered by one roof and separated by a 36-ft. space for the passage of cars. Stucco fronts above the car entrances at each end join the two units, which are two stories high. On the first floor of the west unit are the offices of the company, which occupy about 20 ft. of the 180-ft. length. The remainder of that floor consists of space for incoming freight, with a small office midway. The first floor of the east unit is practically all dock space for outgoing freight. The second floor of each unit consists only of open space without partitions, with the exception of rooms above the company's offices. The floors do not extend over the tracks, there being only a "bridge" between the two units. A basement was built under the entire building and may be used later for storage.



KANSAS CITY FREIGHT TERMINAL—OUTGOING FREIGHT ON STATION PLATFORM

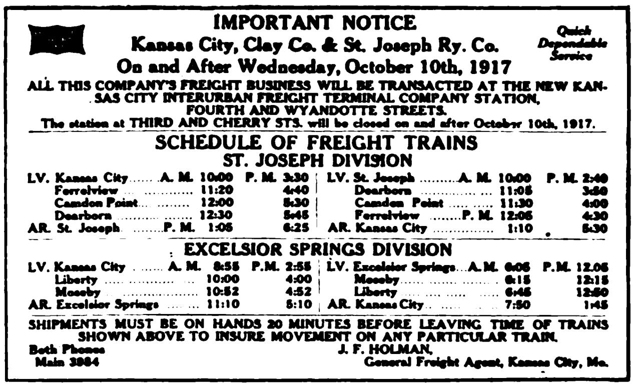
The sidewalk space on Wyandotte Street beside the building is depressed and paved and is used with the permission of the city by wagons and trucks for loading inbound freight from the station platform. On the east side of the building is a canopy and concrete platform where outgoing freight is handled. The adjacent team yard, 47 ft. wide, is paved with cement, and has a storage track along the side away from the building. Of the three tracks within the building the middle track is used for storage and the east and west tracks are used for outgoing and inbound freight respectively. The three tracks can accommodate eleven cars. Tracks have been built on both Third and Fourth Streets, with switches leading to the tracks in the building and to the storage track in the yard.

ADVANTAGES OF NEW FREIGHT SERVICE

The new terminal is near the warehouse and wholesale district, from which the haul is not only short but nearly on a level. One of the largest warehouses is only a block from the station. The need for the union freight terminal and its advantages have been plainly demonstrated during the short time that it has been in use. Since its opening, the freight business of the roads has greatly increased, and wholesale houses have voiced their appreciation of the present facilities. Whereas, for instance, one carload of freight had been carried occasionally by the Kansas City, Clay County & St. Joseph Railway from Kansas City to St. Joseph, Mo., several carloads are now hauled twice daily. A radical increase in l.c.l. freight, or less than carload shipments, between the two cities has been one of the most notable indications of the need for the station. Wholesalers can haul on one truck goods destined for various points along the different lines, whereas formerly separate trips had to be made to the several stations, and, in fact, these trips were not made when it was easier and cheaper to truck to the steam railroad freight terminals. Grocers not only of Kansas City but of the larger towns served have already extensively used the more flexible facilities, and their patronage is increasing. The freight rates on the interurbans are the same as those charged on steam roads in the territory.

SERVICE AND EQUIPMENT OF THREE ROADS USING UNION TERMINAL

Among commodities which afford big possibilities for trolley express business are meat packers' products, shipments of 17,000 lb. a day from one packer now being not unusual. Most of the Kansas City packers have houses also in St. Joseph, and the Kansas City, Clay County & St. Joseph Railway offers a means of equalizing the supply in the two markets. It formerly required from four to six days for a shipment from one of the cities to the other, while on this road three hours is a maximum. This company's freight equipment consists of five steel motor cars and five standard box cars, besides several flat and gondola cars all used in local service. Physical connection is made with steam railroads, but all such interchange freight is handled in foreign cars. Some of the methods employed by this company to develop its freight traffic were told by J. F. Holman, general freight agent, in an article which appeared in the ELECTRIC RAILWAY JOURNAL for July 7. The company's freight station has become inadequate for its business, chiefly on account of the congestion of wagons and trucks.



IMPORTANT NOTICE

Kansas City, Clay Co. & St. Joseph Ry. Co.

Quick Dependable Service

On and After Wednesday, October 10th, 1917

ALL THIS COMPANY'S FREIGHT BUSINESS WILL BE TRANSACTED AT THE NEW KANSAS CITY INTERURBAN FREIGHT TERMINAL COMPANY STATION, FOURTH AND WYANDOTTE STREETS.

The station at THIRD AND CHERRY STS. will be closed on and after October 10th, 1917.

SCHEDULE OF FREIGHT TRAINS

ST. JOSEPH DIVISION

LV. Kansas City	A. M.	10:00	P. M. 3:30	LV. St. Joseph	A. M.	10:00	P. M. 2:40
Ferrelview		11:20	4:40	Dearborn		11:05	3:50
Camden Point		12:00	5:30	Camden Point		11:30	4:00
Dearborn		12:30	5:45	Ferrelview	P. M.	12:06	4:30
AR. St. Joseph	P. M.	1:05	6:25	AR. Kansas City		1:10	5:30

EXCELSIOR SPRINGS DIVISION

LV. Kansas City	A. M.	8:55	P.M. 2:55	LV. Excelsior Springs	A. M.	6:05	P.M. 12.05
Liberty		10:00	4:00	Mosby		6:15	12:15
Mosby		10:52	4:52	Liberty		6:45	12:50
AR. Excelsior Springs		11:10	5:10	AR. Kansas City		7:50	1:45

SHIPMENTS MUST BE ON HANDS 20 MINUTES BEFORE LEAVING TIME OF TRAINS SHOWN ABOVE TO INSURE MOVEMENT ON ANY PARTICULAR TRAIN.

Both Phones
Main 3984

J. F. HOLMAN,
General Freight Agent, Kansas City, Mo.

KANSAS CITY FREIGHT TERMINAL—CARD USED TO ADVERTISE FREIGHT BUSINESS

The Kansas City & Western Railway has had in service four box cars, two flat cars and an express motor car. It has done a good freight business for several years, mostly in hauling poultry, dairy products and farmers' supplies and also roofing paper, electric supplies, dry goods and similar commodities to merchants in Leavenworth, Kan., and other towns. This road offers the advantage of direct shipment from Kansas City, Kan., to Leavenworth, where there are several large factories as well as the State penitentiary with its industries. The company does not haul freight to Fort Leavenworth and was not permitted to build a siding there as supplies are delivered by the railroads, which have docks at the fort. However, its freight business has increased 23 per cent during the last year. This increase is due, in part, to the retail trade of Leavenworth merchants which has been increased on account of the proximity of the troops.

The present cars of the Kansas City & Western Railway cannot be brought into Kansas City, Mo., as they are too high for the Eighth Street tunnel and too long for the curves. The company has a freight station on the Kansas side and has trucked shipments from a freight station at Third and Grand Streets, Kansas City, Mo., which has heretofore been used jointly with the Kansas City, Kaw Valley & Western Railway and the Strang line and will now be used by the last-named road. The Kansas City & Western is remodeling a passenger car for use in hauling freight to the new union terminal. W. G. Holmes is general freight agent of the road. He is a son of C. F. Holmes, president of the company.

The Kansas City, Kaw Valley & Western Railway, of which J. D. Cornell is traffic manager, operates at present to Lawrence, Kan., where there is a cement works, serving Bonner Springs, and is being extended to Topeka. It has two electric locomotives which handle carload freight in conjunction with the Rock Island, Kansas City Southern and the Kansas City Terminal railroads through the terminal connection near Kansas City, Kan. This business averages twenty carloads a day. The company has also four 50-ft. motor express cars and one 40-ft. trailer for l.c.l. freight, each of 60,000-lb. capacity. It has been using the freight station at Fourth and Minnesota Avenues, Kansas City, Kan., jointly with the Kansas City & Western Railway.

Association Methods Criticised

At the recent convention at Chicago of the Associated Business Papers, the following resolution was passed:

> Whereas, Certain associations of business men permit the name and influence of their associations to be used in the solicitation of advertising for their association publications in a manner that frequently is highly objectionable,
>
> Resolved, That The Associated Business Papers, Inc., in convention assembled in Chicago, this 13th day of October, 1917, do hereby condemn such solicitations as an undignified and improper perversion of association influence, far removed from the original purpose of any business organization, and equally removed from the methods that should govern the sale of legitimate advertising.

On account of the many employees of the New York, New Haven & Hartford Railroad who have entered military service, women are now employed as crossing tenders, station agents, telegraph operators and also in the stores department in the shops. The company has opened a free school to instruct the women in telegraphy and ticket and freight accounting.

How to Tell Fraudulent Financial Advertising

Investment Bankers' Committee Prepares Simple Working Guide for Periodicals Interested in Truthful Financial Publicity

THE committee on fraudulent advertising of the Investment Bankers' Association of America has prepared a simple guide to assist advertisers, advertising agencies, publishers and government authorities to eliminate fraud and misrepresentation from advertising copy of a financial character. The information has been issued in pamphlet form, and copies can be secured from the committee, whose headquarters are at 111 West Monroe Street, Chicago, Ill.

When the character of the advertising appears to be satisfactory, it is said, and there are no flagrant misrepresentations in the copy, the more subtle hazards in the advertised securities can generally be ascertained by requiring information along lines shown in part as follows:

Property: What constitutes the property? Is it actually built and in operation? Where is it located? What is the value determined by a competent appraiser, audited by a certified public accountant? What is the value of the property for the purpose of operation? How long has it proved successful? What is the output? Does the company own or lease the property?

Earnings: What are the actual earnings as audited by a certified public accountant? What are the detailed earnings over a period of years? Are the earnings estimated instead of actual? If estimated, by whom? Estimates should not be made essentially on the basis of earnings of prosperous companies in the same line of business, for different management will not operate with equal success.

Investment Income: What dividend or interest is paid on securities offered? If income is being paid or promised, who has audited the books for the company?

Price of Securities: If the par value of securities offered is $10 or less, an investigation is desirable; if it is below $1, this investigation is imperative. Moreover, it is bad practice to offer securities for sale with the statement that the price will be advanced at a certain day.

Financial Statements: Any statements mentioning figures should be susceptible of proof through an income statement and balance sheet audited by a certified public accountant. These two statements should be given as of one date. From these can be calculated the tangible net assets per share of stock or the value of property securing each bond. If these fall materially below the selling price of securities, the risk is considerable.

Equity: Misrepresentations are often made when an issue of treasury stock is offered. Care should be exercised that a large amount of stock is not issued on a disproportionately small amount of property. When common stock is offered as a bonus with preferred stock, it is well to find out what risk the promoter has taken in putting out the preferred stock. The public may be risking all the money and the promoter only his time, with the chance of profit inversely arranged.

Management: What are the names of the officers and the directors? The management should include men trained in all the branches necessary to the successful operation of the business. A properly financed company usually has one or two bankers or experienced financiers. If there is no such person, special inquiry should be made as to the permanent financial plan under which the company is securing its money.

For the purpose of assisting in eliminating fraudulent financial advertising, the committee of the Investment Bankers' Association is prepared to co-operate with publishers and other bodies. To this end it maintains a file of information which is available to persons interested. The committee desires to secure as much information as possible regarding the record of any suspicious or definitely bad promotion.

State Rate-Making Power Upheld

New York Second District Commission Decides It Has from State Full Power to Revise Rates Upward as Well as Downward, in Spite of Maximum Set by Old Laws or Local Franchises—Six-Cent Fare Authorized for Huntington Railroad

THE Public Service Commission for the Second District of New York on Nov. 20 handed down a very important decision recognizing the paramount right of the State to increase rates through its regulatory body in spite of the maximum set by old laws or by local franchises. The ruling was in one of the numerous 6-cent fare cases before the commission —that of the Huntington Railroad, running from Amityville to Huntington Harbor, Long Island.

A summary statement of the decision is that the commission has followed the Court of Appeals in the Ulster & Delaware case (218 N. Y. 643) and the Appellate Division for the Third Department in the New York & North Shore Traction case (175 App. Div. 869). After authorizing the advance of the company's fares from 5 to 6 cents the commission concludes: "This determination and order may be reopened at any time if and when it may appear to the commission that the controlling reasons for allowing an increase of fares in excess of those which otherwise would legally obtain no longer exist."

THE FUNDAMENTAL QUESTIONS INVOLVED

Two questions were squarely presented in the case:

1. Whether Section 181 of the railroad law, which limits a fare for a continuous ride within any city or village to 5 cents, precludes the commission from authorizing a 6-cent fare.

2. Whether the acceptance by an electric railway corporation of a franchise containing a 5-cent fare condition precludes the commission from increasing such fare to 6 or more cents for one continuous ride in the same city or municipality.

The commission has decided that Subdivision 1 of Section 49 of the public service commission law was intended by the Legislature to vest power in the commission, and has made it the duty of the commission, where it finds upon a sufficient showing that in fact the maximum rates or fares chargeable either under Section 181 of the old railroad law or under the local franchises are insufficient to yield reasonable compensation for the service rendered and are for that reason unjust and unreasonable, to authorize the increase of such fares. The principal opinion is by Commissioner Carr, who cites all of the decisions and all of the statutes of the State of New York having any bearing, historical or otherwise, upon the question. There are concurring opinions by each of the other commissioners.

OLD RAILROAD LAW NOT BINDING

In discussing the first question, Commissioner Carr mentions Section 33 and Section 49 of the public service commission law, covering the regulation of rates, Subdivision 2 of the latter covering the investigation of operating practices and equipment, and Section 50 providing for the ordering of improvements and additions.

Section 33, he states, permits the commission to prescribe just and reasonable maximum fares for all forms of reduced rate passenger tickets on steam railroads and electric railways.

Section 49 provides that whenever the commission shall be of opinion * * * that the maximum rates, fares, or charges chargeable to any such railroad or electric railway corporation are insufficient to yield reasonable compensation for the service rendered and are unjust and unreasonable, the commission shall * * * determine the just and reasonable rates, fares and charges to be thereafter observed and in force as the maximum to be charged for the service to be performed, notwithstanding that a higher rate or charge has been heretofore authorized by statute.

Subdivision 2 authorizes the commission to investigate the regulations, practices, equipment and appliances of an electric railway in respect to transportation of persons and property and to determine the just and reasonable safe, adequate and proper regulations, practices, equipment, appliances and service thereafter to be enforced and to be observed and used in the transportation of persons and property and to fix and prescribe the same by order, and it shall be the duty of every electric railway to observe and obey the requirements of every such order and to do everything necessary to secure the absolute compliance therewith by all its officers, agents and employees.

Section 50 authorizes the commission to order changes and improvements in road and equipment and additions thereto if in the judgment of the commission the same are necessary to promote the security or convenience of the public or employees or in order to secure adequate service or facilities for the transportation of persons or property.

Continuing, the commissioner says:

"What was the purpose of these sections giving such drastic powers to the commission and authorizing it to place heavy burdens on the electric railways, unless the commission was at the same time authorized to give such relief in the way of increased fares as might be necessary to enable the corporation to receive a fair return on the increased investment made necessary by the orders of the commission? It cannot be successfully urged that the commission has the right to order such improvement in service and equipment as might be necessary for the safety of the traveling public, even though this action on its part might in effect operate to confiscate the property of the corporation, for this is contrary to the law of the land.

"What then does the law contemplate in this respect? The answer is that the commission is empowered to require the corporation to give proper service, and, on the other hand, to require the public to pay reasonable rates for such service. The law as it exists at the present time requires the commission to determine the just and reasonable rates which will enable electric railways to earn a reasonable return upon the value of the property actually employed in the public service and to provide a reserve for surplus and contingencies.

"So we believe it may be said to be settled that the Legislature has full power to delegate rate-making powers to the Public Service Commission and that the commission has full power to fix just and reasonable rates for carriers and public service corporations and that the fixing of rates is a proper exercise of the police power of the State."

It might be claimed, Commissioner Carr said, that because Section 181 of the railroad law does not specifically provide for an increase in the rate of fare, therefore the only power of the Legislature or the commission is to reduce that rate. On this point he remarked:

"We think that such a decision would be quite untenable because it would be equivalent to saying that the Legislature is powerless to amend a general law no matter what the necessity might be or how important for the welfare of the public. While we believe that the use of the word 'regulate' implies an increase as well as a reduction in fare, yet it may be that when the word was first used by the Legislature it was intended to mean any revision of the fares charged by electric railways and that the word 'reduce' was used to apply to rates charged by electric railways in excess of 5 cents pursuant to special acts of the Legislature, but in any event it is entirely inconsistent with the public service commission law to attempt to hold that the only power given the commission is to reduce fares when the statute particularly imposes upon it the duty to determine the just and reasonable rates which are necessary in order to provide a reasonable return upon the value of the property employed in the public service."

MUNICIPALITIES CANNOT DETERMINE FARE

The other fundamental question, involving the control of local franchises over fares, is discussed by Commissioner Carr as follows:

"It is settled beyond question that municipalities have no right to impose conditions in franchises other than those which the statute gives them the power to exact. The fact that conditions restricting the fare within the municipality are imposed in a franchise does not deprive the Legislature of the supreme power to determine what conditions shall be imposed upon an electric railway corporation. There is no decision in any of the courts in this State which attempts to hold that the Legislature in the enactment of general laws governing the creation and operation of railroads, whether electric surface or otherwise, has in any respect conferred upon the municipalities the power to fix a rate of fare in a specific amount. It has delegated the power at different times to fix maximum rates, but this was always subject to the right of the Legislature to intervene and revise and alter such rates as might be fixed under the delegated power.

"As further illustrating that the municipalities never had any power to exact conditions beyond those prescribed by the Legislature, we call attention to the case of New York Cable Company vs. Mayor, etc., of New York (104 N. Y. 1). In this case the commissioners appointed under the provisions of Chapter 606 of the laws of 1875 attempted to exceed the powers which were given in the act under which they were appointed, and the court held that powers beyond those authorized by the statute could not be conferred upon the railroads and that, on the other hand, conditions beyond those covered by the statute could not be imposed. A case along the same lines was decided in 1887, Matter of Kings County Elevated Railroad (105 N. Y. 97), in which it was decided that the Common Council of the city of Brooklyn had no power to impose conditions in a franchise or consent to the operation of a surface railway which related to matters which were under the control of the Legislature and the commissioners appointed under the provisions of Chapter 606 of the laws of 1875.

"We believe that all of the cases dealing with fare conditions in franchises can be harmonized without difficulty. It will be remembered that beginning with the act of 1884 relating to electric railways there was and has been a specific provision in the law requiring the consent given by the municipality to contain a clause setting forth that it is given upon the express condition that the provisions of the act relative to such railways shall be complied with. Therefore even though the municipality should give its consent to the construction, maintenance and operation of an electric railway in the public streets without attempting to set forth the condition in the franchise relative to fare which is contained in the statute, nevertheless the provision of the statute is binding upon the corporation and no greater force or effect is given to it and no greater obligation is placed upon it than that which appears in the statute in this respect. The mere reiteration of this condition in the franchise given by the municipality does not place an additional burden upon the corporation, nor does it operate to divest the State of any power which it may have and which it has always had to regulate the fares on electric railways.

"We are, therefore, of the opinion that notwithstanding the conditions in the several franchises granted to the Huntington Railroad which attempted to fix a 5-cent fare within certain specified territory, the same were only binding upon the company until such time as the Legislature should intervene for the purpose of regulating this rate of fare, and that this commission has the power, under the provisions of the law which created it, to revise the fare fixed in the franchises."

NEED OF HUNTINGTON COMPANY NOT DISPUTED

By reason of the fact that it presented clearly two questions, the first of which is common to nearly all of the electric railway applications before the commission and the second to a very large number of them, all the companies and all the cities, towns, villages and other municipalities interested adversely were notified of the hearing. As far as they desired, they were heard upon all of the legal questions involved. There was no dispute that the Huntington Railroad required increased revenue in order to enable it to pay its operating expenses. No community through which it runs objected by its Council to the applicant's case on the facts, nor did any of the inhabitants thereof or any patrons of the road.

A Playground for Employees and Their Families

Illinois Traction Property Has Provided Cottage and Equipment Whereby Employees May Enjoy a Real Vacation Rest at Almost No Expense

BY W. F. CARR

Formerly Engineer Maintenance of Way Chicago, Ottawa & Peoria Railway, Ottawa, Ill.

THE Chicago, Ottawa & Peoria Railway has utilized one of the many beauty spots along its line as a site for a recreation camp for its employees. This camp was provided not only for the recuperation of the sick families and delicate children of employees but for a playground for the healthy as well.

H. E. Chubbuck, vice-president executive Illinois Traction System, is a believer in close relationship with the workers under him. He regards the employees on the various properties under his management as a family. Needless to say, the managers of the various properties hold the same attitude toward the men under their supervision, and this is consequently true of F. E. Fisher, general superintendent of the C., O. & P. Many companies provide clubrooms for their employees, but he has gone a step further by supplying a place where the entire family of an employee may enjoy country life. It was to bring the families of the individual employees closer together and produce one big family in association and sentiment that he caused this camp to be built and equipped.

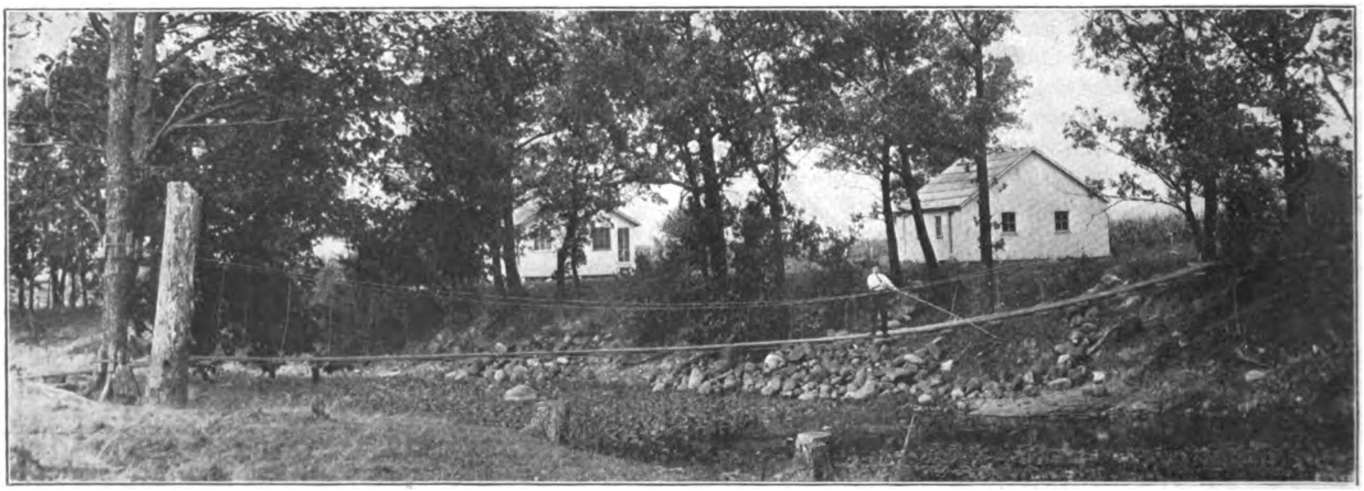
It is located 17 miles west of Joliet, Ill., on Aux Sable Creek, which is one of the many beautiful streams of which north-central Illinois abounds. Its clear, swift waters and rocky bed form an ideal place for the breeding and preservation of game fish. It abounds in bass, pickerel and pike. The company leases 5 acres of land on a bend in this creek and has constructed a dam to provide boating and bathing. A suspension bridge has been constructed across the creek by four cables of 7/16-in. seven-strand galvanized steel messenger attached to convenient tree trunks on the banks of the stream. A private drive leads from the public highway to the camp, and a station stop is made by the company's cars at a point directly opposite the camp and is about one-quarter mile from it.

MAIN LIVING ROOM OF C., O. & P. OUTING CLUBHOUSE

There are two buildings in the camp, one a clubhouse 20 ft. wide and 50 ft. long, and a cottage, 22 ft. x 25 ft. The clubhouse has a kitchen 10 ft. x 20 ft., which serves all families; a dining or living room, 20 ft. x 29 ft., and two bedrooms, 10 ft. x 10 ft. A large fireplace 6 ft. long and 4 ft. high adds to the comfort and coziness of the living room in the clubhouse. The cottage is partitioned off to make two bedrooms. The cottage and clubhouse are furnished with cots, tables, chairs, cooking utensils, tableware, cutlery, a refrigerator, a kitchen range and an oil stove to be used instead of the range on hot days. The cottages and accommodations were arranged for their joint use by three or four families at a time.

The buildings are situated in a grove of trees and are painted white, from which was derived the name White City. From a flagpole in the foreground Old Glory floats during the day and a lantern shines at night when the cottages are occupied. A drilled well provides an abundance of good drinking water, and a cooling cellar has been constructed around the well pipe. Sanitary drainage was considered in the selection of the site, and it is one of the rules that each camping party must attend to the burning up and destruction of all waste.

This cottage outing plan helps in a measure to solve the vacation problem. When a man is let off for a few days' recreation and then is badly needed because of some emergency, he can usually be recalled within a few hours by sending word to the clubhouse. This is one of the rewards which a company receives in return for its interest and expense in building and maintaining the camp.



VIEW OF CAMP WITH SUSPENSION BRIDGE IN FOREGROUND

American Association News

The War Board Appointed by the Association Holds Another Full Meeting—The Milwaukee Company Section Elects New Officers; the Manila Section Discusses Electricity, and Section No. 8 Holds Its "Harvest Meeting"

War Board Meets Again

The Principal Subjects Discussed Were Promotion of Freight Traffic, Fuel Conservation, and the Provisions of the War Revenue and Priority Laws as They Affect Electric Railways

ANOTHER full meeting of the American Electric Railway War Board was held in Washington last week on Friday. The five members were in attendance with Secretary Burritt of the association, who has now been officially appointed secretary of the War Board. H. C. Clark was also present. Action was taken on a number of important matters. The board also discussed the matter of permanent headquarters in Washington, but no definite action was taken.

Britton I. Budd of Chicago, chairman of the sub-committee on traffic, reported that he was arranging for a joint meeting of the traffic representatives of a number of the electric railway companies in the Central States, together with the secretaries of the principal business associations, chambers of commerce and boards of trade in the same district. It was hoped at that meeting to develop suggestions for the more extended use of the electric railways for transportation. This meeting is only a starter. Other plans with the same objects in view are under consideration.

P. H. Gadsden, Charleston, S. C., to whom was referred the request of the Commissioner of Internal Revenue requesting the association to submit suggestions as to the administration and application of the excess profits provision of the war revenue act, so far as it relates to electric railways, reported that he had taken the matter up with a number of electric railway companies and that he hoped before long to be able to submit constructive suggestions.

Progress was also reported on the subject of fuel conservation. Action in this matter has already been taken up with the chairman of the Fuel Conservation Board, and it is hoped that a series of practical suggestions, including methods for flattening out the peaks, will soon be issued under the auspices of the board.

The board decided to take steps looking to the issuance by the Navy Department of an order similar to that issued by Major Curran, quartermaster, War Department, and mentioned on page 899 of the last issue of this paper. Chairman McCarter reported that he had officially notified the President and the Secretaries of the Army and Navy of the organization of the board, as requested at the previous meeting, and he was instructed to send a similar notice to the Chamber of Commerce of the United States.

Mr. Storrs then presented a letter from Chairman Daniel Willard, Advisory Commission, Council of National Defense, inclosing a resolution adopted by the council on Nov. 2, 1917, urging that steps be taken to secure complete co-operation during the continuance of the war from all of the transportation agencies. In accordance with this resolution, Mr. Willard expects shortly to call a meeting in Washington of representatives of all of the different transportation interests, including the special committee on national defense of the American Railway Association, the committee on inland waterways, the committee on highway and motor transportation and the War Board of the American Electric Railway Association. Chairman McCarter was authorized to reply to this letter, assuring Mr. Willard of the full support in this matter of the electric railway interests and indicating the desire of these interests to co-operate as suggested. Mr. Storrs was appointed the official delegate of the board to the joint meeting.

Mr. Storrs then called attention to the wording of the provisions in the war revenue law imposing taxes on freight receipts and on express receipts, and said that it would be well to get a ruling from the Internal Revenue Bureau on what constituted the line of demarcation between express and freight, because the rates on these two classes of business were different, and on a great many electric railways it was difficult to differentiate between the two. Mr. Gadsden was appointed to take this matter up with the Internal Revenue Bureau.

Mr. Brady brought up the question of priority in the case of manufactured articles ordered by electric railways and the position which electric railways occupy under the priority order. Steps were taken to obtain this information.

The board decided to meet again in Washington on Friday, Nov. 23, and extended to President Stanley of the association an invitation to attend that meeting and subsequent meetings of the board.

Milwaukee Section Elects Officers

The Milwaukee Electric Railway & Light Company section held a meeting on Nov. 8, with sixty members in attendance. The following officers were elected for the ensuing year: President, F. A. Luber, promoted from secretaryship; vice-president, W. W. Cook; secretary, L. Beihoff; treasurer, R. Regner. G. M. Kuemmerlein and A. J. Kills were elected directors for a three-year and a one-year term respectively.

Owing to the length of the program two talks scheduled had to be postponed. The first talk was on "Practical Co-operation," by G. W. Kalweit, auditor of the company. Among other advantages of close co-operation the speaker mentioned the importance of referring to the classification of accounts before making charges for materials and labor, thereby giving the proper distributions and lessening the work of the accounting department. He stated that the same spirit that is essential to the nation in the present world conflict should be applied in the work of each individual in the company's organization. His remarks were followed by G. M. Kuemmerlein, superintendent of transportation, who discussed the possibility of employing women as conductors. He said that that would probably be necessary this winter owing to the large number of men entering government service.

H. A. Mullett, superintendent of rolling stock, gave an interesting talk on "Railway Gears," in which he traced the processes of gear manufacture from the mines to the finished product. The last talk was on real estate, by E. J. Evans, real estate agent. His remarks related to the distribution of real estate in Wisconsin in the early days and how a larger population necessitated further divisions. A few instrumental selections constituted the entertainment for the evening. A buffet luncheon was also served.

Electricity in Philippines Interests Manila Section

At a meeting on Oct. 2 of the joint section of the Manila Electric Railroad & Light Corporation, Manila, P. I., Francisco Santiago, foreman electric testing department, presented a paper entitled "Economic Influence of Electric Light and Power on Industrial Philippines." He reviewed the progress in the use of electricity for various industries in the Philippines, and explained how its use contributes toward making the islands economically independent. The discussion related principally to details with reference to local interests. Forty members were present, and three new members were added to the railway division of the section.

Section No. 8 Discusses Operation of Company's Power Plant

R. H. Dalgleish, electrical engineer, Capital Traction Company, Washington, D. C., was the principal speaker at the meeting of Section No. 8, held on Nov. 8. He discussed, with the aid of lantern slides, the operation of the company's main power plant. The address was supplemented by short talks on the details of the plant by A. H. Sparshott, engineer in charge; W. Locke, repairman, and D. J. Hogan, switchboard operator. This was the annual "harvest meeting" of the section. The auditorium was decorated with autumn leaves, corn shucks and fruits of the harvest.

Poor Food for the Dog

Donald Lowrie, in the office of Thomas Dreier, assistant to president Bay State Street Railway, Boston, Mass., has prepared copy for a car poster which is herewith passed on to those who are trying to get rid of the fixed 5-cent fare idea.

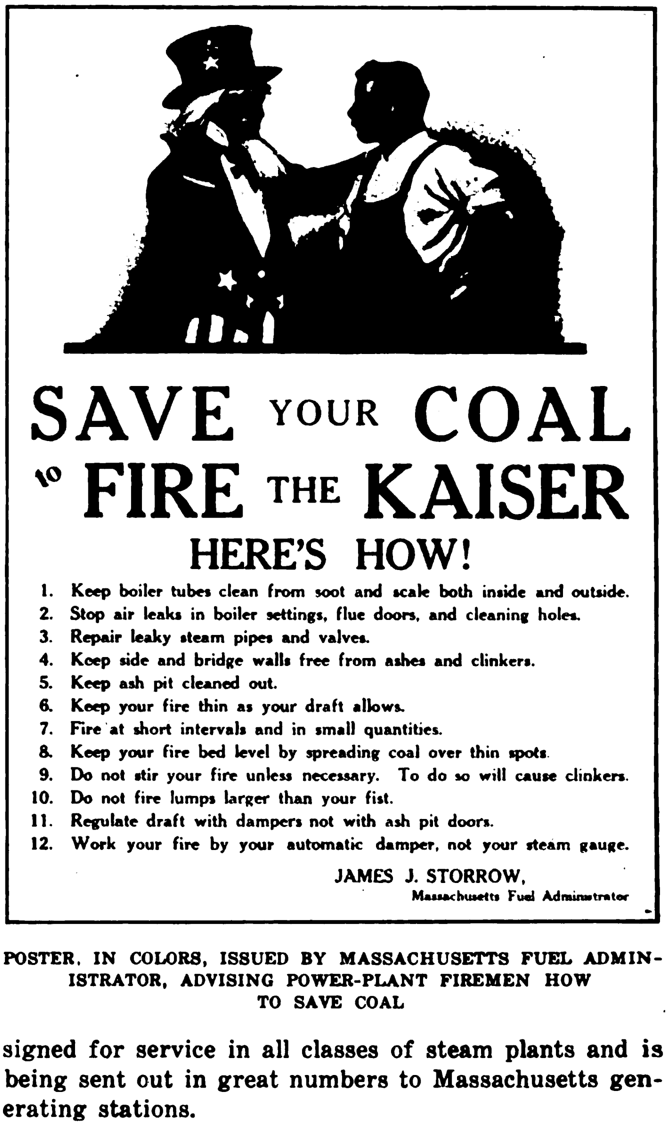
The poster would contain at the top a cut of a very large but painfully thin dog. He is on his back with paws sticking in air. A man is offering him a small portion of food, labeled "5 cents worth of dog meat," but the animal refuses to eat.

Underneath such a cut the following copy would be used:

Oh, see the dog!
What is the matter with the dog?
The dog is dying.
Why is the dog dying?
Because he is too weak to eat the 5-cents worth of meat.
You see, when the dog was a pup 5-cents worth of meat was enough.
But when the pup grew to be a big dog, the man still gave him only 5-cents worth of meat each day.
Now the dog is so weak he is going to die.
Oh, the poor dog!

Fighting the Huns with the Shovel

James J. Storrow, fuel administrator of Massachusetts, has just issued a striking poster showing the power-plant fireman how he can help fight against Germany by saving coal. Running boilers more efficiently is said to depend upon a dozen succinct admonitions, as shown in the accompanying cut. The poster is designed for service in all classes of steam plants and is being sent out in great numbers to Massachusetts generating stations.



SAVE YOUR COAL TO FIRE THE KAISER

HERE'S HOW!

1. Keep boiler tubes clean from soot and scale both inside and outside.
2. Stop air leaks in boiler settings, flue doors, and cleaning holes.
3. Repair leaky steam pipes and valves.
4. Keep side and bridge walls free from ashes and clinkers.
5. Keep ash pit cleaned out.
6. Keep your fire thin as your draft allows.
7. Fire at short intervals and in small quantities.
8. Keep your fire bed level by spreading coal over thin spots.
9. Do not stir your fire unless necessary. To do so will cause clinkers.
10. Do not fire lumps larger than your fist.
11. Regulate draft with dampers not with ash pit doors.
12. Work your fire by your automatic damper, not your steam gauge.

JAMES J. STORROW,
Massachusetts Fuel Administrator

POSTER, IN COLORS, ISSUED BY MASSACHUSETTS FUEL ADMINISTRATOR, ADVISING POWER-PLANT FIREMEN HOW TO SAVE COAL

With each poster there is being sent out, to superintendents of industrial and power plants, a printed statement asking them to co-operate in conserving New England's coal supply this winter. Besides hanging up the poster, they are requested to carry out the following suggestions: Keep the power plant in good repair, and stop all leaks in boiler settings, pipes and valves; cover exposed steam pipes with good non-conductor covering; have the boiler tubes kept free from soot and scale; keep daily records of the operating efficiency of the plant; the installation of automatic dampers will save coal and money; meter the steam bought or sold so that the one who saves will benefit. It is said that on request an inspector will be sent to investigate any plant, at a charge only enough to cover the bare cost of the services rendered.

EQUIPMENT and MAINTENANCE

HAVE YOU A GOOD WAY OF DOING A JOB?
—*Pass It Along*

These Articles Have Been Selected to Provoke Thought and Stimulate Discussion. All of the Technical Departments Are Represented

Some Pointers on Snow-Fighting Equipment and Its Use

The Author Discusses a Number of the Lessons Which Have Been Taught by Recent Experiences of the Connecticut Company

BY P. NEY WILSON
Roadmaster New Haven Division The Connecticut Company, New Haven, Conn.

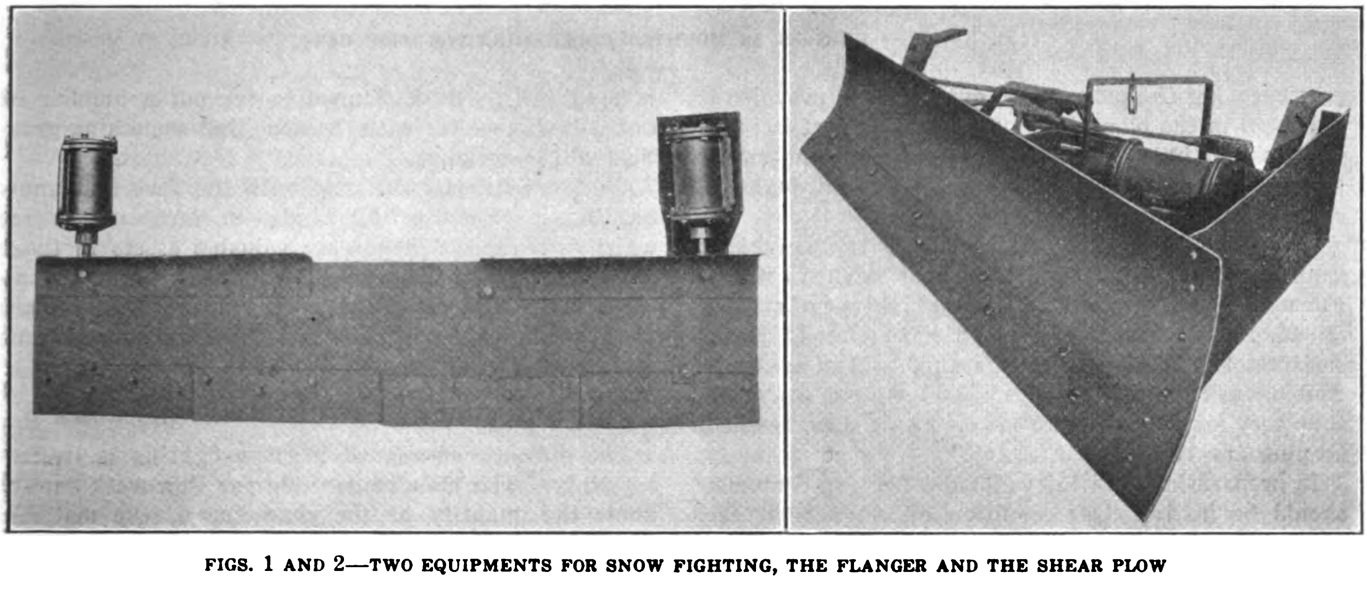
A series of heavy snowfalls which occurred during the winter of 1915-1916, combined with a marked increase in vehicular travel, created an unusual condition with respect to snow fighting on the property operated by the Connecticut Company. The results of the experience during that trying period was a conviction that there must be provided better facilities for snow fighting, including additional equipment and a reserve force of operators.

At a meeting of the American Electric Railway Association local company section held in January, 1916, the subject of snow fighting was formally brought up in a paper read by Harold Bates. This paper appeared in the issue of the ELECTRIC RAILWAY JOURNAL for Jan. 22, 1916, page 162. In this paper Mr. Bates outlined the experiences, successes and failures of other companies in the matter of operating an electric railway under storm conditions. Later meetings brought out a number of other short papers on the subject, as well as a spirited discussion in which many valuable suggestions were made. The result was that a snow-fighting committee was appointed with the writer as chairman, and in due time a report was presented. The present article is based in part upon that report, which has not heretofore been published.

We may consider first the matter of equipment, with particular reference to the rolling stock in the possession of the Connecticut Company at the present time. It seemed wise in the first place that certain double-truck miscellaneous service cars be equipped with removable shears and side wings for leveling, thus converting the cars into snow-fighting units at a comparatively low cost. By thus equipping the service cars they are used much more continuously than otherwise and they do not lie idle for a good part of the year as do snow-fighting units used for that exclusive purpose. The cost of equipping one service car has been found to be about $550.00, and we shall have a number of these in operation during the coming winter.

SNOW-FIGHTING EQUIPMENT FOR HEAVY CARS

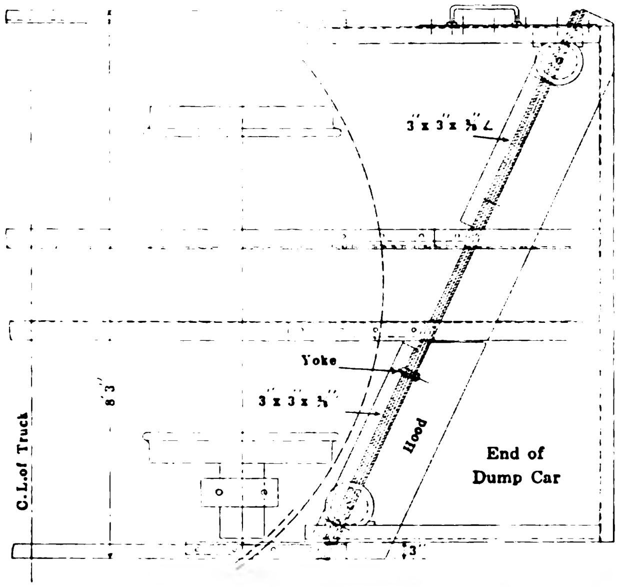
Two equipments which we shall use are shown in the illustrations. In Figs. 1 and 3 is shown a steel flanger designed to go under the end of a dump car and built by the Russell Car & Snowplow Company of Ridgway, Pa. It consists of a shear made of 3/8-in. sheet steel plate with narrow wearing blades of the same thickness. This plate is placed diagonally under the underframe of the dump car and is movable vertically through a range of 3 in., being actuated by two air cylinders, one at each end. The movable plate slides in front of a rigid plate, with a space of 5/8 in. between the two, four steel yokes being provided to maintain this ap-



FIGS. 1 AND 2—TWO EQUIPMENTS FOR SNOW FIGHTING, THE FLANGER AND THE SHEAR PLOW

proximate spacing. The rigid plate is mounted on four cast-steel brackets, carried from the under side of the side and center sills. Half-inch pipes connect the four cylinder ends to a four-way valve in the cab, by means of which the raising and lowering of the sliding blade is controlled.

Another device which we are installing is shown in Figs. 2 and 4. This is a shear plow point built by the Wason Manufacturing Company, Springfield, Mass., and is shown here adapted to a Standard Motor Truck Company's archbar truck. This truck is shown as used under a multiple dump car. The shear is of light sheet steel, mounted on an angle-iron frame attached to the truck in the manner shown. The shear is shod with a 1-in. beveled plate. The frame is made in two parts, a fixed part which is attached to the truck and the sliding part carrying the plow point, guides being provided as indicated in the plan view. The movable part is raised and lowered by means of one air cylinder, the motion of the piston of which is transmitted through bell cranks, a rod and a short chain.



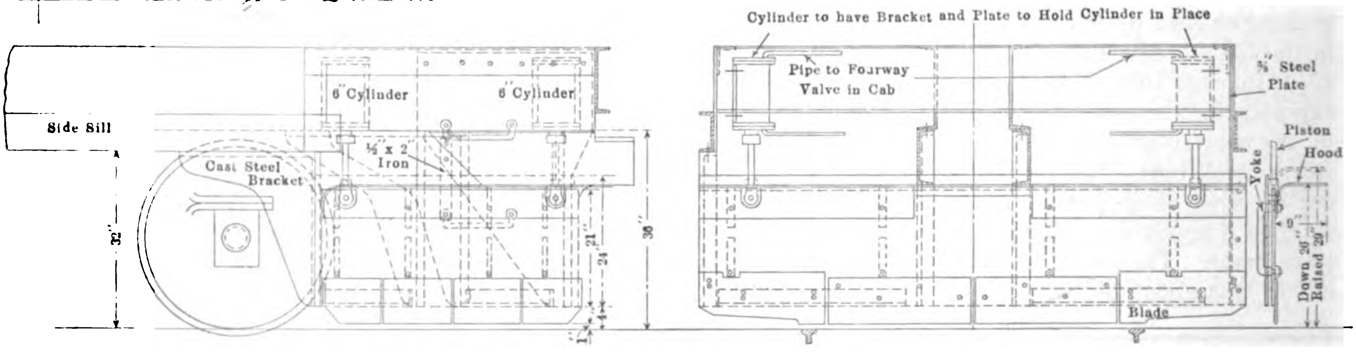


FIG. 3—SNOW FLANGES AS MOUNTED UNDER MULTIPLE-DUMP CAR

The above devices are suitable for heavy special service cars which are not used to a great extent in winter. For use on trolley express cars a special type of scraper, an adaptation of designs which have already proved satisfactory, is to be recommended. Heavily loaded double-truck express cars can start with a storm and thus very materially assist the operating department in keeping the tracks clear.

In preparation for winter all snow-fighting equipment should be in first-class condition by Nov. 15 of each year. Shearing plates should be sharpened and on some plows the shearing plates should be toothed for the purpose of cutting down high centers.

In regard to brooms our committee found that steel and rattan mixed are satisfactory for use in old broom heads on divisions where the snow is light and easily handled. On divisions where ice and very heavy snow accumulate on the tracks an all-steel filling should be used. When all-steel filling is used with wooden broom heads it is found that the holes in the latter become elongated and cut by the action of the broom in service. This trouble we have been able to avoid by the use of a steel plate on the outer surface of the broom head. Of course, the plates must be carefully drilled so as to match the holes with those in the broom head. We have obtained excellent results from brooms filled entirely with steel.

We also found that sweepers are more effective than plows for city streets, but the brooms in these should be driven by gearing and not by sprocket chains.

Among other subjects studied by us was the equipment of miscellaneous articles which should be furnished to each snow-fighting unit. Our list is as follows: Two scoop shovels, two sharp picks, three brooms of steel wire, equipped with spears, one crowbar, one large drawbar, four large draw pins, a minimum of 600 lb. of salt, two pails, two car replacers, two white lanterns, one barrel of sand, two red lanterns, two switchbars, six oak blocks 2 in. x 6 in. x 24 in. in size, six oak blocks 4 in. x 6 in. x 24 in. in size, two oak wedge blocks faced with steel 4 in. wide and 24 in. long, and four 9-in. fish-plates.

In addition to devices for removing snow from the tracks the Connecticut Company appreciates the importance of utilizing mechanical means in unloading it from work trains. All that can be reported at this time is progress, as it is planned to try out a number of methods this winter with the hope that something practical will materialize.

We were impressed firmly with the fact that snow fighting machines of all kinds—in fact, any device which will replace labor—are valuable assets in these days of labor shortage. Snow-fighting units are always ready and can be depended upon to do certain work, while human labor is uncertain and especially so under storm conditions.

ORGANIZATION OF THE SNOW-FIGHTING FORCE

The difficulty in regard to snow fighting is its uncertainty. The man responsible for this work cannot know the quantity or the character of the material which he may be called upon to move. By way of contrast, if an engineer is given two days to haul 15,000 cu. yd. of sand from Brown Street to Smith Street yard, a distance of 5280 ft., he knows all of the conditions involved in the job and can plan accordingly. When he has to move snow he knows practically nothing about the conditions except that he is going to be tremendously handicapped by the weather. The all-important thing, therefore, is to have a sufficient reserve of men and equipment, and more especially equipment.

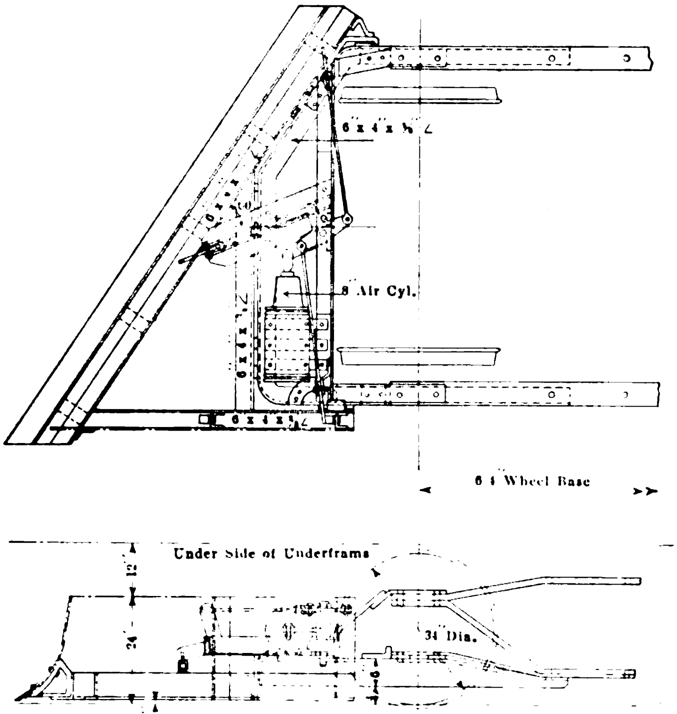


FIG. 4—SHEAR PLOW POINT MOUNTED UPON TRUCK FRAME

Not later than Nov. 15, when the regular routes for the plows and sweepers are drawn up, the chief motorman, a shop man and a regular motorman assigned to the equipment should test out each piece of equipment on the road, reporting in writing as to its condition and listing necessary repairs. These repairs should be made at once. The chief motorman should be held responsible for the condition of all snow-fighting equipment during the entire winter season.

An informal meeting should be held in the manager's office in the fall, when all concerned may offer suggestions as to improvements in the organization or equipment.

The maintenance-of-way department should be directly responsible for the salting of switches, cleaning intersections and disposing of accumulated snow, acting, of course, under orders from the manager's office. For salting switches at night a special car carrying five or six men has been found to be economical and efficient, as without this it is bound to be difficult to reach the switches on outlying lines under the severe weather conditions which are apt to prevail in the brief time available. Orders should be issued to men on plows to salt switches when they open up a line which the maintenance-of-way department has not been able to reach on account of the stalling of the regular cars. In fact, these men should salt all switches during a storm.

In every case the organization must be built around the equipment available, but always with a view to cutting hand labor down to a minimum.

DUMPING SNOW INTO SEWERS

The use of sewers as a means for snow removal has received particular attention from the Connecticut Company and the city of New Haven has given permission for such use in a considerable number of cases. In order that there may be no misunderstanding as to the manholes which can be used, charts like that of which a portion is reproduced in Fig. 5 are furnished to those engaged in snow fighting.

We have found that by the use of a two-horse snow remover of the scraper type we can, with an average haul of 700 ft., remove snow from the street and dump it into the city sewers at a cost of 13 cents per cubic yard. This rate is less than one-half that of carrying the snow by team, and the work can be done by a gang or four or five men in addition to the driver.

The dumping of snow into the city sewer requires, of course, the co-operation of city engineers, and in many cities their consent has been withheld due either to precedents or to some unusual condition which confronts them. The city of New York has gone so thoroughly into the matter and has issued so complete a report on the subject that with this backing the Connecticut Company has received permission to use the plan in several municipalities. In our opinion the use of the sewers where possible is the most satisfactory of all plans for snow removal and it reacts to the general good of the community served. Undoubtedly the method will grow in favor as soon as city engineers become more familiar with the excellence of the results obtained.

In our communities special snow-dumping manholes are being considered, and these are valuable because snow can be dumped into the sewers with their aid with a minimum amount of labor. One manhole of this type is being built into a large and important bridge under construction, and the city and the railway will have here an economical point for disposing of snow.

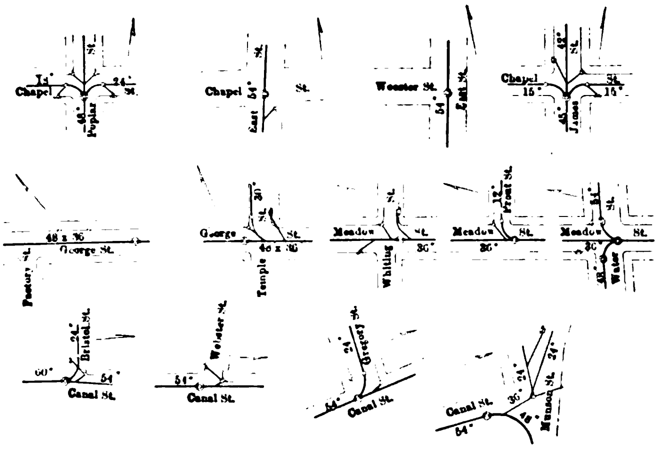


FIG. 5—SECTION OF CHART SHOWING SEWER MANHOLES

Before leaving the subject of dumping snow into sewers it should be noted that, aside from the economy mentioned, the difference between this method of disposal and that usually employed, namely, carting snow to city dumps or rivers, may in many cases be the difference between success and comparative failure.

In conclusion, I wish to emphasize the importance of utilizing equipment to the maximum in disposing of snow. This means reducing man power to a minimum. The latter purpose is accomplished in many cases by the use of some type of scraper with a short haul to the point of disposal. On the other hand, it must be evident that if a miscellaneous service car, such as a trolley express car, can be made over in a few hours into a dependable snow-fighting unit, the general efficiency of the outfit has been increased. Most snow-fighting organizations are designed to meet and conquer the average snowfall, but it is the unusual which happens in so many cases. Then the ordinary organization is taxed beyond its limits and there must be a reserve in readiness to enter the fight. As machines are more dependable than men under storm conditions, machines must form the backbone of the reserve force.

Rubber Gloves Apparently Not Injured by Severe Testing

BY C. G. BROWN
Laboratory Director Rochester Railway & Light Company, Rochester, N. Y.

It is not at all uncommon for operating companies to subject rubber gloves to a high-voltage test before accepting them. Sometimes all the gloves are tested, and in other cases only a certain percentage are selected for tests. The Rochester Railway & Light Company, however, is testing all new gloves before they are put into service, and occasional tests are made on the gloves already in use. Another way in which our test differs from the customary method is that we not only apply high voltage—in our case, 10,000 volts—but we also have an ammeter in series with the gloves, so that we know how many milli-amperes are being passed through the glove. As a tentative limit we are taking 10 milli-amperes. If more current than this passes the glove is considered unsatisfactory.

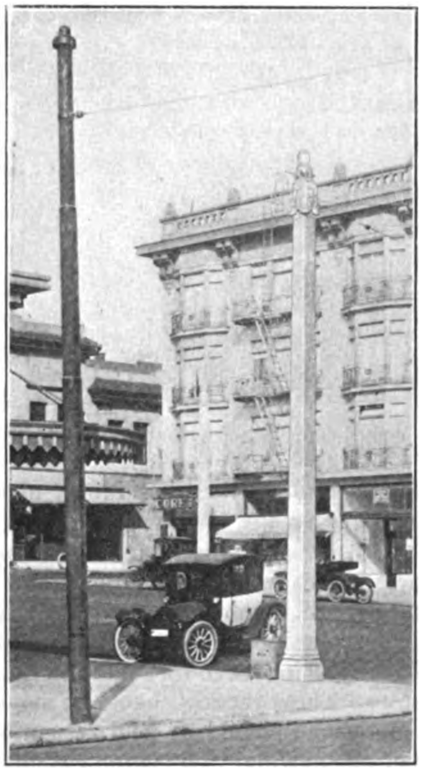
One objection which has sometimes been raised to this test is that the glove might be weakened by it, especially if the testing were done frequently. In order to find whether there was any ground for this objection we subjected an ordinary glove, which had had considerable use, to 10,000 volts for twenty-six hours before it broke down. When it did break down it was at the surface of the water, and an effect was noticed just before the breakdown which appeared to have been caused by corona. It seemed probable that a brush discharge was given off from this one point of the inside of the glove, and that the gradual weakening effect of the brush discharge rather than the high tension on the glove proper, caused the breakdown. The glove was then returned to the water without being immersed quite so far, and was subjected to a similar test for 118 hours before the second breakdown. The second breakdown started a fire in the upper part of the rubber, so that we were not able to examine it to see whether or not there were any small cracks in the glove. One should remember that the part of the glove which is above the water in this test is not the part which needs careful testing, and that no special damage is done if this part is weakened. Further, since the testing is not likely to last more than a minute or a minute and one-half, once a month, the experiment indicates, although it does not prove, that such testing is harmless.

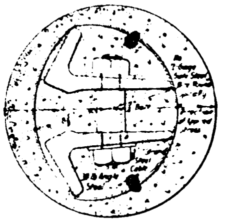
Three-Section Concrete Poles Made to Resemble Steel Poles

Cylindrical Poles Constructed at $18 Each Are Cheaper and More Satisfactory than the Square Concrete Poles

BY S. L. FOSTER
Chief Electrician United Railroads of San Francisco

For the past year the United Railroads of San Francisco has been manufacturing a tapered cylindrical reinforced 30-ft. concrete pole for double side-pole trolley lines. The metal elements of the pole are made of scrap 38-lb. angle steel which was torn out when the old cable roads were reconstructed as electric lines. This angle shape is used only for cable lines which are no longer being built, and the price offered for this unusual shape of steel angle as scrap has hitherto been ridiculously low. The concrete pole costs about $18 as compared with $44, which is the present price of the 5-in., 6-in., 7-in. steel pole.





AT LEFT, THREE-SECTION CYLINDRICAL CONCRETE POLE SIMILAR IN APPEARANCE TO A TUBULAR STEEL POLE. AT RIGHT, SQUARE CONCRETE POLE. DRAWING SHOWS CROSS-SECTION OF CYLINDRICAL CONCRETE POLE

By using two of these angles back to back as the tension member and assuming the concrete as the compression member, a pole has been constructed which appears by calculation to have a slightly higher moment of inertia than a three-section tubular pole made of 5-in., 6-in. and 7-in. standard pipe. Under test this concrete pole showed a smaller permanent set after the application of a 1000-lb. force at the top than the standard tubular pole did under a pull of 800 lb. The reinforced concrete pole gave a greater deflection per pound of pull than the tubular pole, but in service the concrete pole has proved equally satisfactory for the span wire strain. It looks as well as the steel pole, and except for esthetic reasons it requires no preliminary or periodic scraping, painting or other preservative treatment such as the steel pole requires in San Francisco's marine climate. The concrete pole weighs 2100 lb. as against 675 lb. for the 5-in., 6-in., 7-in. tubular pole, but the former will last forever whereas the latter, unless given expensive paint treatment yearly, rapidly succumbs to the corrosive action of the salt fog. This corrosion occurs not at the base alone where most steel poles fail, but in the upper parts of the pole and more particularly on the windward or seaward side.

Of course, the concrete pole is strongest in but one direction while the tubular pole is equally strong in all directions, but by setting and using the former for span strains only it is found entirely adequate.

In constructing these cylindrical section concrete poles, vertical wood forms are necessary and forms that will remain watertight under considerable hydrostatic pressure. The pole is built upside down, using very fluid concrete. The proportions used in the smallest diameter section is 1 cement, 2 sand, 3 fine gravel; that in the larger diameters 1 cement, 1 sand, 2 gravel. The completed pole is allowed to stand four days in the forms for the concrete to set. It is then lowered to the ground, its voids filled and its surface smoothed up. After this it is covered with sand and left to season thirty days. To provide a metal mesh to retain the concrete about the angles, the latter are wrapped spirally with a galvanized steel No. 12 B. W. G. wire, each turn being wired on each side of the angles to a longitudinal piece of ⅜-in. seven-strand steel cable whose bight at one end of the pole serves as a point of attachment for the ropes used in lowering and for a small sheet brass dating tag.

The cross-section shown is of the lowest section of the pole through one of the spacer bolts. The two angles are carried up to the top of the pole, being back to back without any spacing between them at the top of the pole. The pole top is molded in the forms to a hemispherical shape so as to accommodate the standard cast-iron cap and carry out the resemblance to the standard tubular pole. With its maximum diameter of but 8⅝ in. its appearance is less obtrusive than the usual square section concrete pole with twisted steel rod reinforcing. For the same safe pull at the top the square pole is 13 in. or 14 in. square at the ground line, 18½ in. or 19½ in. across the diagonal, and far heavier than the pole just described. It is also more costly to construct and more expensive to erect. The photograph includes a round three-section concrete pole that took but 1/16 in. permanent set when released after the application of 1000-lb. pull at the top and a square, rod-reinforced concrete pole calculated to withstand safely a pull of 800 lb.

The cylindrical poles are made to resemble the standard 6-in., 7-in., 8-in. tubular steel poles. The concrete pole sections are 6⅝ in., 7⅝ in. and 8⅝ in. in outside diameters and are of the same relative lengths as the tubular poles. This permits the application of the standard pole bands and cast-iron feeder cross-arms that are used on tubular poles. In appearance only an expert can distinguish the concrete from the tubular pole.

The concrete pole if painted must be given as a first coat some specially made lime-resisting application. Even this should not be applied until the pole has had ample time to dry out. As the assortment of colors in the lime-resisting paints is usually limited and seldom matches the color that is standard for the steel poles on the system, the second and the third coats can be made of the standard linseed oil paint. If the standard linseed oil paint is applied as the first coat, the oil will combine with the caustic lime set free from the concrete and will be transformed into a soap. The result will be that the film of paint will quickly disintegrate, check, powder and peel. It will be washed off by the first rains and the work will have to be done all over.

Pointers on Saving Coal in the Power Plant

Experts on Coal Conservation Offer Suggestions to Owners and Managers

The committee on coal conservation of the Chamber of Commerce of the United States has issued a bulletin containing a number of definite suggestions. It directs attention to the fact that a horsepower-hour of energy has been produced on a pound of coal. In most plants three or four times this quantity is consumed, and it is not to be expected that such a result can be attained throughout the country, but it is the record of present possibility.

The definite suggestions are as follows:

Reconsider the advantage of buying heat and power from a specialized plant that makes nothing else and can afford the investment and supervision that gets a maximum of value out of each pound of coal; in some localities hydroelectric power may be available.

Find the nearest source of coal that will meet the requirements, even if it does take a little more trouble to use it; the tax on the transportation system will thus be reduced so far as haulage by rail is shortened; coal is mined in twenty-six states, and these states extend practically across the continent and from the northern to the southern borders.

Give to the power plant and its personnel recognition and encouragement such as is due an expert and an important department, thus getting new effort and attention to offset the extra attention and care needed with coal inferior in grade and preparation to the coal formerly available.

Seek to increase skill and proficiency in the men who handle the coal; a fireman at a hand-fired boiler shovels three to ten tons of coal a day—or as great a value in material as many skilled men in other departments.

Put the fuel-using equipment into as perfect condition as possible; provide at hand-fired plants an ample firing floor with a good surface, together with a smooth-bottomed coal car if it can be used; eliminate leaks in the boiler setting, see that fire doors fit properly, replace defective grate bars, make sure that smoke connections are clean and tight; if mechanical stokers are used, see that they are in good repair and that directions for using them are being followed; in general, make the plant and fireroom of such character that an efficient man will stay on the job.

Install simple and convenient means by which the fireroom force may see results; scales for weighing fuel and ash, meters for measuring water fed to the boiler, and devices for determining the quality of flue gases, the draft over the fire, etc., can be made to interest the men in the fireroom and show the actual results of efforts to economize; convenient means for operating the flue damper must be installed.

Endeavor to run boilers in service at their capacity; if efficiency is increased, one or more boilers in a battery may be dropped.

Provide water that is free from scale by using, when necessary, water-treating devices if the plant is large and special feed-water heaters in small plants.

Reduce loss of heat after it is generated; see that boiler surfaces and steam pipes are properly covered; the simplest and most inexpensive covering will reduce loss by 80 per cent; in the engine room cut out useless steam lines, have valves properly set, reduce the small auxiliary pumps, etc., to a minimum, provide the repairs for which the engineer has been asking.

Obtain expert advice; good steam engineers are familiar with well-tried ways of reducing both consumption of coal and consumption of heat; their advice should be obtained in all practical cases; this is not a time for radical innovations but for utilizing tried experience.

Coal Gas for Driving Motor Vehicles

The executive committee of the British Commercial Gas Association has issued a comprehensive report on the use of coal gas in motor vehicles. The report states that the principal objection to its use is the difficulty of storage. The practical disadvantages of storing the gas under normal pressure in a flexible container are the fragility of the container and its large size which make it unsuited for city service. However, the arrangement is simple and economical and the limitation of the amount of gas that can be carried is partly offset by the ease with which the holder can be re-refilled.

GAS-DRIVEN OMNIBUS IN EDINBURGH

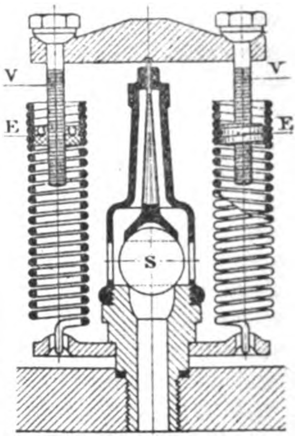
For storing the gas under pressure in steel cylinders a pressure of from 20 to 25 atmospheres is recommended. It was found from experiments that the calorific value of the gas is reduced 10 per cent if the pressure is carried to 120 atmospheres. The effect of low-pressure storage on the quality of the gas was not determined, but it is believed that at 20 atmospheres the effect would be negligible. It is recommended that the charging depots be of the multiple type rather than single reservoir and that the gas should be stored at a higher pressure than that required on the cars to compensate for the drop in pressure in transferring. No trouble has been experienced in the drop in temperature due to the expansion of the gas when it is released from the station storage cylinder.

Test runs made by a bus under average conditions at a schedule speed of 9 m.p.h. showed that a distance of 25 miles can be covered per 1000 cu. ft. of gas. An important feature in the use of coal gas is its cleanliness, which makes for clean pistons and cylinders, and eliminates injector troubles and starting difficulties in cold weather. A view of an omnibus of the Scottish Motor Traction Company operating in Edinburgh is reproduced to show the arrangement of the gas holders.

Reducing the Time Element in Hardness Tests

French Engineer Improves Brinell Apparatus Permitting Tests to Be Made in Ten Seconds

In the issue of the ELECTRIC RAILWAY JOURNAL for June 26, 1915, page 1201, W. L. Allen described methods of testing gears for hardness, etc. He explained the principle of the Brinell machine for testing hardness, and a reproduction of a photograph of the machine was used by way of illustration. The issue of *Le Génie Civil* for Oct. 20, 1917, page 265, contains a report of an important improvement in the Brinell apparatus which has successfully reduced the length of time required to make an accurate test with that machine from five minutes to ten seconds. It is not to be inferred that in practical work it has been possible to allow as long as five minutes for each test, hence the results secured in practice have probably less accuracy, say by 5 to 10 per cent, than when made in the laboratory.



VALVE FOR LIMITING FORCE APPLIED IN BRINELL MACHINE

It will be remembered that the Brinell machine operates on the principle that if a hard steel ball of specified diameter is pressed into a metal surface with a definite force, the diameter of the depression is a measure of the hardness. The ball used in the actual apparatus has a diameter of 1 cm. (0.394 in.) and the force used is 3000 kg. (6615 lb.). The Brinell "hardness numeral" is obtained by dividing the force in kilograms by the square of the diameter of the depression in millimeters. This numeral may vary over a wide range, being about 150 for a glass-hard steel and 600 for a soft steel.

The improvement referred to consists in applying the principle that if a certain extra force be applied this can be made to compensate for the reduction in diameter of the depression due to the use of too short a test period. Experience has shown that the additional force can be determined from the following formula, wherein dP is the extra force, dD is the error in diameter due to shortage of test period, and D is the diameter of the depression. All of these units are in the metric system.

$$dP/3000 = 2dD/D$$

In order to apply the principle to the Brinell machine, in which the force is applied by a hydraulic piston, a valve like that shown in the accompanying cross-section is used to limit the hydraulic pressure. In this a ball valve rests on a seat sharply inclined, and the ball is held on the seat by means of springs which are adjustable as to length and stiffness by means of the adjusting nuts *EE* and *VV* respectively. When the valve is properly adjusted it serves to make the desired correction, practically independent of the speed with which the force is applied. While theoretically each material requires a different adjustment, in practice it is found that one setting will serve for most practical purposes.

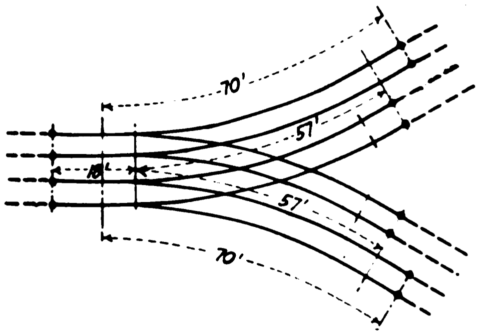
Cost Data on Special Work Renewals—VII

By M. BERNARD

**Assistant Engineer Way & Structures Department,
Brooklyn (N. Y.) Rapid Transit System**

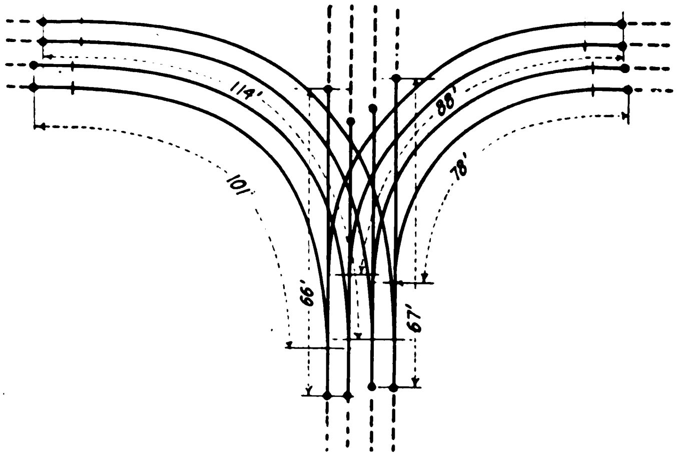
This is the seventh plate of the series of Cost Data on Special Work Renewals. The previous plates were published in the issues for July 21, Aug. 18, Sept. 8, Sept. 29, Oct. 27, and Nov. 10.

Fig. 24—Double Track Wye
Length—290 ft. single track
Construction removed—9-in. girder rail*—8-in. granite on sand
New construction—9-in. girder rail*—8-in. granite on concrete.



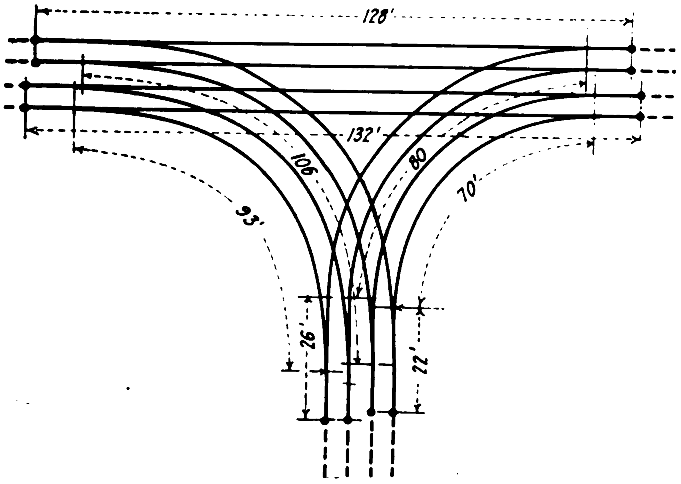
	Light Traffic	Average Traffic	Heavy Traffic
Labor	$585.00	$735.00	$885.00
Handling	200.00	215.00	230.00
Miscellaneous	105.00	130.00	155.00
Total (except materials)	$890.00	$1,080.00	$1,270.00
Cost per single track foot	3.07	3.72	4.38

Fig. 25—Double Track Through Wye
Length—514 ft. single track
Construction removed—9-in. girder rail*—8-in. granite on sand.
New construction—9-in. girder rail*—8-in. granite on concrete.



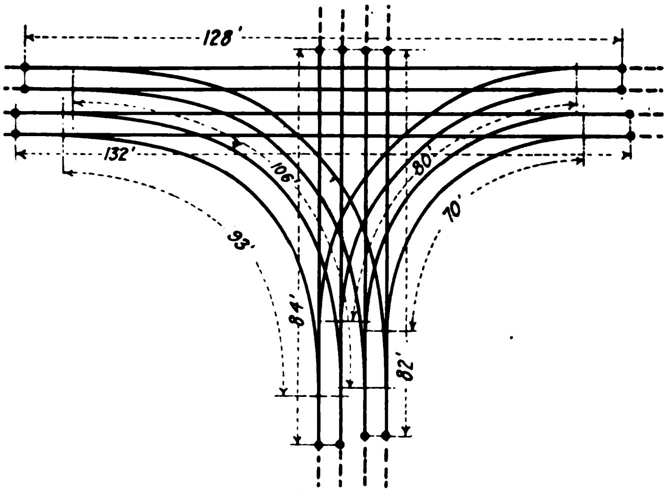
	Light Traffic	Average Traffic	Heavy Traffic
Labor	$1,060.00	$1,325.00	$1,590.00
Handling	360.00	390.00	420.00
Miscellaneous	200.00	245.00	290.00
Total (except materials)	$1,620.00	$1,960.00	$2,300.00
Cost per single track foot	3.15	3.81	4.47

Fig. 26—Double Track Three Part Wye
Length—657 ft. single track
Construction removed—9-in. girder rail*—8-in. granite on sand.
New construction—9-in. girder rail*—8-in. granite on concrete.



	Light Traffic	Average Traffic	Heavy Traffic
Labor	$1,230.00	$1,530.00	$1,840.00
Handling	460.00	500.00	540.00
Miscellaneous	230.00	280.00	340.00
Total (except materials)	$1,920.00	$2,310.00	$2,720.00
Cost per single track foot	2.92	3.51	4.14

Fig. 27—Double Track Three Part Through Wye
Length—775 ft. single track
Construction removed—9-in. girder rail*—8-in. granite on sand.
New construction—9-in. girder rail*—8-in. granite on concrete.

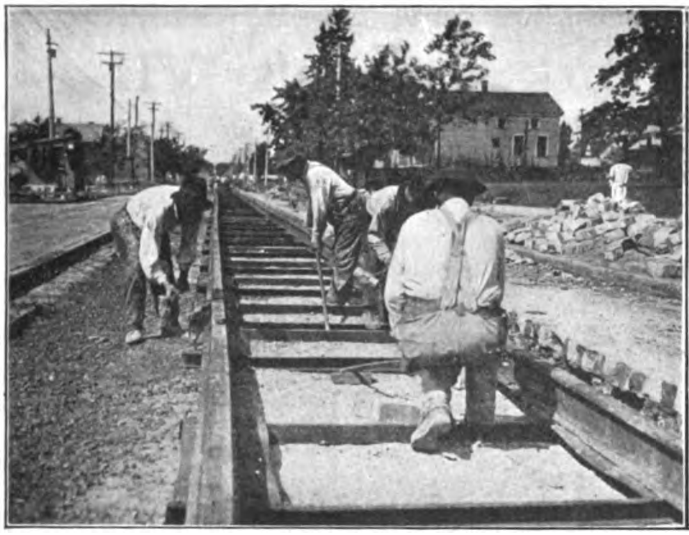


	Light Traffic	Average Traffic	Heavy Traffic
Labor	$1,600.00	$2,000.00	$2,400.00
Handling	540.00	590.00	640.00
Miscellaneous	300.00	370.00	440.00
Total (except materials)	$2,440.00	$2,960.00	$3,480.00
Cost per single track foot	3.15	3.82	4.50

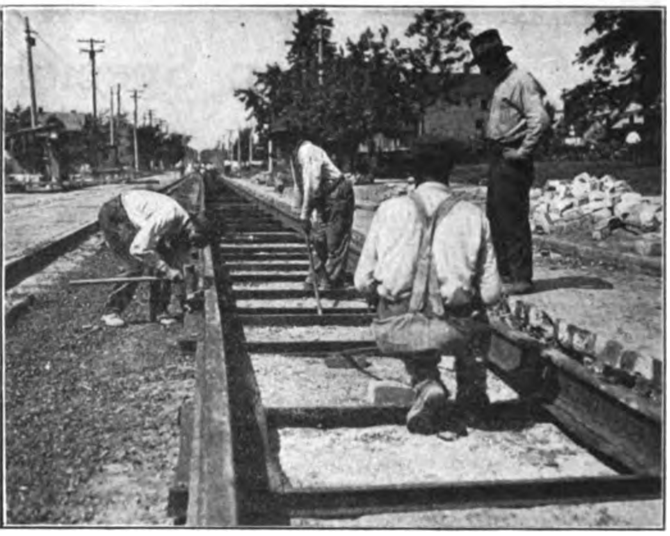
*Hard-center construction. *Explanation:* By "light traffic" is meant either the divergence of cars during progress of work or a traffic of not more than 150 cars per day of twenty-four hours. "Average traffic" denotes the passage of about 325 cars per day of twenty-four hours, and "heavy traffic" that of 750 or more.

By "labor" is meant the labor cost of tearing out the old paving and special work and installing the new at the location where the work is done. "Handling" signifies the cost of loading the necessary materials at the various storage yards as well as the unloading of same at the place of renewal. It also includes the cost of transportation and the cost of removal of old or left-over material. Since the transportation is done by a subsidiary company, which adds profit and overhead expense to the net cost, this item may differ considerably from that obtained on other railways. Under "miscellaneous" are included the expense of city inspectors, expense incurred when portable crossovers are used for divergence of cars during renewal, watchmen's wages, and incidental engineering expense. The total of these three items—labor, handling and miscellaneous—therefore includes everything except the cost of materials.

On account of the unsettled labor conditions prevailing since the beginning of the war, the costs given are based on pre-war wages, the average track labor on which these costs are based is 20 cents per hour, including the foreman's wages.



DRIVING ONE SET OF CLIPS INTO POSITION WITH SLEDGES



PLACING THE OPPOSITE CLIPS IN THE STEEL TIES

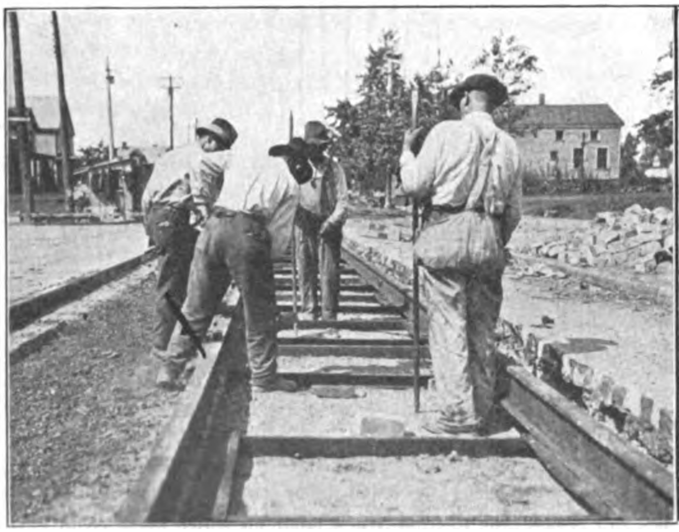
Time Studies in Applying Twin Steel Tie Fastenings

In order to determine the speed with which rail clips can be applied to International steel twin ties, time checks have been made on several four-man gangs engaged in applying the fastenings. These gangs were composed of average foreign labor, and they were not aware that the speed of their work was being checked. The average of a large number of time checks showed that it required only two and one-half minutes for each gang to move forward and apply the eight fastenings to one tie. This is equivalent to gaging and spiking three wooden ties, the same number of men being required in each case.

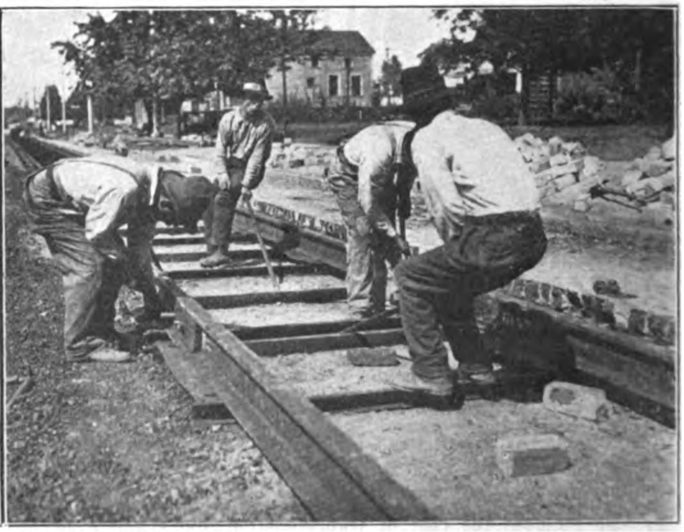
The sequence of operations is shown in the accompanying illustrations. After completing the fastenings on one tie the gang, equipped with two 12-lb. sledges, moved forward to the next tie. The eight clips and four wedges were distributed in advance. Two clips for each rail were inserted in the openings in the tie plates, the ties being laid slightly off center to permit this. With the four clips in place the tie was struck horizontal blows with sledges until the four clips were driven tight up over the rail base. In this position the other four clips were inserted in the openings in the tie plates. If they were tight they were started into position and struck a vertical blow with a sledge which forced them down. The final operation included driving a small chisel behind the clips last placed to force them against the rail base. When they were forced in position the chisel was removed and the wedges furnished with the ties were driven in place. No track gaging was necessary, as this was provided for in the tie punching and clips. These are manufactured with a maximum tolerance of 1/64 in., which is as close as track gaging is usually done.

There is now in service about 500 miles of track built with International steel twin ties.

At the carhouses and shops of the New York State Railways, Syracuse, N. Y., the employees that are required to operate cars are designated by the master mechanic. They receive a special training from the instruction department. After an employee receives this training his name is posted on a bulletin board in the carhouse or shop. No employee whose name does not appear on this list is required or permitted to operate a car for any reason whatsoever. A similar rule is in force on the Utica lines of this company.



FORCING THE CLIPS AGAINST THE RAIL WITH A SMALL WEDGE



STARTING THE LAST WEDGE BEHIND THE TIE CLIP

News of Electric Railways

Traffic and Transportation

Financial and Corporate **Personal Mention** **Construction News**

Help for Portland Company

Public Hearings to Be Held to Secure Suggestions to Assist Company to Obtain More Revenue

At a public hearing held before the City Council at Portland, Ore., on Nov. 14, on the petition of the Portland Railway, Light & Power Company to discontinue a number of stub-end lines throughout the city in order to reduce expenses, delegations from each of the districts affected appeared and protested against abandonment of the lines. The preliminary meeting for organization purposes was called by S. C. Bratton, president of the Portland Ad Club. He suggested that such public hearings would be the logical way by which the public could assist the company in securing sufficient revenues to meet its increased operating expenses.

HOW THE INVESTIGATION WILL PROCEED

The investigations will probably continue over a period of two or three weeks. Sub-committees were appointed to study information and data presented to the Public Service Commission; another will consult with the board of arbitration; another will confer with the executive committee of the men's union, and a fourth committee will deal with the officials of the company to ascertain the actual effect of the commission's decision and the arbitration award upon the operating expenses of the company. The remedies for securing relief by the company as suggested by the commission include relief from unjust burdens imposed by the public, increased business, greater operating efficiency, reduced service and increased rates.

The findings of the investigators will be submitted to the Public Service Commission, probably with a petition that the company receive financial relief before Jan. 1, when the present award of the board of arbitration may be annulled by the commission if it so desires.

F. I. Fuller, vice-president of the company, recently told the City Council that the plan of abandoning the various lines in question was recommended by the Public Service Commission in order to reduce operating expenses, and that the company was endeavoring to follow out these recommendations.

Cincinnati Rapid Transit Progress

At a meeting of the Rapid Transit Commission of Cincinnati, Ohio, on Nov. 2 Frank S. Krug, chief engineer, reported good progress on the engineering work for the loop. Preliminary drafts of specifications covering general features of construction have been commenced.

The Linwood Improvement Association has petitioned the City Council to change the name of the East End line to the Eastern Avenue-Linwood line and to establish an extension to California, Coney Island and Mount Washington over the tracks of the Interurban Railway & Terminal Company. This was referred to W. C. Culkins, street railway commissioner.

Residents of Pleasant Ridge and Kennedy Heights are urging Mr. Culkins to recommend an extension of the North Norwood line to these villages. The Cincinnati Traction Company insists that the Interurban Railway & Terminal Company's line should take care of this business.

Mr. Culkins has advised the City Council to defer all plans for rerouting cars until definite locations of stations of the proposed loop are fixed by the Rapid Transit Commission. At present these locations are only tentative. With a letter to this effect to Clerk Fred Schneller, Mr. Culkins returned ordinances referred to him by the City Council providing for double tracking Central Avenue and changes in existing routes. He also advises Council that the Rapid Transit Commission will not decide upon the location of stations definitely until the Ohio Supreme Court has passed finally upon the validity of the rapid transit act in the suit now pending before the court.

St. Louis Hearings Disorderly

Chairman of Committee of Aldermen Inclined to Regard Further Public Discussion of New Franchise as Futile

The public hearings before the public utilities committee of the Board of Aldermen of St. Louis, Mo., on the proposed settlement ordinance for the United Railways have become more or less turbulent. There has been constant bickering between the different interests, and at times the spectacle has been presented of a battle royal rather than orderly consideration of the matters affecting the welfare of every man, woman and child in the city.

PUBLIC HEARINGS A "NECESSARY NUISANCE"

On Nov. 6 D. L. Schwartz, chairman of the committee, declared that the public hearings had become a "necessary nuisance." He said that many persons attempted to talk who admitted that they had not read the ordinance, although the committee had sent copies of the ordinance to persons interested. He deplored the existence of conditions which made possible expressions of personal opinion rather than constructive criticism. According to Mr. Schwartz the committee felt that the ordinance was either good or bad. It was his opinion that it was futile to delay settlement weeks and months in public hearings.

On Nov. 13 another hearing was held by the committee. It lasted more than four hours. There was almost continued disorder. Thomas M. Pierce, special counsel for the United Railways, described the speakers for the Central Trades and Labor Union as agitators and exponents of hoodlumism. At this hearing Lee Meriwether, once candidate for Mayor, was the principal speaker against the bill. He said that he had read the company's advertisements with wonder and amazement.

Later dissension in the ranks of the Civic League was disclosed. Emil N. Tolkacz resigned as president of the league after a stormy meeting of that body at which he expressed his displeasure at the league taking a stand which might delay or hinder a settlement of the mill tax and franchise problems of the railway.

PRESIDENT MCCULLOCH REVIEWS MATTERS

In the *United Railways Bulletin* for November, Richard McCulloch, president of the United Railways, discussed the negotiations with the city. He said that the company earnestly and sincerely desired a settlement which would allow its finances to be straightened out and place it in a position where it could borrow money for equipment and extensions and enable it to continue the best of service and relieve it from the undesirable attitude of being at war with the city. According to Mr. McCulloch the only material advantage to the company in the proposed ordinance was a reduction of $120,000 annually in the so-called mill tax. The company had disbursed more than this sum of money in the increase in wages made to the trainmen on Nov. 1. Although war conditions and the tremendous increase in the cost of supplies had made the company's position more difficult than ever before, the officers were glad to make the increase in wages as an expression of their appreciation of the loyalty and skill of the men.

Akron Strike Settled

Men on Lines of Northern Ohio Traction & Light Company Will Receive Five Cents More an Hour

A settlement between the Northern Ohio Traction & Light Company, Akron, Ohio, and its 800 striking motormen and conductors was effected on the evening of Nov. 16, and full operation on the interurban line and the Akron city line was resumed at 3 o'clock the following morning.

The men will receive an increase of 5 cents an hour for the period between Nov. 1 and May 1, 1918. Negotiations may be opened at the expiration of this contract for a new wage scale, but in case of a disagreement between the company and the men the adjustment of the scale must be left to arbitration. This is a new feature introduced in the last proposition made by the company.

An increase of 5 cents an hour from Nov. 1 to May 1, 1919, was offered by the company the day before the settlement. This proposal was rejected. The company felt that it should protect itself against excessive demands in case of a shorter period by the use of the arbitration clause, and the executive committee recommended the acceptance of the proposition in that shape.

Under the terms of the agreement the men on the Akron city lines will receive 33 cents an hour for the first year, 35 cents for the second year and 38 cents thereafter. Men on the interurban line will receive 2 cents an hour more than this rate.

The demand of the men was for a straight advance of 10 cents an hour.

Informal Wage Conference at Boston

At the request of the local branch of the Amalgamated Association, W. D. Mahon, president of the national body, will shortly visit Boston, Mass., for an informal discussion of the wages situation on the Boston Elevated Railway as affected by present war prices. The company and its union employees are now working under an agreement which does not expire for about a year and a half. While a number of conferences have been held between the officials of the local union and M. C. Brush, president of the company, relative to wage conditions, it is understood that no disposition to depart from the agreement has been evidenced. At some of the later conferences the possibility of the men's increasing their daily pay by working longer hours was discussed, but it is understood that the union did not look favorably upon changing the present nine-hours-in-eleven basis of working. The company is in no position to increase wages at this time. Only recently it passed its quarterly dividend. Pending the report of the special street railway investigating commission in Massachusetts to the forthcoming Legislature and subsequent favorable action by the latter, little chance of early relief appears for the company. The present wage agreement expires in May, 1919.

Go as a Mechanic!

Skilled Men Wanted for Service Overseas Behind the Lines

Electric railway repair men and machinists are wanted for early service overseas. The men in the front line trench need the help and co-operation of skilled men back of the lines, and men who can take care of and repair transportation machinery are wanted at once for the Enlisted Ordnance Corps, National Army.

Uncle Sam is calling on the electric railways to come across and help his fighting men. There is a lot of work to be done "over there," and the call has gone out for all men of this kind between the ages of eighteen and forty who want to do their bit and who know their job.

Modern war is a tremendous business, and the army that wins is the army which has the best equipment and the best men. The men "over there" now are ready to go ahead, but they still need experts to repair and maintain their equipment. There is a fine chance for every man who wants to help. Write to the Chief of Ordnance, War Department, Washington, D. C.

Cleveland Wage Offer Rejected

Representatives of the conductors and motormen of the Cleveland (Ohio) Railway at a conference on Nov. 17 rejected an offer of an increase of 5 cents an hour covering a period from Nov. 1 to May 1, 1919. Time and a half for overtime was included in the offer, but this was to be estimated above schedule runs and was not to apply to runs shorter than eight hours.

The men objected to entering into a contract that would continue longer than May 1, 1918. They were satisfied with the amount of the increase. They argued that they could not tell what the cost of living would be the coming year and felt they would not be justified in making a contract that could not be modified before 1919.

About $375,000 annually would be added to the payroll by the increase offered by the company. This would almost certainly cause an increase in the rate of fare at once.

Another Minneapolis Valuation

Another official report has been filed of the valuation of the property of the Minneapolis (Minn.) Street Railway, controlled by the Twin City Rapid Transit Company. This last estimate is by James D. Hogarth of the city attorney's office at Milwaukee, who was employed by Mayor Thomas Van Lear. The new valuation is less than that made by the city engineer, although based upon the Cappelen analysis and coinciding in the real estate figures. Some of the comparisons are as follows:

	Hogarth	Cappelen
Total valuation	$13,608,730	$16,205,638
Real estate	1,088,862	1,088,862
Tracks	2,232,337	2,743,564
Bridges	112,256	126,427
Rolling stock	4,066,950	4,649,318

Difference between the two reports was much in the way of estimating depreciation. In reference to one line of road the city engineer estimated the cost to reproduce at $89,629, figured the depreciation at $1,141 and left the true valuation at $88,475. Mr. Hogarth contended that if labor depreciation was allowed also the section would be valued at $70,555. Mr. Hogarth said new cars could be reproduced at $6,000 or less, and he made a 10 per cent depreciation deduction and a further deduction of $400 a car for pay-as-you-enter equipment, which he said are necessary to permit economical operation.

Wage Increase Desired

Des Moines Men Say They Will Help to Boost Fares if That Should Be Necessary

Employees of the Des Moines (Iowa) City Railway and the Inter Urban Railway are about to make formal request of the company for an increase in wages of 3 or 4 cents an hour. The present contract between the men and the company does not expire for some time. Two months ago the company voluntarily granted an increase, but officials of the union say that it is not sufficient to meet the increased living expenses.

While the application has not been formally presented the City Railway is already considering the matter and has gone so far as to inquire of the City Council as to the possibility of making a straight 5-cent rate instead of six tickets for a quarter. Emil G. Schmidt, president of the company, in his preliminary negotiations with the men has advised that a fare increase is necessary in order to meet the wage increase asked by the employees. The corporation counsel of the city has, however, already ruled that the fare cannot be increased to straight 5 cents without bringing the question to a vote of the people, as he holds that the franchise specifically provides for a six-for-a-quarter rate. It is estimated that the straight 5 cent fare would increase the company's gross revenues $75,000 a year.

Officials of the union suggest that the city investigate the books of the company to determine whether or not a fare increase is necessary in order to meet the wage raise. If such an investigation proves the company is right, the men say they will make an active fight for an increased fare.

B. R. T. Wants Rehearing on Car Purchase

The Brooklyn Rapid Transit Company on Nov. 22 filed with the Public Service Commission for the First District of New York an application for a rehearing in connection with the commission's order of March 12 last requiring the surface railroads of Brooklyn to provide 250 additional cars. In its order of last March the commission said that the interests of the company were fully protected by the right to a rehearing if facts should arise in the future rendering compliance with the order unreasonable or unjust. The present request of the company is based upon the changed conditions since the original order was issued. Bids received by the company from car builders indicate that at this time the cost of the cars would range from $12,600 to $16,600 each as compared with the normal cost of $7,000 each. Denial of the appeal of the company from the original order of the commission is now before the courts.

Franchise Proposed for Waterloo

Provides for Numerous Improvements and Sharing of City in Profits—Reduced Fares to Workmen and School Children a Factor

A new franchise is proposed for the Waterloo, Cedar Falls & Northern Railway in Waterloo, Iowa. The grant contains some unusual features. It has been drawn and is awaiting a special election on Dec. 5, to place it in operation. A franchise drawn some months ago failed of passage in the spring election by a small majority. The new franchise provides for reduced fares during certain hours of the day, a continuous passage over the lines for 5 cents, reduced fares for school children and for the sharing by the city in the profits. The reduced rate of fare is proposed to be in force between 6 to 8 a. m., and 5 to 7 p. m., when tickets in books selling at twenty-five for $1 will be accepted. The fare for school children is to be at the rate of twenty tickets for 50 cents. These tickets are to be sold in book form and the City Council will regulate the hours in which they may be used on actual school days.

HOW THE PROFITS WILL BE DIVIDED

A provision for the division of profit is quoted from the ordinance as follows:

"Whenever the street car earnings of the company return a gross income for their whole line of 5 cents per car-mile in excess of cost of operation, thereafter the company shall share with the city on all gross revenues derived in excess of said excess of 5 cents per car-mile. Such provision shall be upon the basis of 90 per cent to the company and 10 per cent to the city."

Any proceeds due the city are to be paid at the end of each quarter and the company is charged with the duty of keeping its books in such order that an audit by the city at any time will reveal the actual earnings of the company.

Certain specified extensions must be completed as soon after the passage of the ordinance as business conditions become normal, but in any event the extensions must be made within thirty months after the acceptance of the ordinance.

SPECIFYING IMPROVEMENTS

Ten years after the passage and acceptance of the ordinance, the City Council has the right to order a change in the system of power transmission from the present overhead wiring to an underground system, "or other approved system which may be in vogue at that time." The City Council must give the company one year's notice of such a contemplated order and the system to be installed must have been successfully operated in at least ten American cities of equivalent population, and with climatic conditions similar to those at Waterloo. After such an order has been issued, the company is to have two years in which to remove poles and overhead wires in the business district and four years for similar work in the residential district. By the end of three years after the close of the present war, the present wooden poles are to be replaced by concrete or steel poles if the system of overhead power transmission now in use is continued.

RATE INCREASE SAFEGUARDED

The rate of fare cannot be changed except through the agency of a board of arbitration, the members of which are to be appointed by the judges of the district court. This arrangement has been provided in order to safeguard the public and make it practically impossible to change the rate of fare unless this is absolutely necessary. The method of procedure under which the board will act provides a time limit for every stage of the proceedings. In this way there can be no dilatory court proceedings. Should the decision of the board of arbitration meet with the disapproval of the citizens or the company, simple steps for an appeal are arranged.

Subway Commission Appointed

Mayor Harry L. Davis, exercising the right which he received at the recent election at Cleveland, Ohio, has appointed a board of subway commissioners, consisting of C. J. Neal, city director of finance, one year; Fielder Sanders, street railway commissioner, two years; M. A. Bradley, financier, three years; C. E. Adams, president of the Cleveland Hardware Company, four years, and C. A. Otis, investment broker, five years.

This board may make preliminary surveys, adopt plans which must be submitted to a vote of the electors, award contracts subject to the approval of Council and construct subways and underground terminals. After such construction is completed, the commission will have supervision over the property.

Mr. Sanders has already had a preliminary survey made. This will be placed before the commission.

Wage Increase in San Francisco

United Railroads Announces Increase in the Wages of Its Platform Men as Recognition of Service in Recent Strike

An increase in the wages of the platform men of the United Railroads, San Francisco, Cal., was announced on Nov. 12. With the announcement came the statement that this was a reward to the men for their loyalty in remaining with the company during the recent strike. In commenting on the increase, Jesse W. Lilienthal, president of the company, said:

"The company appreciates the faithful service of the platform men who remained continuously in its employ after Aug. 11, 1917, and recognizes that their loyalty and courage should be rewarded in a substantial manner."

The increase became effective at once. It amounts to about 3 cents an hour. The new scale is as follows:

Period	Rate Per Hour
First year of service:	
First six months	30 cents
Second six months	32 cents
Second year of service:	
First six months	33 cents
Second six months	34 cents
Third year	35 cents
Fourth year	36 cents
Fifth year	37 cents
Sixth year	38 cents
Seventh year	39 cents
Eighth and later years	40 cents
In addition men hereby promoted to the 40-cent class, and men hereafter reaching said class, after one year therein will receive for the next succeeding year	41 cents
And for the second succeeding year	42 cents

In addition to these new rates, and in order to favor the men who were loyal during the strike, it was announced that platform men employed between Aug. 11 and Sept. 17 are to receive 33 cents an hour. New platform men employed from Sept. 18 to Oct. 17 will receive 32 cents an hour. Platform men who left the service on Aug. 11, 1917, or later and who have been re-employed will receive the rate paid to them on Aug. 11, 1917, plus 2 cents an hour to those re-employed on or before Sept. 17, and 1 cent an hour to those re-employed after said date on or before Oct. 17. Platform men formerly employed and hereafter re-employed will receive only such rating and pay as may be individually assigned to them at the time of re-employment.

Seattle Wage Award Accepted

It Has Been Suggested that All Union Labor Back the Effort of the Company to Secure Fare Increases

The members of the union of trainmen of the Puget Sound Traction, Light & Power Company at Seattle, Wash., at a recent meeting unanimously adopted a resolution drawn up by S. J. Wallace, their president, accepting the findings of the arbitration board appointed to pass upon the questions of wages and terms of service and thanking the members of the board.

Suggestions have been made by the union that all organized labor be asked to back the company in an endeavor to secure 6-cent fares and the abolition of transfers. The increase in revenue thus brought about, it is said, would practically permit the granting of an eight-hour day to the men. Other means of relief suggested are the remission of the 2 per cent tax upon gross receipts, the abolition of bridge tolls and the repeal of the franchise clauses requiring the company to pay construction and maintenance cost of paving between its tracks.

The findings of the board of arbitration were reviewed in the ELECTRIC RAILWAY JOURNAL of Nov. 11, page 914.

Increase in Wages on Pennsylvania Line.—The employees of the Lewisburg, Milton & Watsontown Passenger Railway, Milton, Pa., have been granted a 10 per cent raise in wages, effective from Oct. 11. It is the second 10 per cent increase since June.

Burlington Strike Settled.—The strike of conductors and motormen of the Burlington County Transit Company, Burlington, N. J., was settled on Nov. 14 under an agreement from the company to make the wage 28 cents an hour. The men were receiving 25 cents, and asked for 30 cents. They went out on Nov. 13.

Accident Ties Up Municipal Railway.—The city of Nelson, B. C., has purchased a motor generator from the city of Winnipeg, following the burning out of the generator in the city power plant. The accident put the municipal railway at Nelson out of commission. It is expected that it will be twenty days before cars will again be in operation.

Wage Increase in Fort Smith.—A contract calling for a wage increase of 4 cents an hour for the men of the Fort Smith Light & Traction Company, Fort Smith, Ark., has been signed by the company and a committee representing the Amalgamated Association. The contract replaces one that expired on Oct. 31. The new contract will continue in effect for eighteen months. A provision allowing the men thirty days lay-off in one year was the only change made in the working conditions.

Philadelphia Hearing Postponed.—The hearing on the proposed lease of the high-speed rapid transit lines in Philadelphia to the Philadelphia Rapid Transit Company has gone over until Nov. 23. Announcement to this effect was made on Nov. 14 by Joseph P. Gaffney, chairman of the finance committee of Councils. The delay is due, it was explained, to the inability of William Draper Lewis, Mayor Smith's legal adviser on transit matters, and Director of City Transit Twining to complete their amendments to the draft ordinance in time.

Assessment of Trenton Property Confirmed.—An increased assessment of $1,060,845 upon the property of the Trenton & Mercer County Traction Corporation, Trenton, N. J., by the County Board of Taxation for the year 1915 has been affirmed by Justice Minturn in the Supreme Court. The original assessment levied by the Trenton authorities was $1,003,882. This was increased to $2,064,727, after a protest had been entered, charging that the assessment in the first instance was too low. A hearing was held with the result that the assessment was increased more than $1,000,000. The company appealed the case.

City Will Seek to Recover $2,200,000.—Action has been begun by the city of New York to recover $2,200,000 from the Brooklyn Rapid Transit Company and the Interborough Rapid Transit Company based on revelations made during the investigation by the Thompson legislative committee more than a year ago. The claim against the former company is for $1,990,800, composed of alleged improper interest charges made against the city. The $210,000 claim against the Interborough Rapid Transit Company consists of the bonuses alleged to have been paid improperly to President Theodore P. Shonts, to the counsel and auditor of the company.

Increase for Binghamton Men.—The Binghamton (N. Y.) Railway has voluntarily increased the wages of its motormen and conductors, effective from Nov. 1. The contract between the company and the men had two years to run, but the former arrangement was set aside. The increase is on the basis of 2 cents an hour above the present scale, an annual increase for the first four years of 1 cent an hour and an increase of 2 cents from the fourth to the fifth year, when the maximum of 29 cents is attained. Under the new arrangement employees attain the maximum wage in five years instead of in ten years. The new five-year rate is higher than the former ten-year rate.

Woman Suggested for Appointment to New York Commission.—William M. Bennett, late Republican candidate for Mayor of New York, has written to Governor Whitman about the pending appointments to the commission for the first district to fill the places made vacant by the retirement of commissioners to accept service with the government. In his letter Mr. Bennett has suggested the appointment of a woman to the board. On this point he said: "I would suggest that the time has come for the appointment of a woman to this position. Women now have the vote, and new duties and interests have been given to them. A woman member of the Public Service Commission would bring to it new views and new life and tend to restore it to the original idea that it was appointed a defender of the public and to protect the public against the rapacity and indifference of public utility corporations."

No I. R. T. Operation Over Long Island Railroad.—The Interborough Rapid Transit Company, New York, N. Y., has announced that it does not propose at the present time or in the near future to undertake the operation of a rapid transit service over the tracks of the Long Island Railroad to Little Neck and to Whitestone, Long Island, which the city proposes to lease as an extension of the Corona line. It had been tentatively understood for several months that the company would undertake the proposed operation when the Public Service Commission for the First District and the company reached an agreement upon the terms of the lease. In view of the refusal of the company to undertake the proposed operation, the commission has directed its chief engineer and chief of rapid transit to proceed with preparation of plans and form of contract for the construction of an extension of the Corona line, which now terminates at Alburtis Avenue, Corona, to Main Street, Flushing.

Newlands Committee Said to Favor Government Control.—According to a dispatch to the New York *Times* from Washington, it was reported on Nov. 17 that the Newlands committee had evolved a scheme that would mean government control of the railroads, with government financial support, but leaving the actual operation and ownership with the carriers themselves. The Newlands committee's scheme, it is reported, comprehends a guarantee of earnings of the railroads at a stipulated rate, based on the value of the property. An ample wage would be exacted for the employees. This system, if put into effect, would follow that in vogue in England with respect to the British railways since the beginning of the war. In England the scheme has worked successfully. Official confirmation of the report was not obtained. Under the reported Newlands committee idea the government would, in effect, back the railroads with whatever finances were needed to carry on their operation during the war. The securities would be strengthened by government support. The Newlands committee is composed of members of the interstate commerce committee of the Senate and the interstate and foreign commerce committee of the House. The committee has been engaged for a year in investigating the railroad situation in general.

Financial and Corporate

Annual Report

United Railways Investment Company

The income statement of the United Railways Investment Company, San Francisco, Cal., for the fiscal year ended June 30, 1916, follows:

Dividends on stock owned	$1,718,850
Interest on bonds, notes, etc	172,733
Total	$1,891,583
Expenses	84,441
Interest on securities, notes and loans	1,092,339
Provision toward losses on securities owned	714,803
Total expenses and charges	$1,891,583
Profit and loss—surplus at beginning of year	6,949,014
Credit—discount on bonds purchased for sinking fund	106,700
Profit and loss—surplus June 30, 1917	$7,055,714

Continuing the policy announced in last year's report, the receipts of the company were applied to the reduction of its debts. On Aug. 15, 1917, the payment of $100,000 of 6 per cent serial notes of 1908 extinguished that issue of notes, originally amounting to $3,500,000. During the year a trustee acquired for the sinking fund an additional $359,000 of bonds, the largest amount thus far acquired in any one year in the company's history. The loans and notes payable were reduced by $35,000, and cash on deposit increased $40,140.

To apply toward the reduction of the loss that the company had sustained through its subsidiary, the United Railroads of San Francisco, the investment company started a reserve account and put aside for this purpose $714,802. Other appropriations in consideration by the board are directed to the same end. No interest has been accrued on the notes of the United Railroads of San Francisco or on its 6 per cent gold bonds of 1910 since Feb. 1, 1917.

The United Railways Investment Company, it will be recalled, is solely a holding company, having interests in two widely separated fields, around Pittsburgh, Pa., and in California. Its interests in the Pittsburgh district are represented by holding of stock in the Philadelphia Company, which controls the Pittsburgh Railways and other utilities. The annual reports for this group, whose fiscal year ends March 31, were published in the issue of July 14, 1917.

The interests of the investment company in California are represented by holding of stock in the California Railway & Power Company, which in turn controls the United Railroads of San Francisco and lighting companies. The results from operation of the United Railroads of San Francisco for years ended June 30, 1916 and 1917, follow:

	1917		1916	
	Amount	Per Cent	Amount	Per Cent
Passenger revenue	$7,399,411	99.2	$7,692,258	99.2
Other operating revenue	58,730	0.8	59,485	0.8
Total operating revenues	$7,458,141	100.0	$7,751,743	100.0
Maintenance of way and structures	418,983	5.6	550,046	7.1
Maintenance of equipment	379,696	5.1	371,561	4.8
Transportation	3,292,903	44.1	3,353,488	43.2
General	672,719	9.0	630,139	8.1
Total operating expenses	$4,764 301	63.8	$4,909,234	63.2
Taxes	487,900	6.6	508,800	6.6
Total operating expenses and taxes	$5,252,201	70.4	$5,414,034	69.8
Operating income	$2,205,940	29.6	$2,337,909	30.2
Other income	163,121	2.2	178,525	2.3
Gross income	$2,369,061	31.8	$2,516,234	32.5
Income charges	511,218	6.9	515,470	6.7
Income before deducting bond interest	$1,857,843	24.9	$2,000,764	25.8
Bond interest	1,594,364	21.4	1,604,026	20.7
Net income	$263,479	3.5	$396,738	5.1

During the last fiscal year the decline in the earnings of the United Railroads of San Francisco continued. The loss of $275,836 or 3.5 per cent in passenger revenue in the preceding fiscal year was surpassed by the loss of $292,847 or 3.8 per cent in the year ended June 30, 1917. Other operating revenue also decreased, so that the total operating revenues in the last year showed a falling off of $293,602 or 3.8 per cent, as compared to $272,351 or 3.4 per cent the year before.

The operating expenses, however, were not so large in 1917 as in 1916, the decrease being $144,933 or 2.9 per cent, as compared to an increase of $147,408 or 3.1 per cent in the preceding fiscal year. The falling off in the last year was due in the main to a decrease of $131,063 or 23.6 per cent in maintenance of way and structures and $60,585 or 1.8 per cent in transportation. Taxes decreased $20,900 or 4.1 per cent. The final result after small changes in the subsequent items was a loss of $133,259 or more than 33 per cent in net income.

After a profit and loss charge of $550,000 for depreciation and other adjustments, the surplus as of June 30, 1917, amounted to $992,091. The net increase in the depreciation reserve for the year was $356,915, the reserve at the end of the year totaling $1,313,413. During the last year additions and betterments of property were made to the extent of $180,735. Up to June 30, 1917, an aggregate amount of $2,435,000 par value of mortgage securities had been retired and cancelled from investment made with sinking fund money.

Blue Hill Street Railway Sold

The interest of Stone & Webster in the Blue Hill Street Railway, Canton, Mass., has been sold to Michael A. Cavanaugh, Roxbury, Mass. The road was organized in 1899 and includes about 17 miles of track in the towns of Milton, Canton and Stoughton. It connects at Mattapan with the Boston Elevated Railway and has been under the management of Stone & Webster since it was built. The gross revenue for 1916 was $92,962, operating expenses were $74,611, and fixed charges $19,890, leaving a deficit of $1,539. The road has an unlimited franchise. It has been hard hit by automobile competition in the last few years. Mr. Cavanaugh stated to the representative of the ELECTRIC RAILWAY JOURNAL at Boston that for the present F. T. Buchanan will continue as superintendent. The following officers and directors of the company have been elected: Michael A. Cavanaugh, president and general manager; Ray C. Cavanaugh, vice-president and treasurer; James P. Dunn, clerk. The officers and Allan Forbes, James Meehan, William E. Russell, Everett Maxwell and S. F. O'Hara, directors.

Stock for Employees and Customers

The Mahoning & Shenango Railway & Light Company, Youngstown, Ohio, has arranged for the sale of the 7 per cent cumulative preferred stock of the company to employees or customers at par—$100 a share—in ten monthly payments. Not more than twenty shares will be sold to any one employee or customer. This is in order that as many as possible of those who may wish to avail themselves of the opportunity may do so. The basis of the payments is as follows:

The first payment of $10 on each share must be made at the time of the subscription. A similar payment of $10 a share will be required on or before the tenth of each succeeding month till the full price of $100 a share has been paid. Certificate of stock will be delivered when the final payment has been made. Payments may be made at the main office of the company in Youngstown, at the Electric Shop, Youngstown, or at the offices in Sharon and New Castle. Interest at the rate of 6 per cent per annum will be paid by the company on all installments paid in and the full amount of this interest, figured on the basis of each payment having been made on the tenth of each month, will be deducted from the final payment. Subscribers will have the option of withdrawing all installments paid in upon reasonable notice and the company will pay on all such sums withdrawn interest at the rate of 4 per cent per annum.

New York Lines Lose for Year

Strikes and Rising Costs Cause Decline of 20 per Cent in Net Corporate Income of Metropolitan Carriers

The electric railways in New York, N. Y., showed an increase of $1,555,599 or 1.5 per cent in railway operating revenues for the year ended June 30, 1917. This gain was offset, however, by a rise of $3,678,088 or 7.0 per cent in operating expenses. The result was a decline of $2,610,358 or 20.2 per cent in the net corporate income. These totals, it should be said, have been figured without the making of any deductions for intercompany transactions.

The decline in earning power was directly due, in a considerable degree, to the rising costs of operation, which affected both the large and the small companies. The decline was helped, however, by the drain upon revenues caused by the strikes on various lines during the summer months of 1916. The surface lines in Manhattan alone showed a falling off of $3,568,113 in railway operating revenues, and the Bronx surface lines $701,939. A large part of these decreases is attributable to the falling off of traffic during the strike period. On the rapid transit lines, where the strike agitation was of shortest duration, the gains in revenues were substantial.

The foregoing figures are given in the provisional summary just issued by the Public Service Commission for the First District of New York. This summary, prepared from the quarterly reports of the carriers, is shown in part in the accompanying table. Some of the minor companies in each group are not shown in detail, although they are represented in the totals for boroughs and in the final totals for the whole city.

For the quarter ended June 30, 1917, the railway operating revenues at $26,604,367 showed an increase of $573,619. The expenses at $14,359,388, however, increased $913,231. The net corporate income totaled $3,581,584, a gain of $304,537. The railway operating revenues and operating expenses of some of the larger companies in the Metropolitan district for this quarter follow:

	Railway Operating Revenues		Operating Expenses	
	Amount	Increase	Amount	Increase
Hudson and Manhattan.	$1,085,450	$58,600	$470,099	$84,321
Interborough—Subway. .	5,644,499	558,578	2,181,510	398,290
Elevated .	4,645,254	298,461	2,176,992	347,075
Brooklyn Rapid Transit..	7,762,285	291,770	4,630,737	195,362
New York Railways....	3,137,903	*361,009	1,879,744	*251,434
Third Ave. (Manhattan).	1,052,752	*19,333	638,135	145,937
Union Railway (Bronx)..	748,027	*49,207	462,541	*27,020

*Denotes decrease from corresponding period in 1916.

Loyal Line Sale Offer

The Board of Public Works of Seattle, Wash., has received an offer from Harry Whitney Treat, president of the Loyal Railway, to sell the Loyal Heights line to the city for $70,000 payable in utility bonds, interest and principal to be secured by the revenues of the Municipal Railway System. The offer was made to the board following its call for bids for construction of a municipal railway extending from Market Street in Ballard to the north city limits at Thirty-second Avenue N. W., and West Eighty-fifth Street. The Treat bid was not opened by the board because of a request from Meacham & Babcock, Seattle, that they receive time to submit a bid for a line on Twenty-second Avenue N. W., from Market Street. Mr. Treat made a similar sale offer to the Council on Sept. 7, 1911. At that time A. L. Valentine, superintendent of utilities; Councilman George R. Cooley and Councilman A. F. Haas were delegated to value the property. They reported to the Council that the line, with all its equipment, was worth $39,180, and could be reproduced for $53,355. Steps have been taken by the City Council to provide a bond issue to cover the cost of purchase of the Loyal Heights line or to construct a new line.

The Loyal Heights line is operated on Twentieth Avenue Northwest from Market Street to West Sixty-seventh Street on the tracks of the Western Washington Power Company, for which the Loyal Heights Company is obligated to pay 11 cents a mile for each car and in addition 2 cents a kilowatt-hour for power. The contract which the Loyal Heights company has with the Western Washington Power Company was made on May 1, last, for a period of five years, and may be canceled by either party to the agreement on ninety days' notice.

Abilene (Tex.) Street Railway.—A. Blum, Galveston, and others, bondholders of the Abilene Street Railway, have filed suit in the district court at Abilene praying for the appointment of a receiver for the company.

Barcelona Traction, Light & Power Company, Ltd., Toronto, Ont.—According to the report of the Barcelona Traction, Light & Power Company, Ltd., for the calendar year 1916, the results of the controlled tramways in Barcelona showed the usual improvement. They earned a surplus over the common stock dividend which the holding company guarantees. The Sarria Electric Railway & Tramway showed a steady increase in receipts. The unrest in Spain has not so far affected the working of the properties. The shares of the Barcelona tramway system purchased by the

FINANCIAL AND OPERATING DATA OF ELECTRIC RAILWAYS IN NEW YORK CITY FOR YEAR ENDED JUNE 30, 1917

COMPANY	RAILWAY OPERATING REVENUE*		OPERATING EXPENSES*		RAILWAY TAXES	NET CORPORATE INCOME*		REVENUE CAR-MILES		NUMBER OF TRANSFERS COLLECTED	REVENUE PASSENGERS	
	Amount	Year's Increase	Amount	Year's Increase		Amount	Year's Increase	Amount	Year's Increase		Amount	Year's Increase
HUDSON & MANHATTAN	$4,242,277	$331,769	$1,756,407	$241,420	$294,064	§$718,444	$30,980	8,178,711	210,999	....	68,556,999	5,263,465
INTERBOROUGH (Subway....	21,454,892	2,097,640	8,117,602	1,242,410	801,511	§§8,885,358	172,031	73,671,808	1,630,672	....	414,193,992	42,688,674
(Elevated...	18,411,253	1,876,978	8,465,690	1,332,716	2,069,873			72,259,243	2,951,234	....	349,380,093	37,133,297
BROOKLYN RAPID TRANSIT..	30,040,420	1,574,676	18,156,639	1,097,025	1,968,683	2,708,980	D417,139	100,018,941	D1,461,491	182,174,138	591,607,524	28,261,198
MANHATTAN SURFACE ROADS.	18,609,674	D3,568,113	12,944,391	D374,084	1,617,888	D1,056,952	D1,382,128	44,641,948	D8,929,118	104,558,486	349,788,114	D77,585,733
New York Railways......	11,494,109	D2,220,422	7,868,809	D505,268	1,032,011	D148,052	D2,813	28,918,483	D5,442,503	85,088,109	229,539,683	D45,241,508
Second Avenue	747,092	D131,556	‡618,155	6,899	65,193	D‡123,484	D132,991	2,718,197	D323,205	815,874	15,204,764	D2,844,315
Third Avenue (incl. Kingsbridge)........	3,574,344	D491,139	‡2,239,170	69,833	309,748	D‡264,208	D480,840	5,772,527	D1,305,023	6,653,814	43,109,017	D11,170,827
BRONX SURFACE ROADS† ..	3,769,485	D701,939	3,062,742	88,189	245,457	D424,701	D796,328	14,087,460	D2,614,381	30,501,260	71,153,027	D13,382,710
New York City Interboro.	634,962	D93,207	‡506,485	83,340	44,722	D‡91,128	D178,772	2,252,107	D357,678	4,740,895	13,254,058	D1,993,164
Union (incl. Bronx Traction)........	2,513,512	D395,535	‡1,978,153	40,852	156,826	D‡98,439	D427,996	9,127,319	D1,539,833	21,887,502	47,083,709	D7,718,742
Westchester Electric	422,291	D157,938	‡376,499	D64,733	31,413	D‡170,567	D101,407	1,881,391	D589,819	1,975,632	6,867,645	D2,555,620
(Yonkers)........	563,400	D205,109	‡494,548	D33,846	31,962	D‡187,529	D189,764	2,233,851	D681,781	3,311,471	10,930,110	D4,201,170
QUEENS SURFACE ROADS (excl. B. R. T.)........	2,580,246	D136,560	2,321,468	D12,094	118,334	D462,279	D216,370	10,411,869	D447,038	8,087,115	50,906,681	D3,260,722
New York & Queens Co ...	1,273,583	D162,180	1,304,404	D74,553	57,523	D384,400	D89,830	5,604,524	D542,566	7,571,232	25,179,452	D3,194,156
New York & Long Island...	417,756	D4,104	357,364	20,179	21,607	D29,926	D26,921	1,662,931	D10,255	94,116	7,395,930	D898,595
New York & North Shore..	158,361	D7,985	‡108,832	5,495	11,603	D8,882	D10,914	596,234	D14,270	147,191	2,756,567	D144,963
Manhattan & Queens......	328,102	36,286	232,041	34,292	12,273	D‡19,883	D85,857	1,128,405	128,274	....	8,093,565	923,367
OTHER COMPANIES	1,075,533	81,149	891,551	62,503	69,040	60,072	D1,403	3,939,068	D118,439	2,432,107	23,225,796	959,142
Richmond Light & R. R ..	429,751	22,201	320,534	30,608	21,804	140,802	D8,972	1,512,743	D49,130	1,746,960	8,346,914	396,630
Staten Island Midland	341,623	D1,446	317,057	18,868	16,516	D59,999	D32,942	1,682,342	D45,382	685,147	6,672,468	D49,935
Grand total†	$100,183,784	$1,555,599	$55,716,495	$3,678,088	$7,184,852	$10,428,921	D$2,610,358	327,209,048	D8,777,562	327,753,106	1,918,812,226	20,076,611

D—Decrease or deficit.

*The totals for boroughs, "systems," etc., have been made without deducting intercompany transactions.

†Exclusive of Yonkers Railroad.

‡No charge included for depreciation in addition to actual disbursements for repairs.

§Balance applicable to adjustment income bonds.

§§Exclusive of $217,295 for the year, deficit from operation of subway lines to which company is entitled under Contract 3.

holding company are still held as security for the balance of the purchase price and will probably remain so until after the war.

Catskill (N. Y.) Traction Company.—George B. Austin, president of the Chamber of Commerce of Catskill, reports that the committee appointed by that body to inquire into the situation confronting the Catskill Traction Company was not successful in interesting local capital in the matter to an amount sufficient to take over and operate the railway. The property was sold recently under foreclosure to Joseph Joseph & Brothers Company, New York, who will now proceed to dismantle and scrap the line.

Chambersburg, Greencastle & Waynesboro Street Railway, Waynesboro, Pa.—The Maryland and Pennsylvania Public Service Commissions have approved the sale of the Chambersburg, Greencastle & Waynesboro Street Railway to the Hagerstown & Frederick Railway.

Detroit (Mich.) United Railway.—The $600,000 of 6 per cent bonds of the Detroit, Ypsilanti & Ann Arbor Railway, controlled by the Detroit United Railway, which came due on Nov. 1, were paid at maturity at the office of the Union Trust Company, Detroit. In connection with this payment, the Detroit, Jackson & Chicago Railway will issue $600,000 of 5 per cent consolidated mortgage bonds, dated Feb. 1, 1907, due Feb. 1, 1937.

Fort Wayne & Northern Indiana Traction Company, Fort Wayne, Ind.—Holders of the first and refunding mortgage 5 per cent twenty-year gold bonds, preferred stock, common stock and dividend certificates of the Fort Wayne & Northern Indiana Traction Company have been notified that a committee, consisting of William A. Tucker, Jay Cooke, J. Levering Jones, Randal Morgan, Thomas E. Murray and Henry Sanderson, has been formed to represent the security holders in the reorganization of the company. Bond and stockholders are urged to deposit their securities with the Central Trust Company, New York, under a protective agreement now on file with the depositary. The reasons for the Fort Wayne interest default were reviewed at length in the ELECTRIC RAILWAY JOURNAL of Sept. 15, page 457.

Mahoning & Shenango Railway & Light Company, Youngstown, Ohio.—Lee, Higginson & Company, Boston, Mass., are offering at 94 and interest to yield 7.35 per cent $500,000 of first and consolidated mortgage 5 per cent gold bonds of the Mahoning & Shenango Railway & Light Company dated Nov. 1, 1915, due Nov. 1, 1920, but callable as a whole, but not in part, at 101 and interest on sixty days' notice. The Guaranty Trust Company, New York, N. Y., is trustee under the mortgage securing the bonds. The first and consolidated mortgage bonds are preceded by $5,250,000 of underlying divisional mortgage bonds and are followed by $3,500,000 of 7 per cent preferred stock and $10,628,600 of common stock.

Manhattan & Queens Traction Corporation, New York, N. Y.—Arthur C. Hume, New York, was appointed receiver of the Manhattan & Queens Traction Corporation on Nov. 15 by Judge Hatfield of the United States District Court for the Eastern District of New York. Mr. Hume is also receiver of the South Shore Traction Company, the franchises and physical property of which were purchased by the Manhattan & Queens Traction Corporation. Mr. Hume, as receiver of the South Shore Traction Company, has a suit pending in the Federal Court at Brooklyn to recover $1,750,000 from the city of New York for damages to the company through hindrance during the construction period.

Minneapolis, St. Paul, Rochester & Dubuque Electric Traction Company, Minneapolis, Minn.—Federal Judge Booth on Nov. 13 granted the petition of the Continental & Commercial Trust & Savings Bank, Chicago, to have $135,000 disbursed among the holders of collateral notes against the Minneapolis, St. Paul, Rochester & Dubuque Electric Traction Company. Receiver C. E. Warner was ordered to turn over that amount to the Minneapolis Trust Company.

Northumberland County Traction Company, Sunbury, Pa.—The property of the Northumberland County Traction Company included in the system of the Sunbury & Susquehanna Railway, was sold under foreclosure recently at Philadelphia for $200,000 to bondholders.

Owensboro (Ky.) City Railroad.—Receivership for the Owensboro City Railroad is believed to have been averted by the action of the directors of the company in arranging to have the holders of the general mortgage bonds of the company forego their interest for the next three years. The bonds outstanding amount to $200,000. Instead of paying out the $36,000 in interest, that sum, it is said, will be used in improving the system. It is probable also that the plan of selling six tickets for a quarter will be discontinued at an early date.

Philadelphia (Pa.) Rapid Transit Company.—Judge Dickinson of the Federal Court has ruled that federal taxes to the amount of $73,759 should be returned to three underlying companies of the Philadelphia Rapid Transit Company on the ground that they had been collected illegally. The companies involved were the Market Street Passenger Railway, the Union Traction Company and the Philadelphia Traction Company. It was argued that the corporate existence of the complainant companies was kept only to receive income for disbursement among their stockholders and for the conduct of normal transactions. In upholding the companies, Judge Dickinson awarded full interest on the taxes from 1913. Assistant United States Attorney Kremp has announced he will appeal from the decision.

Quebec Railway, Light, Heat & Power Company, Ltd., Quebec, Canada.—The gross earnings from operation of the Quebec Railway, Light, Heat & Power Company for the year ended June 30, 1917, totaled $1,832,032 as compared to $1,731,732 in 1916. This was an increase of $100,299 or 5.8 per cent for the last year. After the addition of miscellaneous income amounting to $230,851, the total revenue from all sources at $2,062,883 represented an increase of $94,281. The operating and maintenance expenses, however, showed a greater increase, for the amount in the last year of $1,155,969 was greater by $126,218 than that in the year before. The fixed charges and taxes totaled $706,326, leaving a net surplus of $200,587 for the year. This compares with a net surplus of $215,403 in the year preceding. After making provision for obsolete cars on certain divisions, discount account, etc., there remained a total credit to surplus account of $684,572. The maintenance expenses during the year totaled $226,366, and the sum of $302,663 was expended on capital account.

Seattle (Wash.) Municipal Railway.—The bond issue of $40,000, required for the extension of the Seattle Municipal Railway to Leary Avenue and Market Street in Ballard, has been oversubscribed by the people of Seattle. The bonds were sold on terms of 10 per cent cash, 45 per cent payable on Dec. 1 and 45 per cent payable on Jan. 1. The largest single purchase was for $2,000. Many payments were made with Liberty bonds, which the city arranged to accept at par as cash.

Shore Line Electric Railway, Norwich, Conn.—The Shore Line Electric Railway of Rhode Island, for which a charter was secured as noted in the ELECTRIC RAILWAY JOURNAL of May 5, page 844, has organized with R. W. Perkins as president. The separate company in Rhode Island will absorb all the rights possessed by the Pawcatuck Valley Street Railway, Ashway & Westerly Railway and the Westerly & Connecticut Railway, all owned previously by the Norwich & Westerly Traction Company.

Springfield (Mass.) Street Railway.—The Massachusetts Public Service Commission has authorized the Springfield Street Railway to issue mortgage bonds to an amount not to exceed $3,275,000, payable twenty years from their date and bearing interest at not more than 6 per cent per annum. The proceeds of bonds amounting to $2,305,000 will be applied exclusively to the payment, refunding or retiring of bonds issued by the Springfield Street Railway, the payment of which has been assumed by that company by reason of the purchase of railway property or franchises of certain other electric railways, including the Springfield Street Railway, the Western Massachusetts Street Railway, the Springfield & Eastern Street Railway and the Woronoco Street Railway. The proceeds of bonds amounting to $970,000 will be devoted exclusively to pay for borrowed money, to liquidate indebtedness incurred for additions and betterments and to fund floating debt incurred in providing the Springfield Street Railway with working capital.

Electric Railway Monthly Earnings

ATLANTIC SHORE RAILWAY, SANFORD, ME.§

Period		Operating Revenue	Operating Expenses	Operating Income	Fixed Charges	Net Income
1m., Oct.,	'17	$11,804	$11,187	$617	$431	$186
1 " "	'16	25,367	24,173	1,194	668	526

BATON ROUGE (LA.) ELECTRIC COMPANY

1m., Sept.,	'17	$19,710	*$9,919	$9,791	$3,601	$6,190
1 " "	'16	17,285	*8,352	8,933	3,257	5,406
12 " "	'17	227,917	*112,537	115,380	42,507	72,873
12 " "	'16	208,123	*103,899	104,224	38,958	65,266

BERKSHIRE STREET RAILWAY, PITTSFIELD, MASS.

1m., Sept.,	'17	$106,759	*$89,655	$17,104	$27,382	†‡$10,137
1 " "	'16	90,489	*72,639	17,850	27,700	†‡9,652
9 " "	'17	834,909	*714,807	120,102	247,788	†‡126,590
9 " "	'16	747,307	*612,439	134,868	233,892	†‡97,294

BROCKTON & PLYMOUTH STREET RAILWAY, PLYMOUTH, MASS.

1m., Sept.,	'17	$11,699	*$11,032	$667	$1,259	†$592
1 " "	'16	12,496	*9,569	2,927	1,102	1,825
12 " "	'17	124,645	*122,916	1,729	14,231	†12,502
12 " "	'16	120,778	*104,789	15,988	13,240	2,748

CAPE BRETON ELECTRIC COMPANY, SYDNEY, N. S.

1m., Sept.,	'17	$39,805	*$25,628	$14,177	$6,551	$7,626
1 " "	'16	33,804	*18,190	15,614	6,568	9,046
12 " "	'17	443,606	*274,101	169,505	78,701	90,804
12 " "	'16	385,443	*225,937	159,506	78,507	80,999

CLEVELAND, PAINESVILLE & EASTERN RAILWAY, CLEVELAND, OHIO

1m., Sept.,	'17	$52,596	*$33,414	$19,182	$11,565	$7,617
1 " "	'16	43,680	*25,083	18,597	11,454	7,142
12 " "	'17	409,407	*250,536	158,871	105,146	53,725
12 " "	'16	351,576	*195,925	155,651	102,553	53,098

COLUMBUS (GA.) ELECTRIC COMPANY

1m., Sept.,	'17	$91,872	*$39,153	$52,719	$31,101	$21,618
1 " "	'16	77,658	*30,491	47,167	28,630	18,537
12 " "	'17	1,037,936	*396,824	641,112	349,619	291,493
12 " "	'16	829,894	*341,144	488,750	344,041	144,709

CONNECTICUT COMPANY, NEW HAVEN, CONN.

1m., Sept.,	'17	$847,274	*$657,593	$189,681	$102,429	‡$109,525
1 " "	'16	847,871	*619,080	228,791	97,959	‡181,761
12 " "	'17	7,580,645	*5,868,535	1,712,110	880,593	‡984,934
12 " "	'16	7,186,358	*4,976,086	2,210,272	886,674	‡1,526,772

EASTERN TEXAS ELECTRIC COMPANY, BEAUMONT, TEX.

1m., Sept.,	'17	$77,984	*$44,016	$33,968	$12,058	‡$24,299
1 " "	'16	72,387	*37,777	34,610	8,753	25,857
12 " "	'17	921,734	*504,460	417,274	128,470	‡300,115
12 " "	'16	817,376	*432,879	384,497	106,292	278,205

EL PASO (TEX.) ELECTRIC COMPANY

1m., Sept.,	'17	$105,017	*$67,806	$37,211	$6,592	$30,619
1 " "	'16	92,264	*60,949	31,315	5,120	26,195
12 " "	'16	1,278,051	*767,460	510,591	63,385	447,206
12 " "	'17	1,068,260	*622,131	446,129	55,807	390,322

FEDERAL LIGHT & TRACTION COMPANY, NEW YORK, N. Y.

1m., Sept.,	'17	$237,357	*$179,256	$58,101	$50,583	$7,518
1 " "	'16	203,099	*134,446	68,653	49,298	19,355
9 " "	'17	2,036,089	*1,427,568	608,521	442,709	165,812
9 " "	'16	1,860,223	*1,251,301	608,922	438,526	170,396

GALVESTON-HOUSTON ELECTRIC COMPANY, GALVESTON, TEX.

1m., Sept.,	'17	$185,632	*$118,288	$67,344	$38,084	$29,360
1 " "	'16	159,844	*102,747	57,097	36,587	20,510
12 " "	'17	2,002,741	*1,329,485	673,256	446,116	227,140
12 " "	'16	1,932,169	*1,228,006	704,163	437,883	266,280

HOUGHTON COUNTY TRACTION COMPANY, HOUGHTON, MICH.

1m., Sept.,	'17	$28,607	*$18,269	$10,338	$5,085	$5,253
1 " "	'16	26,730	*15,175	11,555	5,240	6,315
12 " "	'17	341,753	*206,608	135,145	61,795	73,350
12 " "	'16	317,341	*179,209	138,132	64,760	73,372

JACKSONVILLE (FLA.) TRACTION COMPANY

1m., Sept.,	'17	$54,794	*$38,893	$15,901	$15,778	$123
1 " "	'16	50,147	*35,316	14,831	15,400	†569
12 " "	'17	668,171	*448,290	219,881	187,862	32,019
12 " "	'16	621,079	*423,758	197,321	181,606	15,715

NORTHERN OHIO TRACTION & LIGHT COMPANY, AKRON, OHIO

1m., Sept.,	'17	$553,468	$347,053	$206,415	$73,504	$132,910
1 " "	'16	446,666	241,405	205,261	90,117	115,143
9 " "	'17	4,736,521	2,912,734	1,823,787	701,368	1,122,419
9 " "	'16	3,780,743	1,888,573	1,892,170	857,521	1,034,649

REPUBLIC RAILWAY & LIGHT COMPANY, YOUNGSTOWN, OHIO.

1m., Sept.,	'17	$426,250	*$280,674	$145,576	$87,100	‡$63,948
1 " "	'16	334,443	*183,689	150,754	69,022	‡82,177
12 " "	'17	4,536,528	*2,944,934	1,591,594	957,608	‡683,362
12 " "	'16	3,817,024	*2,220,241	1,596,783	791,164	‡820,721

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*Includes taxes. †Deficit. ‡Includes non-operating income. §On May 1, the Atlantic Shore Railway was divided at York Beach, the western end passing to the operating control of the Portsmouth, Dover and York Street Railway. The 1916 figures are for the entire system; the 1917 ones for the system as now constituted.

Traffic and Transportation

Fare Increase Allowed in New Jersey

Commission Authorizes Bridgeton & Millville Traction Company to Abolish Six Tickets for a Quarter—Comment on Trenton Case

The Board of Public Utility Commissioners of New Jersey has authorized the Bridgeton & Millville Traction Company to abolish six tickets for a quarter and fifty for $2, and establish in lieu thereof a straight 5-cent fare. The application of the company is granted because the board found that there was no contract to prevent a higher rate of fare, and because the company has not earned sufficient money to give an adequate return on the capital invested.

DIFFERENCE BETWEEN BRIDGETON AND TRENTON CASES

This decision is of interest in view of the attempt of the Trenton & Mercer County Traction Corporation to establish a 5-cent fare and cancel its franchise contract with the city of Trenton, which requires it to sell six tickets for a quarter. In disposing of the Bridgeton case, the commission makes direct references to one of the fundamental differences between this application and that of the Trenton corporation. In the Bridgeton case there were no contractual obligations to give six tickets for a quarter, while in the Trenton case such an obligation has been held to exist. In the Trenton case, which has gone through the Supreme Court on review of the utility board's refusal to allow abolition of the six tickets for a quarter, Justice Swayze held, in effect, that the company had made a solemn contract with the city of Trenton to give six tickets for a quarter and that if the company was unable to earn enough money with this rate of fare it was the company's fault. On the point of contractual obligation, referring directly to the Trenton & Mercer County Traction Corporation, the commission says:

"Numerous ordinances obtained by the electric railway from the several municipalities it served were offered in evidence. There is no reference in any of them to the rate of fare to be charged excepting the ordinance of the city of Bridgeton granting a franchise to the Bridgeton Rapid Transit Company, which contains a provision that the rate of fare shall not exceed 5 cents. The present case, therefore, does not raise the question of the contractual obligations between the company and the municipalities that were discussed in the cases of the Trenton & Mercer County Traction Corporation and the Northampton, Easton & Washington Traction Company."

In the case of the Bridgeton & Millville Traction Company the commission finds that the earnings of the company from 1900 to June, 1917, show no substantial increase. In 1907 the gross earnings were $121,357, as compared with $121,252 in 1917. During the ten-year period they were as low as $107,891, in 1901, and as high as $125,897, in 1913. The company has paid no dividends for the last two years. Its average rate of dividends earned for this period was 1.86 per cent on its capital stock.

WHAT A PUBLIC UTILITY SHOULD BE ALLOWED TO EARN

The decision of the commission in the Bridgeton & Millville case carries some comment as to what a public utility should be allowed to earn. On this point the decision says:

"A public utility should be allowed to earn enough revenue to provide for the following outgo, viz.: (1) Reasonable operating expenses sufficient to provide for conducting its business and for current repairs and maintenance. (2) Taxes imposed upon it. (3) A sum sufficient to provide for annual depreciation accruing over and above current repairs and maintenance, in order to preserve investment intact. (4) A return on investment sufficient to command needed capital.

"It must have items one and two very early in its history. Items three and four are frequently not received until the utility is fairly well developed. In the long run, however, all four items must be earned by the utility; if not, its capital becomes impaired, it cannot secure money for replacements or extensions, it will cease to furnish the service for which it is organized, and the public will be deprived of such service.

"In determining whether the discontinuance of the sale of six tickets for a quarter should be permitted, the need of additional revenue to meet public requirements, especially for better service, must receive consideration. The present high cost of operation shows no sign of recession. The board must meet existing conditions in a practical manner."

Controversy Over Heating Cars

Brooklyn Rapid Transit Company Seeks Relief from Commission Order—Test Under New Conditions Allowed

The Brooklyn (N. Y.) Rapid Transit Company on Nov. 14 asked the Public Service Commission for the First District of New York to suspend its heating order during the rush hours. J. J. Dempsey, superintendent of the elevated lines of the company, explained to the commission that it is not proposed to stop heating the cars altogether, but to heat them probably an hour before they were placed in service for the rush hours so that only a small percentage of the energy now used for heating would be necessary to maintain the temperature at a reasonably comfortable figure. He said that to furnish heat for all cars in accordance with the original commission order would mean the consumption of from 100 to 400 tons of coal a day, according to the weather, or the expenditure of about 30 per cent of the total output for heating alone. Only in exceptionally cold weather would it be necessary under the plan suggested by the company to have more than two points of heat in the cars, and much of the time only one point would be necessary. The commission put the matter over for a further hearing on Nov. 19.

The commission on Nov. 21 approved the plan of the company for the test of proposed new heating arrangements on its cars. The commission directed also that the test contemplated be put into operation under the following provisions:

PROVISIONS OF THE TEST

The plan of the company is to heat a few cars at the depot to a certain temperature, then turn off the heat and send the cars out.

The cars on which such tests are to be made shall not number more than three on each surface line during each rush hour, and two complete trains on each elevated or subway line.

The cars shall be selected by the electrical engineer and the chief of the transit bureau of the commission.

The tests shall be made between the hours of 7 and 9 a. m. and 5 and 7 p. m. on each week day, and shall continue during the next two weeks or such further period as the commission shall prescribe.

The electrical engineer and the chief of the transit bureau of the commission will direct and supervise the tests and they shall have the power of prescribing the manner of making the tests and record their results.

Full and complete records shall be kept, showing the tests made, the lines, type of car, testing conditions, number of passengers carried on each car, the temperature inside and outside the cars at suitable intervals, and any other relevant facts, all of which shall be submitted to the commission at the adjourned hearing in the case on Dec. 2.

The representative of the commission on any test car shall have the power at any time to order the test on that car terminated and to require heat turned on to the extent deemed necessary.

The commission specifically states that it shall not deem as a violation of any provision of the heating order of April 26, 1912, any act or omission of the company or of any of its officers and employees with reference to any car used in such experimental test and displaying such sign, nor any temperature maintained in such car during any period of the experiment.

The present order of the commission requires the company to maintain a temperature of not less than 40 deg. Fahr., or more than 65 deg. from Oct. 15 to April 15. The order is effective except when the company is prevented from complying with it by storm, accident or other emergency beyond the company's control.

THE NEW MAYOR OBJECTS

On Nov. 16 Mayor-elect John F. Hylan sent a letter to Oscar A. Straus, chairman of the commission, in which he said that he felt certain the commission would not grant the suspension of the heating order and that the commission would see to it that the law was properly enforced and that cars were properly heated as the health of the community demanded. He said:

"If the transit corporations do not live up to the law I will ask the proper authorities to take action."

The Mayor-elect was invited by Mr. Straus to attend the hearing on Nov. 19 but he was unable to be present.

On Nov. 20, the Mayor-elect made additional comment in regard to his position on the request of the company for relief from the heating requirements of the commission. He is reported to have said:

"If the Public Service Commission does not compel the Brooklyn Rapid Transit Company to heat its cars during the coming winter, as required by law, I shall ask all the civic bodies of New York City to accompany me to Albany to ask for the removal of the commission."

Petition for Re-establishment of Through Service Dismissed

Boston Company Not Required to Establish Long and Circuitous Surface Line—In Another Case Discontinuance of Service Is Not Approved

A petition of the Mattapan Civic Improvement Association for the re-establishment by the Boston Elevated Railway of through service formerly operated between Mattapan Square and the North Station via the Dorchester and downtown surface routes has been dismissed by the Massachusetts Public Service Commission. The company discontinued normal-hour service on this line in 1912, but gave rush-hour service over it in each direction until the spring of 1916. Transportation facilities in the Mattapan-Franklin Park district have been improved in recent years by the building of an island transfer station at Franklin Park, where the through line mentioned in the petition branched off the main line from Mattapan to the rapid transit elevated stations in the southern part of the city. With the opening of the Egleston Square Terminal the Dudley Street line from Mattapan was diverted to that point and the service was increased by operating two-car surface trains on a four-minute surface headway.

CHANGES IMPROVE SERVICE

The petitioners admitted that these changes gave greatly improved service to about 12,000 passengers who travel daily between Mattapan and downtown Boston. Counts show that about 550 passengers daily travel from the Mattapan district to the Dorchester-South Station district over the route in question in the petition. The board recognizes that these are inconvenienced by the absence of through service, but says that "any attempt to operate a surface line of more than 7.5 miles in length over a circuitous route and narrow and congested city streets is bound to result in slow, irregular and generally unsatisfactory service. Moreover, such service is wasteful to operate and could not be furnished with the company's available equipment and facilities, except by depriving other communities of needed service."

It is expected that the Dorchester Tunnel will be completed to Andrew Square in the near future, and in connection with the rearrangements of service which will then become necessary, it may be found possible to operate a through line from Mattapan Square to Andrew Square, which the board thinks would meet all reasonable demands of the petitioners in the present case. The present petition is dismissed.

The commission has issued a finding disapproving two petitions of the Boston Elevated Railway for discontinuance of service on the Fields Corner-Dorchester Street and Harvard Square-Cottage Farm-Park Street Boston lines. The board had previously refused to allow the company to discontinue these services (February and July, 1916). No evidence was presented by the company of any rearrangements of its service or any change in local conditions which would warrant a reversal of the former orders, the board states. It was, however, suggested by the company that war conditions might make it necessary to curtail service, owing to the inability of the company to obtain the necessary labor, fuel and supplies. The commission holds that any change in present methods of operation upon that ground would appear to be premature. Petitions may be renewed later if necessary.

"L" Fare Increase to Be Sought

Basis of Increase for Chicago Elevated Lines Will Probably Be Through the Establishment of Fare Zones

Plans are beginning to take definite form whereby the Chicago Elevated Railroads will make application to the Public Utilities Commission of Illinois for an increase in the rate of fare. At the present time a considerable portion of the passengers ride a distance of 7 to 10 miles on a single fare of 5 cents, and there is also a large amount of riding between different sections of the city which involves a haul of 15 and even 20 miles for a single fare. The average length of haul on the entire elevated system is 6.48 miles. It is this long-distance traffic which is particularly unprofitable to the company. It is therefore probable that the means sought of increasing the revenue to meet the greatly increased operating expenses will be an adoption of a zone system whereby passengers will pay a fare commensurate with the length of ride beyond a certain 5-cent zone limit.

Company Upheld in Fare Case

Discontinuance of Four-Cent Tickets by Seattle Company Under Commission Order Sustained by Court

The recent action of the State Public Service Commission at Olympia, Wash., in permitting the Puget Sound Traction, Light & Power Company to abolish the 4-cent fare in Seattle, has been upheld by Judge John R. Mitchell of the Thurston County Superior Court, who has dismissed the complaint of the city of Seattle against the commission's order. Corporation Counsel Hugh M. Caldwell has advised the City Council that he will immediately give notice of appeal to the State Supreme Court.

What the Court Held

The city contended that because the sale of 4-cent commutation tickets is required by the company's franchise, granted by the city of Seattle, the Public Service Commission has not the power to authorize the discontinuance of such tickets and that, even if the commission had the power, it was not warranted in doing so under the proof. In handing down his decision, Judge Mitchell said:

"This is clearly a case in which the State is exercising its general police power. I take it to be generally settled that the police power of the State is superior to and independent of the written law, whether constitutional or legislative, a thing that cannot be bartered away, that the State cannot divest itself of, and that once having delegated that power, it may again assume it and exercise it through legislative enactment. I think there is no doubt of the power of the Public Service Commission to dismiss a protest against that action of a common carrier by which it has, according to the plan and schedule of the law, filed a supplemental passenger tariff increasing its rates, deemed reasonable by the commission.

"On the proposition that the proof in the case does not justify the order, little need be said. The proof was ample if convincing to the commission, and clearly it was. The findings and conclusions of the commission as to the facts are invested with the presumption of verity, and no court would undertake to disturb them in this case."

The City Attorney Objects

Mr. Caldwell asserts that the opinion "makes no mention of the contention of the city that the express provision of the public service law relative to commutation tickets withholds from the commission the power to eliminate the 4-cent commutation ticket." He further says:

"In other words, the court holds that, no matter how biased a commission may be, if the evidence, no matter what its character, convinces the commission, the court will not interfere. Also that the commission may substitute some haphazard assumption of value in place of the one contemplated by the statute. We are unable to believe that this is the law, and will accordingly appeal from Judge Mitchell's decision to the Supreme Court."

Progress on Indianapolis Fare Case

A Complete Inventory of the Property of the Indianapolis Traction & Terminal Company Required by Indiana Commission

In connection with the petition of the Indianapolis Traction & Terminal Company for a straight 5-cent fare on its lines in the city of Indianapolis, filed with the Public Service Commission of Indiana on Nov. 15, the commission on Nov. 17 issued an order to the company instructing it to file, before Dec. 19, a detailed inventory of all of its property. A copy of the petition filed with the Public Service Commission, asking permission to abrogate that part of its franchise relating to fares and that it be permitted to charge a uniform 5-cent fare, retaining the usual transfer privileges, has been forwarded by the commission to the city of Indianapolis.

On Nov. 19 the City Council of Indianapolis adopted resolutions appealing to the Public Service Commission of Indiana to refuse to grant the petition for a 5-cent fare filed by the Indianapolis Traction & Terminal Company, and also the petition of the Union Traction Company of Indiana asking permission to charge a fare of 7 cents on the Indianapolis-Broad Ripple line for passengers riding north of Fairfield Avenue, which is the point of connection between the tracks of the Union Traction Company and the Indianapolis Traction & Terminal Company.

Hearing Nov. 30 on Class Rates

Eight Interurban Roads in Indiana Seek 15 Per Cent Increase in Class and Commodity Freight Rates

A consolidated hearing on petitions filed by eight interurban electric railways operating in Indiana for an increase of 15 per cent in class and commodity freight rates will be held before the Public Service Commission on Nov. 30. The petitioners are the Terre Haute, Indianapolis & Eastern Traction Company, Ohio Electric Railway, Union Traction Company of Indiana, Fort Wayne and Northern Indiana Traction Company, Fort Wayne & Decatur Traction Company, Chicago, South Bend & Northern Indiana Traction Company, Southern Michigan Railway and the Indianapolis & Cincinnati Traction Company.

A notice sent out by the commission on Nov. 20 said:

"This is regarded as one of the most important matters now pending before the commission. The first petition was filed by the Terre Haute, Indianapolis & Eastern Traction Company on Sept. 29. The commission wrote the company that the installation of the proposed schedule by the steam railroads was then under investigation and that pending decision in the steam railroad case nothing would be done about electric rates. The final hearing on the 15 per cent petition of steam roads was concluded last week and this matter is now awaiting determination. In the hearing of the petitions of the electric railroads, the commission affords opportunity for full representation by all interested parties who may appear in person or by counsel."

Women on New York Lines

Interborough and New York Railways Prepared to Receive Applications from the Fair Sex

Theodore P. Shonts, president of the Interborough Rapid Transit Company and of the New York (N. Y.) Railways, announced on Nov. 21 that, as a war measure, the companies would receive applications from women for places as station employees on the subway and elevated lines and as conductors on the surface cars. Preference will be given to dependent women relatives of employees now in the army and navy. The pay will be the same as that for men. While it will not be the policy of the Interborough Rapid Transit Company to replace men now employed with women, vacancies in station employees, as they occurred, will be filled with women. Applicants must be between twenty-one and forty-five years old. As for the surface lines, the women conductors will be placed on the pay-as-you-enter cars. In a statement which he issued to the employees, Mr. Shonts said:

PRESIDENT SHONTS' STATEMENT

"The vigorous prosecution of the war by our soldiers and sailors at the front is largely dependent upon the successful carrying on of the nation's industries. The maintenance of an adequate service on the elevated and subway lines of this company is indispensable to the welfare of the city of New York, and to a large degree the effective co-operation of this city with the government at Washington is dependent upon the city's transportation service.

"You who in such large numbers have joined the army or the navy will realize that the work which you formerly performed here, until your return, must be undertaken by others. You probably know that in many of the other countries engaged in this war it has been found necessary to afford to women the opportunity during the war of taking up those duties in civil life which they can perform and which were formerly intrusted to men. This country soon must follow a similar plan if its full strength in the war is to be exerted."

Equipment Used to Better Advantage

General Electric Representatives Show Bay State Men How to Get Most Out of Equipment

Representatives of the General Electric Company have held a series of meetings at Fall River, Brockton, Lawrence and Lynn among the employees of the Bay State Street Railway. Talks on salesmanship and service were made by Charles C. Peirce of the General Electric Company, and special instructions in the efficient use of power and the air brake were given by J. C. Thirlwall and Mr. Queeney of the same company. More than 300 men received instruction at the hands of the General Electric experts. The work will now be carried on by Mr. Huff and thirteen operating motormen. These motormen will not be taken off their regular runs, but whenever a new man is hired they will give him the instruction he needs. R. B. Stearns, first vice-president of the company, in a statement to the men recently on the results obtained, said in part:

"Motormen who received this special instruction found that they could get much better results. One motorman on the Lawrence-Salem line who was five minutes late and who would be much later when he arrived at his destination turned to Mr. Huff, and asked him to take the car. Mr. Huff, using the ideas suggested by the General Electric experts, not only made up the five minutes but brought the car in on time.

"This is only one example. You can see that cars that run on schedule time will give much better service to the public, eliminate waste, and save many thousands of dollars in the course of a year.

"What will you get out of this? That is a logical question. This saving will mean that there will be more money for the company to distribute in wages. You can see clearly that every dollar you save and every extra dollar you earn for the company is a dollar from which you can get your share. But it is equally true that every dollar you waste and every dollar you fail to earn is a dollar from which you cannot possibly expect to get anything."

Fare Increase Likely in Cleveland

The Cleveland (Ohio) Railway is arranging for an increase of fare after Jan. 1 and has ordered tickets for use when that time arrives. The financial statement of the company indicates that a rate of 4 cents cash or three tickets for 10 cents, with a charge of 1 cent for transfer, without rebate, will be necessary. The need of this change will be especially urgent if the motormen and conductors receive an increase in wages. The offer of an increase of 5 cents an hour from Nov. 1 to May 1, 1919, has been rejected by the men, but it is almost certain that they will bring the matter up in some other shape and further negotiations will be necessary.

The proposed increase in the rate of fare would add about $840,000 a year to the income of the company. The interest fund is now $326,000, but it seems likely that it will drop below the required $300,000 before Jan. 1. This is the zero point on the fare barometer, and when the fund reaches the minimum, the rate of fare increases automatically under the Tayler franchise.

Hearing on Milwaukee Fares

Hearings on the application of the Milwaukee Electric Railway & Light Company, Milwaukee, Wis., to increase electric railway fares were held in Milwaukee on Nov. 7 and 8 and in Madison on Nov. 15 and 16. These hearings were devoted entirely to the examination of the commission's engineers as to the basis and details of their valuation of $37,319,782 on the properties of the Milwaukee Electric Railway & Light Company and Milwaukee Light, Heat & Traction Company as at Jan. 1, 1914. This phase of the inquiry has now been concluded. Hearings are to be resumed on Dec. 3 and continued until all evidence has been presented. No serious criticism was presented at these hearings by the cities and municipalities represented, as to the conclusions reached by the engineers of the commission. In fact, all the testimony tended to show that the unit prices assumed were, if anything, too low.

Jitney a Menace in Dallas

The jitney situation in Dallas, Tex., has reached a point where action of some kind is demanded, according to city officials and the public generally. Since the two regulatory ordinances passed by the city have been rendered noneffective through court action initiated by the Jitney Drivers' Association, the jitneys have been operating at will and unrestrained.

The jitney question has arisen in connection with the plans of the Dallas Railway for improvements under the agreement in the new service-at-cost franchise. The railway has submitted an outline of proposed improvements, and has intimated that the jitney question must be settled before many of these improvements can be carried out.

In discussing the situation, William Doran, commissioner of streets, said:

"I am in favor of putting the jitneys out of business because I believe they are a detriment to the growth of Dallas. They are run recklessly and rapidly, and cause danger to all who ride in them and to all who are on the streets when they pass. Especially do I condemn the privilege of permitting them to operate on streets where electric railways are located. I believe the City Commission can regulate them by prohibiting their operation on streets having electric railway tracks."

The cases now on appeal in the Court of Civil Appeals at Dallas involving the validity of the regulatory jitney ordinances have been advanced and decisions are expected soon. When these cases are out of the way, action by the City Commission looking to the elimination of the jitneys in Dallas can be expected.

The jitney case styled Henry D. Lindsey, Mayor, et al vs. the Dallas Consolidated Electric Street Railway, in which the electric railway sought an injunction to restrain the city officials from enforcing the initiated jitney ordinance adopted on the face of the returns in the recent primaries, was argued on submission to the Court of Civil Appeals during the week ended Nov. 3.

Sleepers on North Shore Road.—The Chicago, North Shore & Milwaukee Railroad, Highwood, Ill., will place a sleeper in service between Chicago and Milwaukee, leaving each city at 10 p. m. Patrons will be allowed to remain in their berths until 7 o'clock the next morning.

Higher Fare in Muscatine.—Announcement has been made by the Tri-City Railway of the discontinuance of the use of six tickets for a quarter in Muscatine, Iowa. The six-tickets-for-a-quarter fare was a voluntary concession made to the residents through the courtesy of the road.

Car-to-Car Transfers in Des Moines.—In an effort to relieve the congestion during work hours which has for several months been acute in Des Moines, Iowa, the Des Moines City Railway is putting car-to-car transfers into effect on four of its lines which duplicate each other for considerable distances.

Application for Increased Fare on Kansas-Missouri Line.—The Joplin & Pittsburg Electric Railway, Pittsburg, Kan., which operates in Kansas and Missouri, has applied to the Public Service Commission of Missouri for authority to increase its passenger rates from 1.93 cents per mile to 2½ cents per mile.

New Joint Passenger Rates Filed.—The Lehigh Valley Transit Company and the Philadelphia & Western Railway, Upper Darby, Pa., have filed joint passenger tariffs with the Public Service Commission of Pennsylvania, effective on Dec. 1, which cancel the limited service rates to Center Square, North Wales, Washington Square and West Point.

One-Man Cars on Iowa Line.—One-man cars have been placed in service by the Fort Dodge, Des Moines & Southern Railroad on its local lines in Fort Dodge, Iowa. As the register now in use collects only coin and the company formerly used tickets it is necessary for the present for the motorman to collect tickets as the passengers enter the car.

Increase in Jitney Fares in Richmond, Va.—An agreement has been signed by a number of jitney drivers in Richmond, Va., raising the fare from 5 cents to 7 cents. The increase in the cost of gasoline, tires and automobile accessories is the reason given for the higher fare. The jitney drivers who refused to sign the agreement say that they are convinced that the public will not pay 7 cents. The results so far seem to bear them out in their contention.

Electric Railway Opposes Bus Service.—In an answer filed by the Springfield (Ill.) Consolidated Railway with the Public Utilities Commission of Illinois opposing the granting of a certificate of convenience and necessity to the Springfield Motor Bus Company, the officials of the railway declare there is no necessity for additional common carriers in Springfield. They deny the charge made by the promoters of the Motor Bus Company that the railway cannot take care of the traffic and that transportation on the cars is unsafe.

One-Man Cars for the Worcester-Warren Line. — The Worcester & Warren Street Railway, of which E. W. Holst, Boston, is consulting engineer in charge of operation, has been authorized by the Public Service Commission of Massachusetts to operate one-man cars over its line. The type approved is of double-end single-truck design, weighing complete about 13,500 lb. and built by the St. Louis Car Company. It has cross seats and a seating capacity of thirty-three passengers, with automatically controlled sander, brakes and doors, 24-in. wheels, an 8-ft. wheelbase, two G.E. 258 motors and K-10-A control.

Increase in Fare Granted in Rutland.—The Public Service Commission of Vermont has approved the application of the Rutland Railway, Light & Power Company for an increase in its electric railway fares from 5 cents to 6 cents for each zone. This will result in an increase of approximately $25,000 a year in gross revenue. A hearing was held in Rutland on Nov. 1 by the commission on the petition of the company for permission to increase its fare. Figures were presented to show that the increase in cost of operation in the last few years and the rise in the prices of materials and higher wages made it necessary to charge passengers more for transportation if a reasonable income was to be derived. Valuation figures were also submitted.

Personal Mention

Roger Mills, superintendent of the Sioux Falls (S. D.) Traction System, has been appointed manager of the company.

John Gibson, master mechanic of the Sioux Falls (S. D.) Traction System, has been promoted to the position of superintendent of the company.

E. A. Fox has been appointed superintendent of electrical distribution of the Charleston Consolidated Railway & Lighting Company, Charleston, S. C.

Edward Coy has been appointed engineer maintenance of way in charge of track, bridges and buildings, for the Chicago, Ottawa & Peoria Railway, Ottawa, Ill.

H. A. Ritter has been appointed master mechanic of the Sioux Falls (S. D.) Traction System. He was formerly connected with the Gary & Interurban Railway, Gary, Ind.

Roy C. Green has resigned as assistant superintendent of the accident department of the Cleveland (Ohio) Railway to become connected with Squire, Sanders & Dempsey, counsel for the railway.

J. G. Felton, electrical engineer of the Charleston Consolidated Railway & Lighting Company, Charleston, S. C., has been appointed engineer of the gas and electrical department of the company.

G. H. Kelsay, superintendent of power of the Union Traction Company of Indiana, Anderson, Ind., has been made electrical engineer in charge of overhead lines, lighting and power circuits and substations.

Homer B. Fisher, former fire marshal of the city of Dallas, Tex., and well known in real estate circles in that city, has been appointed as assistant to Richard Meriwether, general manager of the Dallas Railway.

E. E. Jones has been appointed superintendent of power plant of the Union Traction Company of Indiana, Anderson, Ind. He will have charge of the power stations at Anderson, Newcastle, Winchester, Eaton and Portland, Ind.

A. C. Bradley, superintendent of the northern division of the Pacific Electric Railway, Los Angeles, has also been appointed superintendent of the eastern division of the company to succeed M. P. Groftholdt, the two divisions being consolidated.

F. J. H. Kracke will be appointed by Governor Whitman to the Public Service Commission for the First District of New York to succeed Henry W. Hodge, now in government service. Mr. Kracke is commissioner of plant and structures for the city of New York.

F. P. Dickson, a member of the board of directors of the Kansas City (Mo.) Interurban Freight Terminal Company, has been president of the Kansas City, Lawrence & Topeka Railway since the company was organized ten years ago. Mr. Dickson had previously been in steam road work, and before that had been a coal operator.

Geoffrey Porter has resigned as chief electrical engineer of the British Columbia Electric Railway Company, Ltd., Vancouver, B. C. Mr. Porter intends to take up private practice as advising and contracting engineer, but in the meantime will visit Japan. The company does not intend to appoint a successor to Mr. Porter at present.

M. J. Perrin has been appointed manager of transportation of the San Diego (Cal.) Electric Railway, Point Loma Railroad and San Diego & Coronado Ferry Company. The position of superintendent has been abolished. All departments which have heretofore reported to the superintendent will hereafter report to the manager of transportation.

Charles Bulkley Hubbell will be appointed by Governor Whitman to the Public Service Commission for the First District of New York to succeed William Haywood, now in government service. Mr. Hubbell is a New York City attorney. He was formerly president of the city Board of Education and is a member of Governor Whitman's commission in charge of the building of the new prison at Sing Sing.

Clyde E. Barnes, mechanical engineer of the Spokane & Seattle Railway, which controls the Spokane & Inland Empire Railroad, the Oregon Electric Railway, the Pacific & Eastern Railway, the United Railways and the Oregon Trunk Railway, has enlisted in the United States Navy and has gone to the Philadelphia Navy Yard to qualify for service in the naval patrol.

Leslie R. Coffin, manager of the Whatcom County division of the Puget Sound Traction, Light & Power Company since 1910, with headquarters at Bellingham, Wash., has been ordered to report for duty at the American International Corporation's office in Philadelphia, Pa., in which company officers of Stone & Webster are interested. Mr. Coffin's temporary successor at Bellingham will be J. C. Hector, assistant treasurer of the company in that city.

P. D. Kline, who designed, constructed and placed in operation the Ogden, Logan & Idaho Railway, was its general manager for five years, and then accepted on May 1 the position of manager of the La Crosse district of the Wisconsin-Minnesota Light & Power Company, on Nov. 15 was elected vice-president and general manager of the Wisconsin-Minnesota Light & Power Company with headquarters at Eau Claire, Wis., succeeding A. E. Peirce, who has accepted servive as an officer in the army.

George E. Erb, Lewiston, Idaho, has been appointed to the Public Utilities Commission of the State by Governor Alexander. Mr. Erb succeeds Axel P. Ramstedt, who resigned almost a year ago to take a position as comptroller with the Day mining interest. Mr. Ramstedt was president of the commission and his term of office had expired. John W. Graham, Twin Falls, succeeded him as president of the commission. Mr. Erb will take up his duties on the commission about Dec. 1. He is a Democrat and has been active in the public and party affairs in northern Idaho for years. He is the owner of a chain of hardware stores.

Sir Albert H. Stanley is reported to be on his way to the United States on a war mission for Great Britain as president of the Board of Trade in the cabinet of Premier Lloyd George. Sir Albert was long connected with the Detroit (Mich.) City Railway, now a part of the Detroit United Railway, becoming its general superintendent. He left Detroit in 1903, joining the staff of the Public Service Corporation of New Jersey, and five years later was appointed general manager of the Underground Electric Railways of London, England. Later he became managing director of that corporation and its allied interests. Sir Albert was knighted in 1914.

H. K. Bennett, long connected with the Fitchburg & Leominster Street Railway at Fitchburg, Mass.. has been appointed superintendent of employment of the Bay State Street Railway, Boston. Mr. Bennett was born in Whitehall, N. Y., in 1871. He lived in Fitchburg, Mass., for thirty-nine years and was educated there and was graduated from Boston University. He took up newspaper work in Fitchburg in 1891. In 1898 he entered the employ of the Fitchburg & Leominster Street Railway as carhouse foreman and dispatcher. He held this position for six years, when he was placed in charge of the claim department, publicity and advertising. Mr. Bennett was a member of the Common Council of Fitchburg for the five years ended Jan. 1, 1911, and during his last year he served also as president of the Council. He was made third vice-president of the American Electric Railway Claim Agents' Association in 1909 and first vice-president in 1910. In 1911 he was elected president of the association. Mr. Bennett's newspaper training has stood him in good stead as a contributor of papers before the association and to the technical press.

H. K. BENNETT

RICHARD MERIWETHER

Richard Meriwether, superintendent and general manager of the Dallas (Tex.) Railway, controlling the recently consolidated electric railways in that city, was born in Frankfort, Ky., in 1875. He lived in Louisville, Ky., up to the time he left for college. He was graduated from Rose Polytechnic Institute at Terre Haute, Ind., in electrical engineering in 1896, and was successively in the mechanical department of the Southern Railway, the Siemens-Halske Electric Company, Chicago, and the Western Electric Company, Chicago. He accepted a position with the Louisville (Ky.) Railway in 1903 as assistant to the superintendent of power, having charge of all transmission lines. In 1906 he became connected with the Louisville & Eastern Railway, running from Louisville to Beard Station, Ky. For several years Mr. Meriwether was mechanical superintendent of this line and in addition had charge of the construction of a line from Beard Station to LaGrange, and also a line from Louisville to Shelbyville. In 1909 he was appointed general superintendent of the Louisville & Eastern Railway, in charge of all operation and construction, and continued in that capacity until 1911, when he accepted a position with Stone & Webster as general superintendent of the Dallas (Tex.) Consolidated Electric Street Railway. This position he held up to the time of the consolidation of all the electric railways in Dallas under localized management as the Dallas Railway. Mr. Meriwether then accepted the position of superintendent and general manager of the new company.

B. M. Warner, who has filled the position of general superintendent of the various Spreckels companies at San Diego, Cal., including the San Diego Electric Company, the San Diego & Southeastern Railway and the Point Loma Railroad, has been appointed chairman of the board of economics which has recently been created to handle important matters pertaining to the operation, maintenance, construction, etc., of the companies. Mr. Warner has also been appointed manager of the Coronado Beach Company, the Coronado Water Company and the United Light, Fuel & Power Company. He will have jurisdiction over the following departments: Engineering, hotel power plant, tent city and miscellaneous interests now under the superintendent's department. His jurisdiction will also extend over all departments of the Coronado Water Company and the United Light, Fuel & Power Company.

Obituary

M. L. Scudder, former president of the Lincoln (Neb.) Traction Company and a large stockholder in the company, died at his home in New York City on Oct. 29.

Charles F. Hutchings, who for many years had been the legal adviser of the Kansas City Western Railway, died at his home in Kansas City on Nov. 10, at the age of seventy-one years. He is survived by a widow and three children.

Robert M. Gallaway, former president of the Merchants' National Bank, New York, died at his home in New York on Nov. 13. Mr. Gallaway was for many years president of the Atlantic Dock Iron Works. When that company was dissolved in 1887 he became president of the New York Mutual Gas Light Company. Mr. Gallaway lived in France two or three years, but returned to this country and took an active interest in the affairs of the Northern Pacific Railroad. Later he became associated with Jay Gould and was made vice-president of the Manhattan Elevated Railway, New York, which position he held until 1891, when he became president of the Merchants' National Bank. At the time of his death Mr. Gallaway was a director of the Manhattan Railway.

Construction News

Construction News Notes are classified under each heading alphabetically by States.

An asterisk (*) indicates a project not previously reported.

RECENT INCORPORATION

***Alamance Railway, Burlington, N. C.**—Incorporated to construct and operate electric, steam or other railways to connect Burlington, Graham, Haw River, Hopedale, Carolina and Glencoe. Capital stock, $60,000. Incorporators: George W. Hatch and F. E. Coxe, Burlington, and J. H. Bridgers, Henderson, N. C.

FRANCHISES

***Grove, Ill.**—The Grove & Morton Railway has asked the Public Utilities Commission of Illinois for a certificate of convenience and necessity to construct and operate a line between Grove and Morton.

Springfield, Ill.—The Public Utilities Commission of Illinois has dismissed the petition of the Chicago, Springfield & Cairo Railway for a certificate of convenience and necessity, authorizing it to construct a line from Springfield to Cairo. It was shown that the company did not spend 25 per cent of its capitalization within the first five years after its incorporation, as required by law. J. B. Campbell, president. [May 26, '17.]

Springfield, Ill.—The Public Utilities Commission of Illinois has dismissed the petition of the Springfield-Carbondale Railroad for a certificate of convenience and necessity to construct its proposed line from Springfield to Carbondale. The company failed to begin building operations. C. H. Forrester, Chicago, president. [April 14, '17.]

Manitowoc, Wis.—The Wisconsin Public Service Company has received a franchise from the City Council to supply electricity in Manitowoc.

TRACK AND ROADWAY

Pacific Electric Railway, Los Angeles, Cal.—It is reported that the Pacific Electric Railway contemplates the construction of an extension from Santa Ana to San Diego.

San Francisco, Napa & Calistoga Railway, Napa, Cal.—This company reports that it has just completed the construction of a three-span 90-ft. bridge, using 27-in. I-beams with cover plates on four 45-deg. skew concrete piers 16 ft. high.

Municipal Railways, San Francisco, Cal.—A contract has been awarded to H. S. Tuttle for installing electric conductors and appurtenances for the Market Street line of the Municipal Railway of San Francisco.

Jacksonville (Fla.) Traction Company.—Work will be begun at once by the Jacksonville Traction Company on the construction of an extension to the State Fair grounds.

Pensacola (Fla.) Electric Company.—Improvements that will cost in excess of $75,000, and which include moving the tracks of the Bayshore line farther away from the beach, have been authorized by the Pensacola Electric Company. The removal of the tracks has become necessary owing to fact that each year for several years storms have washed up the tracks and demolished trestles, causing a big annual outlay in making repairs. The plans are to start at about Palmetto Beach and build the new car line around behind the settlement at Big Bayou. A trestle about 12 ft. above normal tide will be constructed and the line from that point on to the navy yard will be so far from the bay that there will be no danger of damage during storms.

St. Petersburg-Tampa Railway, St. Petersburg, Fla.—All preliminary work has been completed by the St. Petersburg-Tampa Railway for the construction of its proposed line from St. Petersburg to Tampa and work will be begun as soon as the government grants a permit for the construction of a bridge across Old Tampa Bay. George S. Gandy, Sr., St. Petersburg, president. [Sept. 22, '17.]

Georgia Railway & Power Company, Atlanta, Ga.—Work will be begun at once by the Georgia Railway & Power Company on the reconstruction of all its curves, switches and tracks on Peachtree Street between Edgewood Avenue and Ellis Street.

Savannah (Ga.) Electric Company.—This company reports that it will construct about 3000 ft. of track on Abercorn and on Fifty-fourth Streets.

Chicago, Milwaukee & St. Paul Railway, Chicago, Ill.—A thirty-two lever mechanical interlocking plant has been ordered by the Chicago, Milwaukee & St. Paul Railway from the Federal Signal Company, Albany, N. Y., to be installed at Drummond, Mont.

Gary & Interurban Railroad, Gary, Ind.—It is reported that the Gary & Interurban Railroad plans to improve its line in Gary.

Wichita Railroad & Light Company, Wichita, Kan.—Work will be begun at once by the Wichita Railroad & Light Company on the construction of its extension to the Orient shops.

Frankfort & Shelbyville Electric Traction Company, Shelbyville, Ky.—Col. Charles E. Hoge, Frankfort, Ky., has been elected president of the Frankfort & Shelbyville Electric Railway, formed to build a line from Shelbyville to Frankfort, Ky. P. C. Phillip, Philadelphia, promoter of the company, has been elected vice-president and general manager, and F. W. Henkel, Chicago, secretary and treasurer. Directors for the first year are J. Sweigert Taylor and Eli H. Brown, Jr., Frankfort, D. B. G. Ross, Louisville, F. W. Henkel and P. C. Phillip. The company is proceeding with the details of the preliminary operation and is collecting the signatures to the deeds of the right-of-way It had been the intention of the company to continue the line of the wide-gage Louisville & Interurban Railway from Shelbyville to Frankfort, where it would connect with the standard-gage line of the Kentucky Traction & Terminal Company, but this decision is now open again, and a standard-gage line may be built. [Oct. 27, '17.]

Portland, Me.—The Public Utilities Commission of Maine on Nov. 8 ordered the physical connection of the steam and electric railway tracks in Portland, the work to be completed by Jan. 1, 1918. The cost will be met 75 per cent by the steam roads and 25 per cent by the electric roads.

Bay State Street Railway, Boston, Mass.—Work has been begun by the Bay State Street Railway on the widening of Washington Street, Quincy, and the construction of a loop in the principal square, in co-operation with the War Department, the City Council of Quincy and the Fore River Shipbuilding Company. The work will cost about $175,000, of which about $80,000 will be for land damages. Four hundred tons of steel rails, 500,000 paving blocks, seven carloads of cement, 5000 cu. yd. of filling material, 48,000 bolts, 3000 tie-rods, 450 joints, 1000 copper bonds, a new pole line and 1½ miles of trolley wire will be put in place. A large amount of the material is on hand. The work is directed by Mayor Whiten, R. B. Stearns, vice-president of the Bay State Street Railway, and H. G. Smith, general manager of the Fore River Shipbuilding Company.

Escanaba (Mich.) Traction Company.—As soon as rails can be secured the Escanaba Traction Company will double-track its Stephenson Avenue line from Ludington Street to Hartnett Avenue.

Trenton & Mercer County Traction Company, Trenton, N. J.—Work will be begun at once by the Trenton & Mercer County Traction Company on the reconstruction of its tracks on South Broad Street between Liberty Street and the city line.

New York & Long Island Traction Company, Hempstead, N. Y.—The Public Service Commission for the First District of New York has announced the withdrawal by the New York & Long Island Traction Company of a petition requesting permission to abandon two unbuilt transit lines which are included in the company's franchise. One of these lines was to extend down to Rockaway Road, from Jamaica Avenue to Three Mile Mill Road, where the line would join the company's present line between Brooklyn and Freeport. The other was to extend through South Street, from Washington Street, Jamaica, to Hollis Avenue, Queens. Because of the high cost of labor and materials at this time, it is not planned to compel the company at present to build these proposed lines, which would be a boon to sections now without trolley service to Jamaica except by roundabout routes. As soon as conditions are favorable, however, application will be made to the Public Service Commission for the construction of the lines.

Interborough Rapid Transit Company, New York, N. Y.—In view of the refusal of the Interborough Rapid Transit Company to undertake the operation of a rapid transit service over the tracks of the Long Island Railroad to Little Neck and Whitestone, which the city proposed to lease as an extension of the Corona line, the Public Service Commission for the First District of New York has directed its chief engineer and chief of rapid transit to proceed with the preparation of plans and form of contract for the construction of an extension of the Corona line which now terminates at Alburtis Avenue, Corona, to Main Street, Flushing.

Long Island Railroad, New York, N. Y.—A thirty-two-lever Saxby & Farmer interlocking machine has been ordered by the Long Island Railroad from the General Railway Signal Company, Rochester, N. Y., for installation at Far Rockaway, L. I.

Cincinnati (Ohio) Traction Company.—Announcement has been made by the Cincinnati Traction Company that it will construct a new line to Price Hill.

Tulsa (Okla.) Street Railway.—The Hodge Street line of the Tulsa Street Railway has been double-tracked from Rockford to Lewis Avenue. The company will double-track its North Main Street line from Main and Cameron Streets to the Katy turnout on North Cheyenne Street. This will greatly facilitate the handling of traffic on the north and south line.

Port Arthur (Ont.) Civic Railway.—A contract has been awarded by the Port Arthur Civic Railway to Stewart McKenzie of Fort William, Ont., for the erection of timber bridges over McIntyre River on its main line.

Johnstown, Pa.—The Public Service Commission of Pennsylvania has approved the plans of the Johnstown Traction Company for extending its line through the Seventeenth Ward to Constable Hollow. It is expected that work will be begun on the line in the spring.

Dallas (Tex.) Northwestern Traction Company.—E. P. Turner, president of the Dallas Northwestern Traction Company, has announced that actual construction work will begin within the next few days on the Denton-Krum section of the line being built out of Dallas. Bids for grading have already been received. [Oct. 20, '17.]

Dallas (Tex.) Railway.—R. Meriwether, general manager of the Dallas Railway, operating the consolidated electric railways of Dallas, Tex., under the recently granted service-at-cost franchise, has outlined improvements proposed under the terms of the franchise requiring the expenditure of $400,000 in betterments and extensions, and has asked the approval of the city authorities for the improvements. Three new car lines will be established, and tracks on two streets will be eliminated. The tracks on Exposition Avenue between Fair Park and Gaston Park will be eliminated, and the tracks on South Austin Street between Commerce and Cadiz Streets will be taken up. The present Second Avenue line will be extended from Forest Avenue to the city limits, a distance of about 1 mile. A new line will be constructed from South Lamar Street to Akard Street on Cadiz. The South Belt line that now runs on Austin Street will be eliminated. The Harwood line, which now has its terminus on Grand Avenue, will be extended to Forest Avenue. Further reference to the proposed Improvements was made in the ELECTRIC RAILWAY JOURNAL of Nov. 17, page 914.

Texas Electric Railway, Dallas, Tex.—Rails and ties have been placed on the ground by the Texas Electric Railway for an extension of its Gray's Hill line in Sherman to the Sherman Hospital, as authorized under a recently granted franchise. Shortage of labor is delaying the work. The company has begun the work of installing ornamental steel trolley poles along its lines within the city of Sherman, taking the place of the wooden trolley poles that have been in use since the lines were built. The new ornamental steel poles are 30 ft. high.

Seattle (Wash.) Municipal Railway.—The bond issue of $40,000 which is required for the extension of the Seattle Municipal Railway to Leary Avenue and Market Street, Ballard, has been oversubscribed by the people of Seattle.

West Virginia Traction & Electric Company, Wheeling, W. Va.—The city of Wheeling and the West Virginia Traction & Electric Company plan to build two reinforced concrete bridges over Wheeling Creek at a cost of about $70,000.

SHOPS AND BUILDINGS

Chicago, North Shore & Milwaukee Railroad, Highwood, Ill.—It has been reported in Chicago and Milwaukee papers that the Chicago, North Shore & Milwaukee Railroad had completed plans for the erection of a new terminal in the downtown district of Milwaukee. These reports are unfounded. While the company has acquired property in Milwaukee for use as a general merchandising and express terminal, and has erected necessary buildings which have been in use for several months, it has no plans at the present time for the erection of a new terminal in Milwaukee.

Fort Wayne & Decatur Traction Company, Decatur, Ind.—A contract has been awarded to Charles N. Christen by the Fort Wayne & Decatur Traction Company for the erection of a new passenger station on Jackson Street, Decatur. The structure will be 20 ft. x 50 ft., one story high, the walls to be of cement block and the floors of concrete.

Hagerstown & Frederick Railway, Frederick, Md.—A new carhouse is being built by this company on Summit Avenue, Hagerstown.

Long Island Railroad, New York, N. Y. — Fire recently damaged the carhouse of the Long Island Railroad at Locust Avenue, Jamaica, and destroyed one car. The damage to the carhouse is estimated at about $2,000.

Oklahoma (Okla.) Railway.—Plans are being made by the Oklahoma Railway for the construction of a temporary freight station at Oklahoma City.

Sand Springs Railway, Tulsa, Okla.—This company reports that contracts will be placed at once for the construction of a new carhouse to cost approximately $10,000.

Philadelphia, Pa.—Mayor Smith of Philadelphia has approved contracts with the Standard Construction Company, Philadelphia, for building two stations on the upper part of the Frankford Elevated Line for $55,000 and $53,000, respectively. Sealed proposals will be received by the Department of City Transit, William S. Twining, director, until 12 o'clock noon on Dec. 4, for the following work appurtenant to the Frankford Elevated Railway: Contract No. 539—Plumbing installation on station buildings at Orthodox-Margaret streets and at Ruan-Church streets. Contract No. 540—Electrical installations in station buildings at Orthodox-Margaret streets and at Ruan-Church streets. Copies of plans and specifications may be obtained upon deposit of $10, to be refunded upon return of plans.

POWER HOUSES AND SUBSTATIONS

Northern Ohio Traction & Light Company, Akron, Ohio.—Plans have been completed by the Northern Ohio Traction & Light Company for the construction of a new power house, 25 ft. x 25 ft., at Midvale.

Sarnia (Ont.) Street Railway, Ltd.—A report from the Sarnia Street Railway states that it has purchased from the Canadian Westinghouse Company one 500-kw. rotary converter for the operation of its cars, to be delivered about the first of the year.

St. Albans & Swanton Traction Company, St. Albans, Vt.—This company reports that a contract will be awarded the Electric Storage Battery Company for the renewal of its battery at Swanton.

Eastern Wisconsin Electric Company, Sheboygan, Wis.—Plans have been completed by the Eastern Wisconsin Electric Company for the installation of a 500-hp. steam boiler in its power house at Rees and Main Streets, Fond du Lac. The boiler will be equipped with automatic stokers.

Wisconsin Valley Electric Company, Wausau, Wis.—An electric lighting plant will be built by the Wisconsin Valley Electric Company in Marathon.

Manufactures and Markets

Discussions of Market and Trade Conditions for the Manufacturer, Salesman and Purchasing Agent

Rolling Stock Purchases Market Quotations Business Announcements

Pacific Coast Roads Are Developing Freight Business

High Prices and Slow Deliveries Are Encouraging Western Manufacture of Supplies—Prices Are Unchanged—Market Dull

The unfavorable turn of affairs in Russia and Italy has made everyone "hold his breath" as one Pacific Coast dealer put it, and this condition has very noticeably affected the electric railway field. Hesitation and uncertainty are evident in market and trade conditions. Western companies always did do more manufacturing in their own shops than is customary among Eastern railways and this tendency has become more general since prices have increased and deliveries lengthened. Of course the Eastern centers will always be depended upon for most manufactured supplies, but such items as trolley wheels, hangers, composition ears and clamps, for example, are now very generally made in the shops of Western companies.

Effective efforts are being made all along the coast to build up freight business. An inventory shows that twelve coast companies are giving increased attention to this phase of their business, and excellent results are reported. The most notable activity in this line is on the lines of the Pacific Electric Company in southern California. On this system interstate as well as local freight is accepted, and an extensive business is being built up. Several hundred freight cars are under construction at the Torrance shops of this company, these cars being made entirely in accord with standard practice. A feature of the electric railway freight service is the quick delivery it affords, which is particularly attractive to the farmer with produce to market. In addition to the freight business in agricultural districts, which has been built up extensively in southern California and some parts of the Northwest, there is also a field for larger consignments. For example, 300 cars of steel were very recently routed over the line of the Oakland, Antioch & Eastern.

Although the number of jitneys has fallen off materially this year, on account of strict regulation and other more attractive occupations for jitney drivers, this form of competition is still depleting electric railway incomes. Interurban jitneys seem to be increasing in popularity even on such long runs as San Francisco to Los Angeles, about 500 miles. Orders have recently been issued by the California Railroad Commission placing interurban jitneys and motor trucks on virtually the same basis as the steam and electric railways. This may deflect some freight business from the electric lines. Several important hearings before utility commissions for fare increases are under way. The use of female labor is being seriously considered by several roads who are facing labor problems.

There has been practically no change in prices recently and, because of slow movement, such stock shortages as there are have not been felt. In fact, there is such a wide variety of standards on the Western coast that it is very difficult to carry stocks in most lines and it is the custom to anticipate demands. Since the entry of this country into the war it has become apparent that even greater delays in deliveries must be expected. Railway companies have come to realize this and are protecting themselves by raising their minimum stock limits, thus affording a wider margin. It is now the feeling on the coast that no improvement in deliveries can be expected.

Deliveries on standard steel rails are quoted for late in 1918. No quotations are being made on girder rails or bolts. Tie plates and angle bars are in the same class with rails, but spikes are quoted for six to eight weeks' delivery at factory. Forged steel blanks for gears and pinions are quoted for eleven months. No stocks are available. Stocks of railway motors and controllers are in good shape and delivery is quoted at five and a half to six months, which is three or four months better than on many lines in the railway supply field. However, there is no demand for motors at present.

Deliveries on seamless trolley poles are well over a year, but butt-welded poles can be had for shipment in six weeks. The recent heavy purchases of one-man cars on the coast has lead to the prospect of considerable business in accessories for such cars and as these are for the most parts standard, stocks will probably be carried on the coast. Stocks of brushes are practically exhausted, and it is a problem to secure those for which orders come in, particularly if older types are specified. Stocks of insulators for overhead work are only fair and deliveries are rather slow. Stocks of porcelain for inside work, however, are very heavy.

Prevailing Conditions Favor Sale of Saving Devices

Necessity for Practising Economy in Every Direction Has Led to Greatly Increased Market—One Manufacturer Is Making Installment Deliveries

Unusual conditions which are prevalent to-day have left their stamp on the market for practically all economy devices. While little money will be expended on new projects and on extensions except where conditions or commissions actually demand, electric railway properties have not been slow to recognize that the expenditure of certain sums, usually small, in economy-increasing devices will shortly be repaid many fold by the savings thereby effected.

Operating costs have increased almost to the breaking point and, in no part is this more true than that pertaining to energy, where the company produces its own. When it is purchased under a long-time contract irrespective of the price of coal, of course this is not so true, but this is a rare condition. One of the most important methods of energy saving, of course, is in the proper manipulation of the controller, so it is not surprising that energy-checking devices on the car should be greatly in demand in these days of national economy. Hence, most large railway companies and many small ones are now studying the most effective way of checking the consumption.

The Railway Improvement Company reports that the pressure of demand has obliged the filling of orders in installments, as rapidly as manufacturing facilities will permit. Deliveries of coasting recorders are being made right along on this plan, so as partially to satisfy customers. While metal and other essentials entering into the construction of coasting time recorders have been arranged for the future, no one can tell when the output of the sheet steel mill may be commandeered by the government. It is held that since coasting recorders may be classed as necessary to transportation equipment, a certificate to supply the metal sheets may be granted by the federal board in charge of such matters and the requirements filled.

The Economy Electric Devices Company, Chicago, which handles the engineering and sales of the Sangamo Economy railway meter, is in fortunate position regarding deliveries. This company's energy-checking device consists of only a case, a resistance spool and a standard Sangamo D-5 watt-hour meter element and shunt. These elements are identical with those manufactured in large numbers for power station switchboards, for d.c. central station use, and for many other purposes. Therefore, the production is a part of the regular steady output of the Sangamo Electric Company, which employs more than 1000 people in its meter manufacturing plant at Springfield, Ill. Sangamo Economy railway watt-hour meters are now being shipped to The Milwaukee Electric Railway & Light Company to complete an order for 350 meters now being installed in the city of Milwaukee. Deliveries of Economy meters can be made promptly.

The Arthur Power-Saving Recorder Company, New Haven, Conn., also reports that the market for power-saving recorders is good. Up to recently it has been making deliveries at from thirty to sixty days, but the company is now moving into larger quarters in order to take care of the development of its business, and in future expects to be in a position to make deliveries in shorter time than this.

Labor May Have Unpleasant Effect on Market

Higher Prices and Longer Periods for Deliveries Are Anticipated Unless the Situation Is Improved Shortly

Unless the threatening attitude of the factory workers—skilled and unskilled—is met in some way or other and definitely disposed of, manufacturers and sales representatives of railway supplies and accessories in the leading centers say still further advances in price and delays in shipments are to be expected. Though prices are generally accepted as being at the apex point now and will remain at this stage so long as even the most far-sighted men are able to gage the future, there is a bare possibility of still further changes. Should they occur, factory conditions in respect to labor will bring them about.

Considering the seriousness of the situation a supply house representative said as an illustration that he had occasion, within a short time, to buy parts of a transmission device. A year ago he paid 29 cents a foot; a few months later it had advanced to 50 cents, and at a more recent date he was obliged to pay 72 cents. He contended, from the nature of the goods, the increases were due entirely to a shortage of labor at the factory. Speaking further of delays in delivery he cited a case of a car building company in the Middle West that had a lot of new cars ready for shipment East. On account of the embargo the manufacturer was unable to get his product farther than Utica or Syracuse, the government deciding the cars were non-essentials in the war sense and therefore were not entitled to any shipping privileges, although they were badly needed to relieve railway congestion at certain points.

In point of volume the sale of railway supplies of divers kinds is reported to be in nowise discouraging, if the prevalent sentiment in all lines of business is taken into account. The most important orders for equipment come from railways running into or having connections with cantonments. The great trouble is getting raw material, with the deliveries at present slightly improved. Gears and pinions are in a better position, and orders can be put through when enough pressure and "steam" are behind them.

Co-operative Manufacturing

Two Manufacturers of Non-Competitive but Related Railway Products Operate Under Same Plant Roof Advantageously to Both

Economical production and distribution require that fixed charges be kept as low as is consistent with satisfactory output. Two manufacturers of non-competitive but somewhat related lines recently agreed to work together under the same plant roof. One, who produces a trolley specialty, compensates the other for the use of his establishment, saving some considerable outlay for machinery in a separate installation. The established house gets the benefit of a certain amount of additional revenue or rental and can fit in the production of the new specialty with its own work to advantage. The manufacturing load factor, in other words, is bettered.

The arrangement is one which is expected to give the specialty manufacturer more time to devote to field work and conceivably may lead to a more complete representation outside the plant than was formerly the case.

Local Orders to Local Manufacturers

Details of Situation that Arose When an Electric Railway Property Did Not Order Rolling Stock from Local Manufacturer

Other things being equal, the patronizing of local manufacturers is of mutual benefit both to utility companies and to producers of supplies and equipment. On a recent call at a large car-building plant it was learned that had the local electric railway company placed its latest car order with this concern instead of contracting with an outside builder, the owners of the plant would not have decided to give up car manufacture for the time being, but would have continued along former well-established lines. The plant is now in government service and might have been commandeered in any event, but a little more patronage by the local company would have prevented the voluntary stoppage of work along the lines for which the plant had become noted.

From the company's viewpoint it should be said that its management regarded it as its duty to procure the necessary rolling stock at the lowest cost consistent with the required quality. The operating organization felt that if an outside builder could furnish the cars most nearly in accordance with price and delivery requirements, the local plant must see that no injustice was done in going to its competitor. It was claimed that in this case other things were not equal, and that the best interests of the railway demanded placing the contract in a distant city. These points are of interest to the trade in their suggestion that in all cases where local manufacturers are in competition with outsiders decisions to place contracts should be based upon a comprehensive analysis of the competing tenders in all their aspects; that the award should be dependent not upon any single factor, but upon the predominance of advantages offered, taking the local railway company's operating problems, economic situation and relations with the public under detailed consideration.

Contradictory Conditions in Guy Anchor Market

Certain Distributers Pessimistic Owing to Unsatisfactory Position of Raw Materials, Others Place Hope in Government and Export Demand

With the situation in guy anchors not altogether rosy in the view of several commentators, it is not entirely hopeless according to others. The former are inclined to rate the market on a par with everything else where malleable iron is the basic material. This applies to prices and deliveries, with the future rather hazy. Not being a stock proposition, factory readiness in material, producing capacity and definite shipping promises are vital considerations. The lack of new construction work is another reason offered why trade is not strong. Preparation in the way of additional strengthening and general repairing, in anticipation of the stress and strain incident to the winter storms, is almost normal.

On the other hand, an optimistic manufacturer of guy anchors avers that trade is better than it has ever been. Deliveries are made within thirty days and prices are advancing, so much so that all quotations are subject to change without notice. A heavy shipment was recently made to France on the order of a private customer. The improvement in domestic buying is ascribed to meeting the extraordinary demand from the military cantonments. It is this new outlet and the export trade, which was never had before, that are swelling the volume of sales. The same optimistic authority may be quoted relative to the lessening of repair work, which is charged up to the high prices of the necessary material.

ROLLING STOCK

Saskatoon Municipal Railway, Saskatoon, Canada, has recently purchased one second-hand, single-truck car from the Ottawa (Canada) Electric Railway Company. It is undergoing repairs in the company's shop.

Third Avenue Railway, New York, N. Y., is reported as contemplating the introduction of two-car trains on the principal lines of its system, if the test trials prove satisfactory. Provision for them is yet to be made.

International Railway Company, Buffalo, N. Y., is receiving from the Russell Car & Snow Plow Company, Ridgway, Pa., four combination work cars and plows and three long single-truck rattan sweepers. Twenty-five of the original order for 100 new cars placed with the Kuhlman Car Company, Cleveland, Ohio, as mentioned in the ELECTRIC RAILWAY JOURNAL, Oct. 27, 1917, have been received by the International Company and put in operation. The remainder are arriving at the rate of two daily.

Columbia (Ga.) Railway, Gas & Electric Company is reported as having built five new cars in its own shops, which were enlarged and specially equipped for the purpose. Orders that were placed months ago for seven new cars have been delayed in shipment on account of the congestion at the manufacturer's, but will soon be in operation. The company's lines run into Camp Jackson, and the traffic has made extraordinary demands upon its equipment.

Brooklyn (N. Y.) Rapid Transit Company has under consideration, and is making inquiries, for the equipment of two car trains. Preliminary trials have been carried on for some time with a trailer, but it is now the intention to put in experimental operation two motor cars. The work of converting the cars, of the type known as 3000 and 3100, is to be carried out in the company's own shops. Four cars are to be rebuilt, and in addition to the old equipment the multiple control and the necessary air brakes must be installed.

TRADE NOTES

P. A. Stacy has recently been appointed manager of the Railway Roller Bearing Company, Syracuse, N. Y., to succeed Raymond H. Carhart.

D. M. Ferguson, formerly of the National Transit Company, has been appointed director of publicity for the American Steel Exports Company, Woolworth Building, New York.

R. L. Browne, who for the last fifteen years has been identified with electrical and mechanical engineering, has become associated with the sales department of the Goldschmidt Thermit Company in the capacity of commercial engineer.

General Electric Company, Schenectady, N. Y., announces that its repair shop at Atlanta, Ga., is fully equipped to give its customers repair service on all classes of direct and alternating-current apparatus. Correspondence should be addressed to the engineering department of the company, Third National Bank Building, Atlanta, Ga.

J. E. Lynch of the Page & Hill Company, Minneapolis, Minn., is at present acting as general superintendent of stores for the American International Shipbuilding Corporation, Philadelphia, Pa. He is on leave of absence from the Page & Hill Company and expects to resume his position in that organization as soon as his present duties are completed.

J. W. White, from 1906 to 1912 with the Westinghouse Electric and Manufacturing Company, East Pittsburgh, Pa., and from 1913 to 1916 with the Bullock Works of the Allis-Chalmers Company, Milwaukee, Wis., as special agency representative in charge of dealers and jobbers, has been made manager of the power and railway division of the Westinghouse Company at Detroit, Michigan.

Railway Utility Company, Chicago, Ill., manufacturer of the mercury thermostat for electrically regulating the heating current in electric cars, reports that it has purchased from the Thermo-Electric Regulator Company of Chicago all of its completed thermostatic equipments, stock, dies, parts, etc., as well as an exclusive license to manufacture and sell thermostatic heat regulators under any and all patents now owned by the Thermo-Electric Regulator Company or which may be issued to it on applications pending.

Department of Commerce, Washington, D. C., has ready for distribution, at the rate of 15 cents a copy, "Customs Tariff of Chile," prepared and translated by L. Domartzky, tariff expert of the Bureau of Foreign and Domestic Commerce. The chief difference between the new tariff and the law of 1897, previously in force, is that of form; that is, the new rates, with one exception, are specific instead of ad valorem.

Exum M. Haas, formerly associate editor at Chicago for this paper and recently sales manager International Steel Tie Company, Cleveland, has resigned from the latter position to become sales engineer for the Austin Company, Cleveland, in charge of its railroad department. The Austin Company is one of the largest industrial engineering and building companies in the country and is well known in connection with its standard factory buildings, industrial plants and their equipment, and the construction of power houses and heating systems. It has recently entered the steam railroad field and it is in this direction that Mr. Haas' work will lie.

NEW ADVERTISING LITERATURE

Mitchell-Rand Manufacturing Company, New York, N. Y.: A folder—"Everything in Insulation"—containing a complete list of the company's insulating material, with prices and samples attached.

Good Roads Machinery Company, Inc., Kennett Square, Pa.: "Economy Snow Remover" is the title of bulletin K. D. S., with illustrations, now ready for distribution. The Remover, shown in action, serves the same purpose in moving snow as the wheeled and drag scraper does in handling dirt.

J. G. Brill Company, Philadelphia: *Brill Magazine* for October contains portrait and biography of Thomas A. Cross, president United Railways & Electric Company of Baltimore, and descriptions of the Springfield, Mass., electric railway system and of various recent cars built by the J. G. Brill Company and its associated companies.

NEW YORK METAL MARKET PRICES

	Nov. 12	Nov. 21
Prime Lake, cents per lb	23½	23½
Electrolytic, cents per lb	23½	23½
Copper wire base, cents per lb	31	31
Lead, cents per lb	6½	6½
Nickel, cents per lb	50	50
Spelter, cents per lb	8	8
Tin, Straits, cents per lb	73	77
Aluminum, 98 to 99 per cent, cents per lb	36	36

OLD METAL PRICES—NEW YORK

	Nov. 12	Nov. 21
Heavy copper, cents per lb	22	22
Light copper, cents per lb	19½	19½
Red brass, cents per lb	17½	17½
Yellow brass, cents per lb	15¼	14½
Lead, heavy, cents per lb	4¾	4¾
Zinc, cents per lb	5¾	5¾
Steel car axles, Chicago, per net ton	$41.00	$41.00
Old carwheels, Chicago, per gross ton	$28.75	$31.00
Steel rails (scrap), Chicago, per gross ton	$34.50	$34.50
Steel rails (relaying), Chicago, per gross ton	$55.00	$55.00
Machine shop turnings, Chicago, per net ton	$17.00	$15.50

RAILWAY MATERIALS

	Nov. 12	Nov. 21
Rubber-covered wire base, New York, cents per lb.	32-35	32-35
Rails, heavy, Bessemer, Pittsburgh	$38.00	$38.00
Rails, heavy, O. H. Pittsburgh, per gross ton	$40.00	$40.00
Wire nails, Pittsburgh, per 100 lb	$3.50	$3.50
Railroad spikes, 9/16 in., Pittsburgh, per 100 lb.	$5.50	$5.50
Steel bars, Pittsburgh, per 100 lb	$5.00	$5.00
Sheet iron, black (24 gage), Pittsburgh, per 100 lb.	$5.80	$5.80
Sheet iron, galvanized (24 gage), Pittsburgh, per 100 lb.	$4.85	$4.85
Galvanized barbed wire, Pittsburgh, cents per lb.	$4.35	$4.35
Galvanized wire, ordinary, Pittsburgh, cents per lb.	$3.95	$3.95
Cement (carload lots), New York, per bbl	$2.22	$2.22
Cement (carload lots), Chicago, per bbl	$2.31	$2.31
Cement (carload lots), Seattle, per bbl	$2.65	$2.65
Linseed oil (raw, 5 bbl. lots), New York, per gal.	$1.18	$1.20
Linseed oil (boiled, 5 bbl. lots), New York, per gal.	$1.21	$1.23
White lead (100 lb. keg), New York, cents per gal.	11	10
Turpentine (bbl. lots), New York, cents per gal.	53	51

Electric Railway Journal

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This Should Be a Frequent Experience

IN AN editorial printed last week the attitude of this paper toward "standing in" with the newspapers was explained. The relations of railway managers with the newspaper publishers, editors and reporters should be friendly, nay, even cordial, but there should be no surreptitious and mysterious friendliness which might justly breed suspicion. At the same time relations with the newspapers are very important, and there must be some plan or plans for giving the newspaper men the facts. A certain newspaper "somewhere in America" had consistently and persistently belabored the local electric railway. The manager felt that the facts of the case were only superficially understood by the editors, but he was at loss to know what to do. At last he convinced the newspaper men that they ought to make a careful study of the property and to learn at first hand what was being done to improve the conditions of which they complained. The result was, as could be predicted, a much more helpful and constructive attitude toward the utility. If this were an isolated instance it would not be significant. It isn't, but it could be more typical. Any live editorial staff should be willing to familiarize itself with the operation of such an essential to the welfare of the community as is the electric railway.

More Women Must Be Used in Electric Railway Service Next Year

NEW YORK seems to be the first city after all in which women will be employed in train operation in this country. The Brooklyn Rapid Transit Company has already put women in service as train guards, and the New York Railways is advertising for women to act as conductors on pay-as-you-enter cars. If the trials prove successful, and there is no reason why they should not be, women will undoubtedly be very generally employed in electric railway service. The need for providing some substitution for man power grows increasingly evident as this country gains a greater appreciation of what the present war means to it. If we are not to suffer from unpreparedness in this particular in 1918 as the country suffered from general unpreparedness during the years before the war, the electric railway industry must act promptly in this matter. If the war continues into the middle of 1918, as appears inevitable, there is bound to be a shortage of labor far greater than exists to-day, when the country is only about at the beginning of its war preparations. Two factors make this condition inevitable. The first is that some 2,000,000 men will be withdrawn from production to serve actively with the military and naval forces of this country. The other is that a vast army of men will be required in the industries at home to provide the ships, the munitions, the steel and the other necessities of modern war and of the men in the field. We must produce during the coming year practically all of the goods for ourselves and our allies to be purchased by the billions of money appropriated by Congress for the prosecution of the war. Electric railways, therefore, owe it to the country as well as to themselves to conserve their use of the man power of the country so far as they can and yet keep up that transportation service which is directly necessary for the government and for the communities in which they operate.

Women Are Better Than Men for Some Work

THE experience in Great Britain both in railway and manufacturing work since the beginning of the war has shown conclusively that women rapidly become skilled in the work to which they are physically and mentally adapted and that the range of this work is far greater than formerly was considered possible. The ability of women to learn thus quickly does not mean, however, that special training is not necessary. In fact, women on the car or in the shop or office should receive not only the same training that the average man would require to fit them for the work, but they should usually receive more training because most women are not accustomed to the discipline of continuous work at regular hours. Nevertheless, when this training has been acquired, female labor, within its range of occupations, possesses some advantages over man labor. Thus the testimony of employers abroad is that in all creative work women seem to take a special pride in good workmanship. They also take their jobs more seriously than many men, a fact which is due perhaps to a desire not to move from one position to another. Of course in anything which pertains to the housekeeping part of a commercial business, and there is very much of this work on an electric railway system, they possess especial qualifications. Such work on an electric railway property would include not only cleaning of cars and stations but the maintenance of records, ticket selling and clerical work of all kinds. A paper read at the last meeting of the New York Railroad Club on Nov. 16 showed that the Pennsylvania Railroad Lines East had on Sept. 1 of this year 3730 women in its service as compared with only 1494 on May 1. The author of the paper, a Pennsylvania Railroad official, estimated that the figures for October would be 35 per cent in excess of those of Sept. 1. The paper showed that the usefulness of woman labor is spreading rapidly in steam railroad service and to many lines of work which one does not usually associate with women, such as storeroom attendants, block signal operators and bridge tenders.

Let's Demonstrate the Possibilities of Electric Freight Haulage

THE conference of representatives of the different transportation interests which Daniel Willard as chairman of the advisory commission of the Council of National Defense expects to call at Washington within the next few weeks, promises a means of helping to solve the present transportation problems of the country. The steam railroads are admittedly overloaded with freight, owing to the war activities, and while some relief can be obtained by a liberal policy of rate raising and other alleviating legislation, the nation now needs all the assistance which other transportation agencies can supply. These other agencies consist of the electric roads, highway vehicles (particularly motor trucks) and the waterways. Each has its merits and its advocates. What can each do to help haul some of the freight and what will be the cost?

Obviously the best plan is to make a scientific study of the possibilities of each system of transportation and of the requirements of each to bring it to its greatest practicable efficiency. In some instances undoubtedly the motor truck will be found to be most economical, in others the electric railway, and in still others, at some seasons, the inland waterway. Let the representatives of each system at the conference state the controlling factors of each means of transit and the relief, legislative or otherwise, which it requires to do its share. Steps can then be taken, under federal authority if necessary, to secure needed relief. It is clearly undesirable to parallel by motor trucks and expensive highways an electric road when the latter is able by slight or no additional expense to furnish as good or better service, if only an obstructing charter provision against the haulage of freight can be removed. On the other hand, where there are no electric railways or where, owing to transshipments, the cost of motor truck transportation is less expensive the latter should be chosen.

Very few people among the general public realize the immense possibilities of electric freight transportation. Yet this country is literally gridironed north of the Potomac and Ohio, and east of the Mississippi, with electric railway tracks whose capacity for the haulage of light freight and even of standard freight cars is far from being utilized. We believe the Electric Railway War Board is the best means which the industry has of bringing this fact to the attention of the authorities at Washington. This board has an opportunity at this time to perform a great service both to the country and to the electric railways by emphasizing the value of electric freight haulage at the coming conference.

Automatic Control Takes Another Step

THE control of the hydroelectric generating station by automatic means is a logical outcome of success with the automatic substation, as it affords another opportunity to reduce operating labor. The idea of such control seems to have been original with E. W. Allen and Edward Taylor of the General Electric Company, inventors of the automatic substation. In the case of the Cedar Rapids installation, described elsewhere in this issue, there was a small hydroelectric site right at hand which could be used advantageously as an auxiliary by the central station company, although it could not be made to earn a very attractive return under normal operation on the investment necessary to develop the project. With a labor charge of about $3,600 a year eliminated from the annual operating expenses of the plant, however, reasonable return on the investment could be earned. Accordingly, the water power has been developed with automatic control. Practically, the only charge which the company has now to meet in return for a supply of about 4,000,000 kw.-hr. a year of energy is the interest on an investment but little greater than that involved in an average ordinary 2000-kw. water-power plant.

An interesting feature of the control as arranged at Cedar Rapids is the remote supervision from the steam station over the automatic equipment. This makes it possible for the operator at the steam station to add, in the short period of thirty-seven seconds, from 500 to 2000-kw. capacity to his generating facilities, depending on how many of the units are already running, and this with not more than one second's attention from himself. He has simply to throw four small switches on the benchboard and all the hydroelectric machines come in on the line and pick up the load to their full capacity. It is also possible by this remote control to shut down machines and thus to store up water for greater use at certain times. If left to its own purely automatic control, the station will keep as many machines on the line as the flow of the river will permit.

Two features of the automatic control as installed in the first station would seem to offer an opportunity for possible trouble. While two exciters have been installed, any trouble developing in the one in use will shut down the entire station, since the other cannot be used until a manually-operated, double-throw switch at the station is thrown to the opposite position. This, of course, would require the plant to be out of commission during the time necessary for an operator to go from the steam station to the hydraulic plant. Another cause of shutdown might be a failure of the speed-limiting device which protects all machines and for which no duplicate has been provided. Any trouble here would require shutting down the entire plant until the device could be repaired, or presumably the plant could be operated by cutting out the speed-limiting relays and running the machines at the risk of overspeed. However, these two circumstances are remote possibilities, as both the exciters and the speed-control device are rugged, dependable machines, and in addition the steam station has ample reserve capacity readily to absorb the extra load, so that it was not thought necessary to complicate the mechanisms by providing equipment to guard against these possibilities.

An Encouraging Note Is Sounded for Railway Men

COMING as they do from the chairman of the Massachusetts Public Service Commission, one of the foremost regulatory bodies in the country, the words of F. J. Macleod before the New England Street Railway Club last week ought to be very encouraging to the electric railway industry. As shown elsewhere, his remarks are based upon a sympathetic understanding of electric railway economics and electric railway burdens. For instance, he says that depreciation should be better provided for, but that the question of depreciation and the question of fare must go together. This is a clear recognition of the public's as well as the utility's responsibility for the insuring of continuous, efficient and paying service.

And in regard to the priority of depreciation charges or dividends when the income is not sufficient to provide for both, Mr. Macleod pointedly states: "I see no escape from the conclusion that dividends must also be provided in sufficient amount to enable the company to preserve its credit and to go forward in making the improvements and extensions that are absolutely demanded." This is not an assertion that dividends are paramount but that they are on a par with depreciation charges. The public should provide for one just as much as for the other, and neither the physical property nor the stockholders should be forced to bear the burden of the public's shortcomings. The responsibility of the commissions in seeing that the public pays fully for what it gets—that is the crux of the electric railway situation, and we are glad that Mr. Macleod seems to realize it.

Furthermore, we have been interested to note Mr. Macleod's assertion that there must be a considerable degree of experimentation with different methods of fixing fares before one can be sure that in the case of any particular property the maximum revenue result is reached. We have said before, and we repeat it even more strongly, that not even electric railway men know exactly what methods of increasing fares are to be preferred for individual cases. Just how far the distance factor can be introduced, either on a straight-mileage or a graded-zone-system basis, is a question that demands a most searching investigation by electric railways themselves. The commissions have been and will continue to be intensely concerned with this very question, but electric railway operators should be men enough to think for themselves, although quick to co-operate with the commissions.

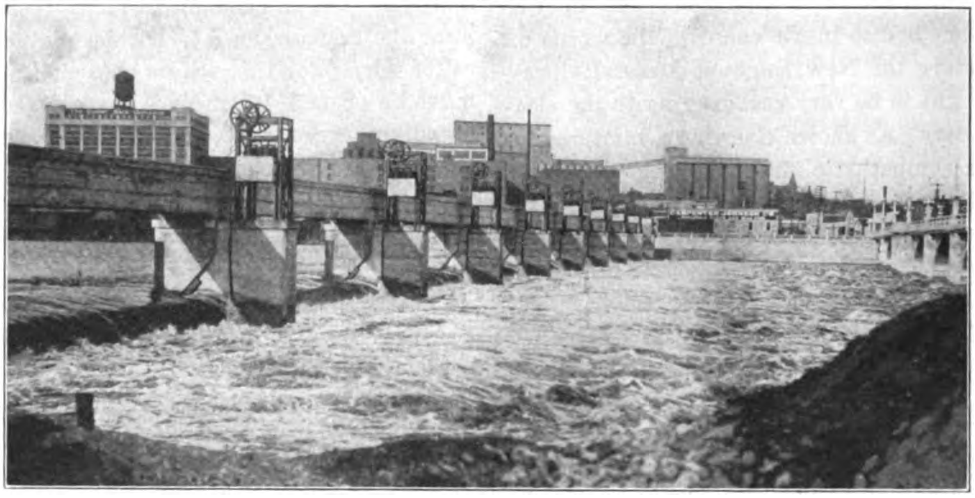
The utterances by Mr. Macleod, and also encouraging statements by William C. Bliss, chairman Rhode Island Public Utilities Commission, may well be said to mark the beginning of a new era in the New England transportation field—an era in which, we hope, the electric railways will be restored by commission and public foresightedness to their position as prosperous civic developers. But, as Mr. Brush says, the commissions should not be asked to do all the work of rate regulation. They can grant higher fares, but it is not their duty to convince the public of the fairness of their decisions. This the companies must do through intelligent, persistent publicity, not because the commissions will be so cowardly as to be governed by popular clamor rather than impartial judgment, but because the public, if it imagines that it is being unjustly treated, will go behind the commissions to the legislatures for political relief. It is for this reason that the eyes of the public must be opened, its prejudices removed, its misunderstandings corrected. And this work is entirely up to the railways themselves.

Progress of the Front-Entrance Center-Exit Car

AMONG the promising developments in electric railway rolling stock the new type of car in which the passengers enter at the front and pay as they pass the conductor located just forward of the center or exit door is worthy of special notice. Enough cars of this type are now in use to warrant the drawing of a few general conclusions. A representative of this paper has just made a study of the transportation conditions in several cities where they are in operation and finds roughly as follows: The application of the general principle of increasing the prepayment space has greatly improved loading speed; in fact, a crowd of boarding passengers streams into the car with gratifying celerity. In general the passengers are inclined to distribute themselves fairly well throughout the car, especially where cross seats are furnished in the rear. There is, of course, some tendency to remain in the entrance end but this is less, it would seem, than in other types of car. The loss of fares, through seizing of the opportunity to work off old transfers in the rush of emptying a crowded car at a congested transfer point in the rush hour, has proved not to be a serious evil. There are naturally many details of arrangement of ramps, stanchions, steps, heaters, etc., still in process of being worked out, but these do not affect the general principle. The tendencies as to these minor but important matters will be discussed in an early issue. The consensus of opinion, as far as we have been able to gather it, is unmistakably to the effect that as prepayment of fare at the car entrance was a step in advance of previous methods of collection, so, and for the same reason, the moving of the conductor to a point removed a reasonable distance from the entrance is another step in the direction of progress. There is no question but that the front-entrance, center-exit car and the one-man car provide, in their respective fields, at least a partial solution of the problem of "more service at less cost." It is fortunate that the new plan is being tried on new rather than remodelled cars. This fact permits the advantages of light weight, quick acceleration, low friction and safe, convenient step arrangement to be combined with those inherent in the conductor location.

Automatic Power Plant at Cedar Rapids

Cedar Rapids, Iowa, Is Site of Pioneer Development—2000-Kw., Low-Head Generating Plant Operates in Parallel with 19,000-Kw. Steam Station a Short Distance Away—The Water Power Plant Control Is Completely Automatic but Provided with Remote Supervisory Control of the Automatic Equipment from the Steam Station



IOWA AUTOMATIC HYDROELECTRIC PLANT—CEDAR RIVER DAM

AUTOMATIC control of electrical machines, with which the electric railway field is now more or less familiar, and which thus far has been limited in its application to substations and other consumers of electrical energy, has now been extended to include the hydroelectric generating station. The pioneer installation is located at Cedar Rapids, Iowa, and is the joint product of the General Electric Company engineers and John M. Drabelle, electrical engineer Iowa Railway & Light Company. It comprises the control of a 2000-kw., low-head station constructed almost in the heart of the business district of the city, on the Cedar River, and arranged to operate in parallel with the Iowa Railway & Light Company's 19,000-kw. steam-generating plant, located about 3300 ft. farther up the river. The 2000-kw. capacity is made up of four 500-kw. units, of which three are already in operation.

The preliminary work on this installation was begun at about the time Taylor and Allen were working on the original installation of the automatic rotary converter substation on the Elgin & Belvidere Electric Railway (see ELECTRIC RAILWAY JOURNAL, Sept. 18, 1915, page 583). The plan as originally laid out was to operate the hydroelectric plant with remote control from the steam plant, in order to eliminate the necessity of employing an operator continuously at the hydroelectric plant. While a manually operated station could have been made to pay on the site occupied by the present plant, it would not have made an especially desirable investment. At a conference in Chicago, at which the General Electric Company engineers, including Mr. Taylor and Mr. Allen, and the company's engineers were present, it was brought out that remote control would not be particularly advantageous, principally for the reason that it involved too many complications and made possible too great an opportunity for an operator to err in controlling the station. It was believed that a completely automatic control might be developed, and upon further investigation it was shown that if sufficient engineering courage and ingenuity were to be had on the part of the railway company and the manufacturers, a saving of $3,600 to $4,000 a year in labor might result. William G. Dows, president of the railway and light company, later expressed himself in favor of the venture and work on the development began. An interesting sidelight in connection with the development of this plant is the fact that due to a rather liberal policy on the part of the manufacturer in absorbing much of the development charges necessary in working out the control layout, and also because of the exclusive use of standard apparatus in making up the control assembly, the actual investment in this first automatic generating plant is no greater than would have been required for a first-class manually operated station.

GENERAL OPERATING FEATURES

As the station equipment is arranged and will usually be operated, the control of the machines will be handled remotely from the steam station, where the simple act of removing one small double-throw switch on a bench board will start the automatic control equipment at the hydro plant in its series of functions in placing a machine on the line, without further attention from anyone. These same switches on the benchboard, however, set in the opposite position, leave the number of machines running in absolute control of the automatic equipment at the hydro plant which is actuated by the level of the water in the storage reservoir. The conditions of load will not at any time determine the number of machines cut on or off the line. It will simply be the practice to load the hydraulic plant up to the capacity which the water flow will allow, or which emergency requires, and the load fluctuation on the system will be taken care of at the steam station. If left to the purely automatic control, a lowering of the head beyond a certain level automatically cuts the generators off the line in a certain sequence and as many as necessary to keep within the water flow. And conversely, with a rising head the machines will start up and come in on the line as rapidly as the rise in water level permits. Any trouble whatever instantly cuts the machine or machines out and thus gives protection, regardless of the position of switches at the steam station, and then automatically brings them back on the line when conditions have become normal again. In brief, the complete control scheme includes a purely automatic control on which is superimposed a remote manual control. The former operates in accord with the water supply, while the latter causes machines to be cut in or out at the will of the steam plant operator, by means of the automatic equipment, regardless of water conditions.

IOWA AUTOMATIC HYDROELECTRIC PLANT—FRONT ENTRANCE

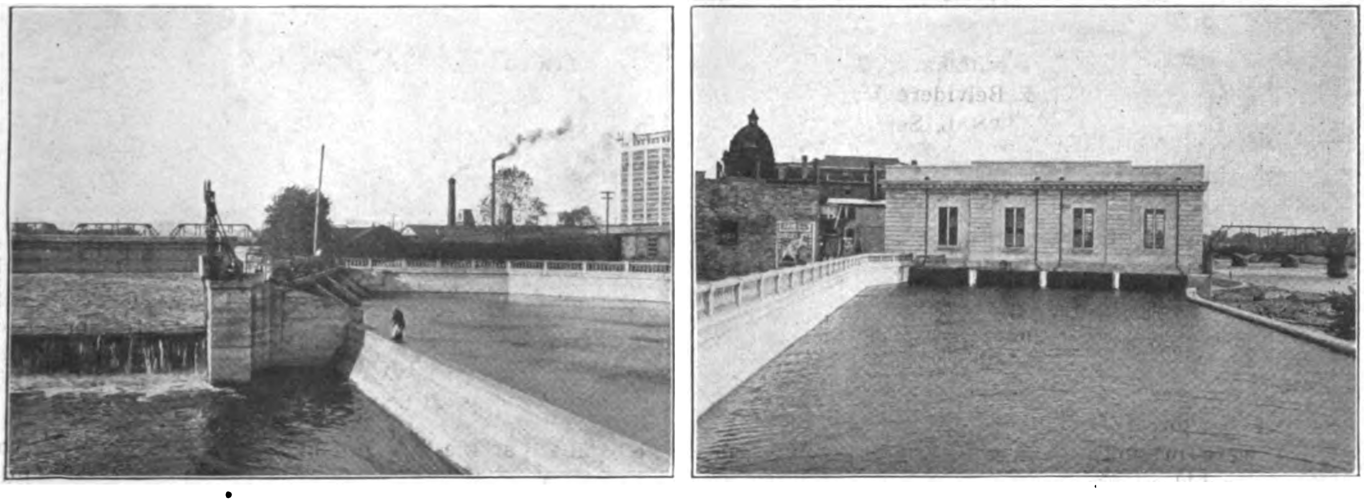
As many machines will be run during the day through the remote control supervision as is possible and still permit the river to store up water for full-load operation of the plant during the night. This plan of utilizing the full flow of the river has been adopted as the one which best fits in with the load conditions on the system. The operation of all three units at the hydroelectric station permits the shutting down of one boiler at the power house during the night. This gives an opportunity to clean boilers and do repair work at the steam station, and still leave sufficient capacity to carry the night load, which includes the load brought on by interurban freight hauls requiring about 800 kw.

The hydroelectric plant provides an excellent safeguard against interruption on the system, especially in the daytime when normally only one or no machines would be operating, for they can very quickly be placed on the line to relieve the steam plant. For instance, if one of the large steam turbine units should lose its vacuum, the operator would simply have to push three levers on the hydroelectric control benchboard, and in thirty-seven seconds thereafter he would have 1500 kw. of hydroelectric capacity on the line and under load. Furthermore, after pushing these switches, he would not need to stand at the benchboard and wait for the hydroelectric plant to come in on the line, but could immediately rush to the vacuum pumps and assist in getting the steam turbines back on the line, the hydroelectric units taking care of themselves.

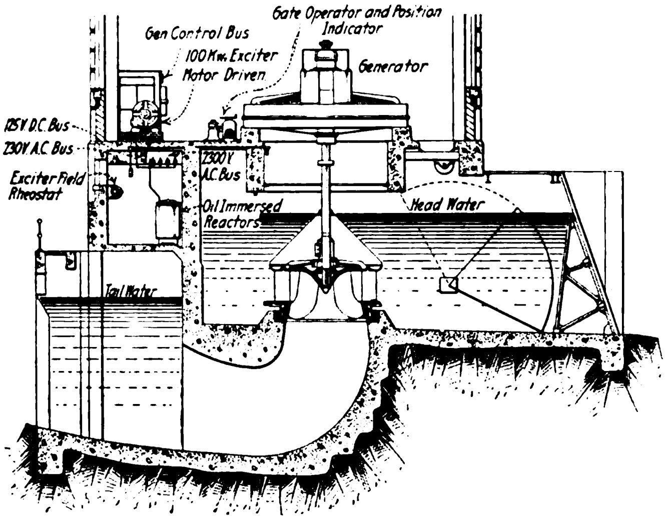
Another unusual advantage of the general system is the fact that by virtue of a constant excitation current in the fields of the hydroelectric machines it is possible to utilize a partially loaded unit to improve the power factor on the entire system. For example, if there is enough water flowing in the river to permit the operation of one machine at full load and to produce 100 kw. on another, full use can be made of the water available and of the full capacity of the windings on the second machine, by taking the control away from the contact-making ammeter and using the underloaded, over-excited machine to absorb a large part of the wattless component of the system load.

SPECIAL FEATURES OF THE LAYOUT

The general arrangement of the power house and its location with respect to the river are not unusual. The interest in the plant lies principally in the selection and arrangement of the electric automatic control apparatus. Each machine with its water wheel and motor-driven control of the gate opening, and its electric control relays and contactors, form a completely separate


IOWA AUTOMATIC HYDROELECTRIC PLANT—VIEWS SHOWING DAM, INTAKE FLUME AND SIDE VIEW OF POWER HOUSE

unit, with the exception of the field excitation supply. Excitation for all generators is supplied from either of two motor-generator sets which deliver a constant current without the interposition of Tirrill regulators, to the field coils of the several units. No instruments have been installed in the hydroelectric station, but rather have been placed on the control benchboard for this station located in the steam plant. All arrangements for switching in the hydroelectric station itself are entirely automatic. The connection between the two generating stations is thus made up of three groups of conductors, the power cables, instrument cable and control cable.



IOWA AUTOMATIC HYDROELECTRIC PLANT—GENERAL CROSS-SECTION

The striking feature of the station interior is its simple appearance. There is a single row of generators through the station, and opposite each is a cabinet in which the relays and switches for that unit are mounted. The few contactors and relays in view on the front of these cabinets do not give one the impression of any unusual amount of control apparatus. The use of switch cabinets rather than the usual paneled switchboard, and the construction of a bus chamber immediately below the cabinets, have made possible the impression of simplicity which one notices. This arrangement of the control apparatus has the advantage of making every element of the wiring and control system as readily accessible as it would be on any board, and yet places it out of sight.

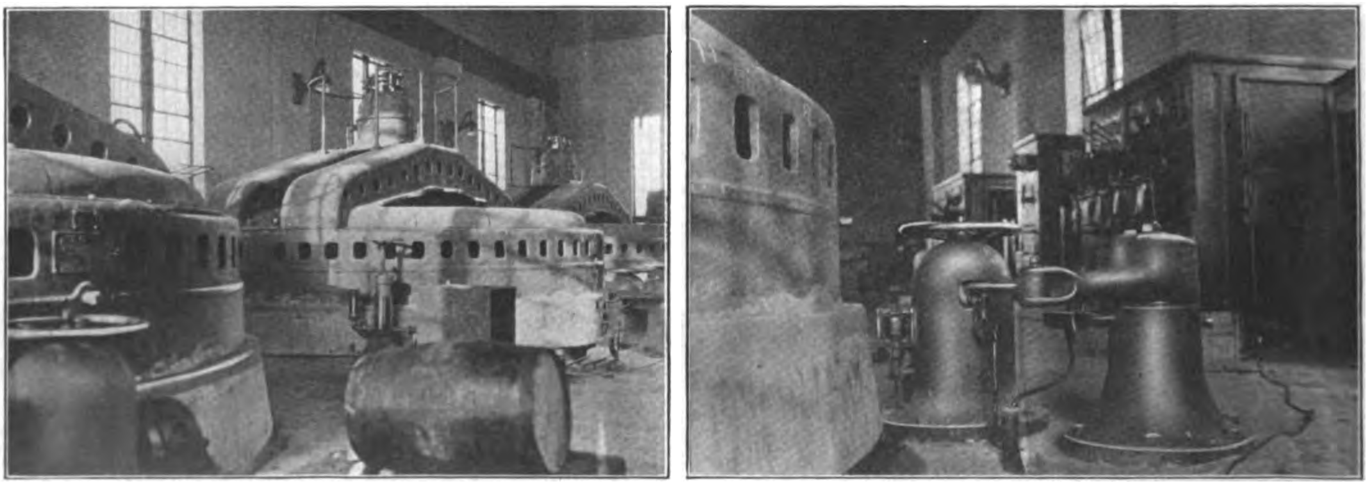
It is also of special interest to note that the plant does not contain any oil governors, since the gates are operated by motors which are controlled either automatically at the hydroelectric station or remotely from the steam station at the will of the operator located there.

RIVER CHARACTERISTICS AND HYDRAULIC EQUIPMENT

The Cedar River is about 600 ft. wide at the power station and is spanned by a concrete dam of the automatic crest type, and composed of nine spillway sections, each 60 ft. wide. The spillway in each of these sections automatically rises and falls with the flow of the river, giving an automatic flashboard effect. This was designed by the Fargo Engineering Company, Jackson, Mich. The intake canal to the power house is built almost at right angles to the spillway at the north end of the dam. The short flume is parallel to the river. The distance of the power house from the dam is but 350 ft.

The normal head of water at the station is 10 ft., with a variation between 8 ft. and 11 ft. Records taken of the river characteristics show that during 180 days of the year the average discharge is about 2100 cu. ft. per second. The lowest flow recorded is 500 cu. ft. per second, which occurred during four days in the year. About twelve or fourteen days in the year the river is at flood stage and the maximum flow is 50,000 cu. ft. per second. These flowage data indicate a regularity which is better than usual and is probably accounted for by the fact that the Cedar River has its source as far north as Minnesota and hence is supplied by a rather extensive watershed. Each water wheel in the plant takes water at the rate of 720 cu. ft. per second under full load.

Standard trash racks and four tainter gates, each 20 ft. long, have been installed at the intake to the flume, which measures 100 ft. wide by 20 ft. deep. Each of these gates is driven by a 15-hp. motor. Each wheel pit at the power house is equipped with another 20-ft. tainter gate on the upstream side and stop logs on the downstream side of the turbine. While this provides for easy inspection, it does not complicate the layout or add much to the cost. Each wheel pit is a scroll case chamber, designed according to specifications of the



IOWA AUTOMATIC HYDROELECTRIC PLANT—THREE 500-KW. MACHINES WHICH COMPRISE THE INITIAL INSTALLATION, AND GATE OPENING MECHANISM DRIVEN BY MOTOR BEHIND STANDARD

Allis-Chalmers Company, which company also designed the draft tubes.

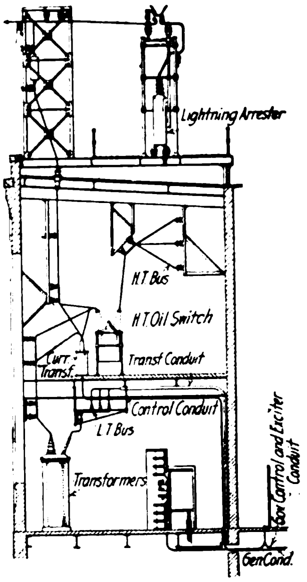
The Francis single-runner type water wheels measure 171 in. in diameter and are rated at 540 brake horsepower at 60 r.p.m. with a 10-ft. head. This type of wheel was chosen because of the low speed necessary and in order to use direct-connected units. An 84-per cent efficiency of the water wheels was guaranteed by the manufacturer, the Allis-Chalmers Company. The thrust bearings on the vertical shafts of the machines are Allis-Chalmers plate type, which is a modified Kingsbury bearing. The oiling system on these bearings is actuated by a direct-connected pump on each unit. Uresel oil is used exclusively and this will need replenishing only about four times a year.

ELECTRICAL EQUIPMENT IN AUTOMATIC STATION

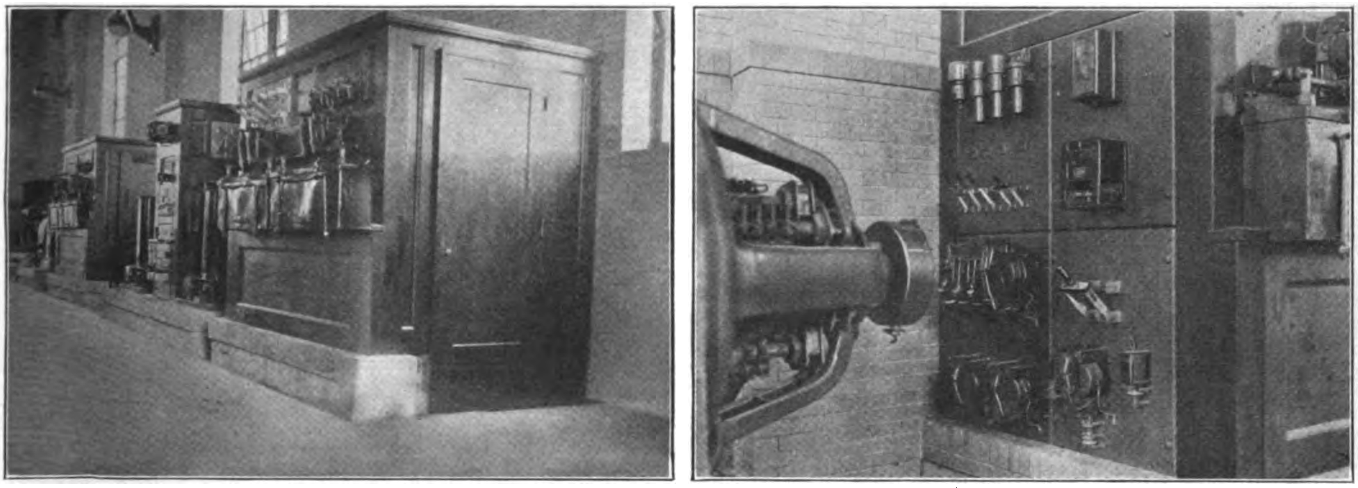
The three generators installed are Allis-Chalmers, two-phase, 60-cycle, 60-r.p.m., 2300-volt, vertical axis machines. Two-phase units were selected so that the station might be paralleled with the company's steam plant which still operates two-phase. The exciter sets which energize the generator fields are rated at 100 kw. at 125 volts. These are compound-wound, inter-pole generators, driven by 150-hp., two-phase, 60-cycle, 2300-volt, 1200-r.p.m. induction motors.

Two 3300-ft. two-conductor, concentric, 60,000-circ. mil, 2300-volt power cables connect the 2300-volt buses in the hydraulic and the steam plants. There is also a lead sheath cable containing ten No. 8 rubber-covered wires, running between the two stations for the instrument connections. Another lead sheath cable, containing fifty-two No. 12 rubber-covered wires runs between the two stations for carrying the control circuits. The control wires and instrument wires were placed in separate cables to avoid the possibility of a breakdown in one of the current transformers placing a high potential on the control circuits. Thirty-eight of the fifty-two wires in the control cable are used for light signals in indicating to the operators at the benchboard in the steam plant the positions of the gates. Without this indicating feature, only fourteen wires would have been necessary to carry out the complete control requirements. All cables between the two plants are laid underground to guard against lightning disturbances.

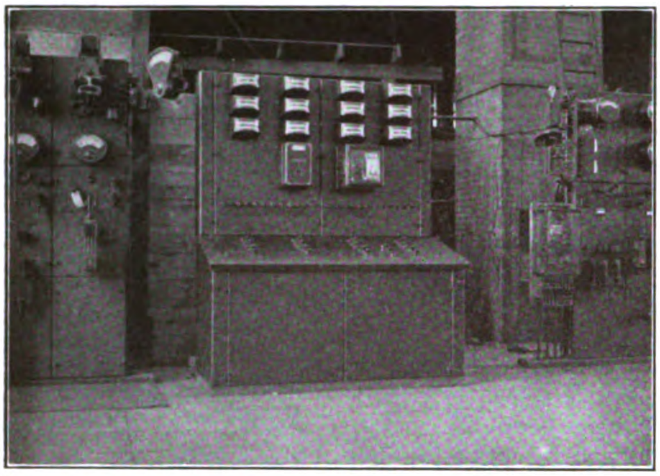
The control equipment at the automatic hydroelectric plant, for the most part, consists of apparatus of standard design for steel-mill work. This type of equipment was selected because of its sturdy and not over-sensitive characteristics. Hence, while the application of the automatic apparatus to the hydroelectric generating equipment is entirely new, the control equipment itself is of usual design but assembled to perform special duties. This equipment is installed on three generator control cabinets and one exciter control cabinet located along one side of the power plant. There is also a terminal board cabinet which has been used as a terminus for all control and instrument wires. Beside each of the generator cabinets is the motor-driven rotary drum controller which determines the sequence of operation of the various relays and contactors in the same manner that this is accomplished in connection with the automatic railway substation. All instrument wires are brought to terminals in the instrument cabinet so that it is possible to cut in portable instruments for testing, in the absence of the permanent meters which are all installed in the steam plant. One feature of the control which differs from that which has been employed in the automatic substations is the overspeed protection device. In the automatic substation this is a simple mechanical device placed on the end of each rotary converter shaft, which closes a circuit through a relay when the speed of the machine reaches a certain point, the relay acting to cut the machine off the line. In the hydroelectric plant this protection is provided for the entire station by a 1-hp. induction motor which drives a speed-limiting device, closing a circuit through a relay in the same manner. As all generators are in synchronism, no one unit could race without carrying all others with it. This motor remains continuously on the line, since it consumes little



IOWA AUTOMATIC HYDROELECTRIC PLANT—CROSS-SECTION THROUGH TRANSFORMER AND SWITCH GALLERIES



IOWA AUTOMATIC HYDROELECTRIC PLANT—FRONT AND SIDE VIEWS OF CONTROL CABINETS FOR TWO GENERATORS AND EXCITERS



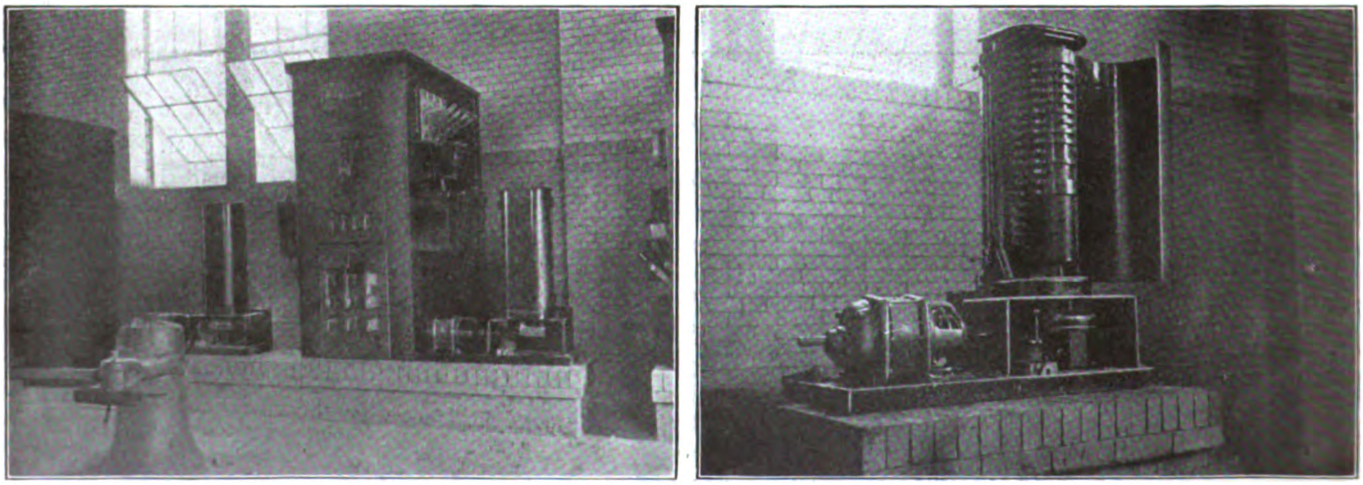
IOWA AUTOMATIC HYDROELECTRIC PLANT—AUXILIARY REMOTE CONTROL SWITCHBOARD LOCATED IN NEAR-BY STEAM POWER PLANT

power, and it was hardly worth while, therefore, to provide relays to cut it off.

The sequence of operation of the control apparatus is in general as follows: When the operator at the steam station closes the small benchboard switch, previously mentioned, the drum controller at the hydroelectric plant starts to revolve. This same connection might have been accomplished by the action of the automatic float switches governed by the water level in the storage reservoir. The first circuit completed by the drum controller is through a relay which starts up one or the other of the exciter sets, depending on which way a triple-pole, double-throw switch is thrown. The 150-hp. motor of this exciter set is thrown directly across a 2300-volt line taking momentarily eight times full-load current and coming up to full speed and full voltage in three and a half seconds. Meantime the drum has continued to revolve and has closed the necessary circuit to energize the gate motor which opens the gate on the water wheel to about 0.2 full opening. After completing this contact the drum controller stops until the generator reaches a speed of 55 r.p.m., at which time a centrifugally operated switch on the top of the generator shaft makes a contact which starts the drum revolving again. This then completes the circuit which closes the main line contactor, putting the machine on the line without field and in series with a set of reactors which will limit the current through the unit to about 2.5 times full-load current during the synchronizing period. Two of these reactors, which are of the single-phase oil-immersed type, designed for five-minute duty, are installed for each machine. A time interval between the closing of the centrifugally operated switch on the main generator and the closing of the main line contactor is provided in order to permit the generator speed to increase from 55 r.p.m. to 60 r.p.m., or synchronous speed, before the main-line contactor is closed. The next function performed by the drum is to close a circuit through the field coils. When the exciting current is first thrown on the generator field, it is limited by the field rheostat connected in the circuit to about one-quarter normal value. This gives the machine a chance to get in step, without unduly high current values. After a moment a section of the field rheostat is shunted out, increasing the field current to its normal value. The current-limiting reactors are then short-circuited and the contact-making ammeter closes a circuit through the gate motor which opens the gate to a point permitting the machine to carry full load. All of these operations require but thirty-seven seconds. The time which elapses from the instant the generator begins to take load until it is under full load is only seven seconds, because of the rapidity with which the gate-opening mechanism responds. In placing the generators on the line the action is similar to that of bringing a synchronous motor up to speed and placing it on full circuit. The ordinary synchronizing process as usually applied to generators does not become a part of the operation in this hydroelectric plant, since placing the machine on the line with low-field excitation allows the rotor to slip back or to be pulled ahead a fraction of a phase angle without trouble. Oscillograph records of the current in the main generator circuit show that the maximum disturbance during the starting period is not serious.

PROTECTION AGAINST POSSIBLE TROUBLE

The bearings of each machine are protected against overheat by thermostats of the spiral spring type which are set to operate at 45 deg. C. Should a bearing become overheated, the thermostat would promptly act to cut the machine affected off the line. When the bearing cooled down to normal temperature the thermo-



IOWA AUTOMATIC HYDROELECTRIC PLANT—EXCITER CABINET AND MOTOR-OPERATED DRUM CONTROLLER WITH SIDE CASING OPEN TO SHOW CONSTRUCTION stat would automatically cut the machine in again. Thermostats are also placed on the current-limiting reactors and set to operate at 75 deg. C. Thermostats on the stator coils of the generators are set to operate at 65 deg. C. The speed-limiting device already described is set so that it shuts down the entire plant whenever the station frequency reaches 64 cycles per second. In a test of this device the main oil switch at the steam station was tripped from the benchboard, cutting all load off the hydroelectric plant, which, of course, would tend to make the machines run away. In one and two-fifths seconds after the oil switch was tripped, the frequency-limiting device operated and the water wheel gates began to close.

The possibility of a machine operating single-phase is prevented by the fact that part of the relays are installed in each phase, and the wiring is laid out so that the opening of any one of the relays will open all contacts and shut down the machine. All contactors are held in by energized solenoids, so that no-voltage failures are guarded against through the instant opening of all relays. The loss of excitation is guarded against by a relay in series with contacts which in opening shut down the plant. The generators are protected against surges by inverse time-element relays which cut the current-limiting reactors into circuit with the machine for an interval on not excessive overloads, before cutting the latter off the line. Under normal operation the 220-volt, 60-cycle energy supply for the control system is supplied from two 5-kva. transformers installed in the hydroelectric plant. In case of emergency, however, a throw-over switch supplies the control energy from the steam station power and lighting transformers.

The float switches guard against trouble from low water. No special provision has been made to guard against the accumulation of snow-ice, except the standard trash racks at the intake to the flume and at the intake to the wheel pits. In this connection it is interesting to note that a sudden stoppage of all units in the plant produces a piling of the water at the gate to such an extent that the back-wash effectively removes all trash from the rack and causes material which has gathered at the upstream trash rack to be washed over the spillways.

Since the hydroelectric plant was placed in operation a list of forty-eight conditions and combination of conditions which might occur to cause trouble at the plant were developed, and each one of these conditions was brought about artificially to test out the apparatus. In each case the plant or the machine, as the condition required, was automatically shut down until normal conditions were restored. These tests included everything from dead short-circuits to exciter failures.

Depreciation and Rate-Making

New England Street Railway Club Discusses Important Phases of These Topics — Remarks by Public Service Commission Chairmen Show Appreciation of Electric Railway Problems

FRANK SILLIMAN, JR., vice-president Cumberland County Power & Light Company, Portland, Me., and of the banking house of E. W. Clark & Company, Philadelphia, addressed the New England Street Railway Club at Boston, Mass., on Nov. 22, upon "Depreciation." During the discussion a notable address was given by Frederick J. Macleod, chairman Massachusetts Public Service Commission, relative to depreciation and rate-making. William C. Bliss, chairman Rhode Island Public Utilities Commission, also spoke briefly but pointedly upon the needs of the electric railway to-day and the importance of making them absolutely clear to the general public. The remarks by Messrs. Silliman and Macleod are abstracted in other columns of this issue.

DISCUSSION ON DEPRECIATION

The first part of the discussion was devoted mainly to questions put to Mr. Silliman. He said that he knew of no electric railway which has made adequate provision for depreciation, this being partly due to the relatively short time the subject has been a vital one in the thoughts and acts of transportation men. To determine what is the proper depreciation allowance in any case it is necessary to look over the history of the property. One cannot tell what the future service requirements will be on a railway, and obsolescence and inadequacy are almost beyond the power of anyone to forecast.

E. C. Foster, president Manchester Traction, Light & Power Company, Manchester, N. H., said that the great trouble in regard to depreciation has been that the electric railways have not had sufficient revenue to charge anything to depreciation and still pay out dividends. All electric railways were under a misapprehension for certainly twenty years, believing that the growth of earnings would care for depreciation. About ten years ago the setting aside of depreciation funds began, but to-day the 5-cent-fare unit is utterly inadequate to meet the requirements of caring for the property and meeting the increased cost of labor and materials. Not only should 6, 7 or 8-cent fares be imposed where required, but companies should be relieved of some of their public burdens. Mr. Silliman felt that if to-morrow every utility should begin to charge off depreciation its credit would not be much affected, but some companies which had been flagrantly paying unearned dividends would suffer in credit. A company, it was said, makes a better appearance before a regulating authority if it has been making provision, at least on its books, for depreciation.

Matthew C. Brush, president Boston (Mass.) Elevated Railway, emphasized the great importance of obsolescence, citing instances where companies are operating power plants and rolling stock which are worth 70 to 75 per cent of their original cost but are, none the less, obsolete under modern standards. He recalled a generating unit representing in 1911 the highest development of the art, but now obsolete as a productive machine. Obsolescence and depreciation, he said, are properly a straight charge against fares. If all the companies in the country had charged off in the last twenty-five years what they should have, to meet obsolescence, there would not have been a lasting 5-cent fare in the land. Obsolescence occurs as a direct result of the pleasure and convenience of the traveling public and not as a matter of choice to the railway.

MR. BLISS ADVOCATED SLIDING SCALE OF RATES

Chairman Bliss of the Rhode Island commission said that the average member of the public has little real conception of electric railway financial problems, and goes into such matters blindly and often with prejudice. Claims that watered stock exists are presented in most exaggerated form, and the feeling of the average man is reflected in legislative bodies. In Mr. Bliss' opinion the 6-cent fare is not the remedy for the present situation in populous areas. It seems rather that a contraction of the single-fare area is preferable, thus retaining the short haul and more profitable riding, and charging more for the outlying rides. The increasing use of the automobile is endangering revenue seriously. Excessive 5-cent-fare areas must be contracted. What is desirable is a sort of sliding scale of rates providing automatically for increased fares without necessitating long hearings. Mr. Bliss said he disliked to refer to the Cleveland system, which has given more wrong impressions than anything else in the world, but in its provision for fare changes in accordance with the status of a special fund accumulated out of earnings the public follows along the line of paying for what it gets. [The speaker did not imply that the existing fares at Cleveland are adequate.—EDS.]

In moving a rising vote of thanks to the speakers, Mr. Brush said that the commissions should not be asked to do all the work of fare regulation. All railway men, including the manufacturers, must make it their business to have the public realize that the decisions of the commissions are fair. They must do their part in dissipating the feeling that the commissions represent merely the patrons.

Accounting for Depreciation

A "Correct and Workable" System for Handling Depreciation of Electric Railway Property—Depreciation Cannot Be Ignored

BY FRANK SILLIMAN, JR.
E. W. Clark & Company, Philadelphia, Pa.

IN my remarks I shall not enter into a discussion of the application of depreciation to fare or rate regulation, but shall address myself to the subject of depreciation itself and how to account for it. If depreciation is properly accounted for, its status as a factor entering into fare or rate regulation settles itself.

DEPRECIATION RESERVES SHOULD BE CHARGED TO OPERATING EXPENSES

I agree with the Interstate Commerce Commission that any reserves created to meet depreciation should be created by charges to operating expenses. My chief reason is this: A large part of depreciation is due to wear and decay of physical property. The useful life of that property depends in part upon current expenditures for maintenance. Two utilities operating under similar service conditions may have very different lengths of useful life of the same kinds of property, because one spends more upon that property for current maintenance than the other does. Unless reserves for depreciation are created by changes to operating expenses there is grave danger that by assuming the same life of the property such utilities will move far apart as to the total amounts provided for current maintenance plus renewals.

The simplest and best accounting method is to have no reserves for depreciation, and charge the cost of both renewals and maintenance to operating expenses in the month or year in which the cost is paid. The only objection to this method is that it imposes upon the income of one fiscal period expenses belonging to previous periods. No prominent railroad system in the United States, except one (Norfolk & Western Railway), carries a reserve account for depreciation except as to rolling equipment. While very large public utilities may handle depreciation of all kinds of property in the same manner that railroads handle depreciation of way and structures, should this plan be generally followed by public utilities their operating expense accounts would be very much distorted whenever any important renewals were made, particularly in the cases of smaller utilities. It is solely because of this objectionable distortion that the creation of depreciation reserves by charges to operating-expense accounts or surplus is employed. It is, in effect, a provision for a depreciation equalization account extending over a period of years instead of one year, as other equalization accounts are now limited.

A CORRECT AND WORKABLE DEPRECIATION SYSTEM

Accounting for depreciation can be done by the ordinary public utility in a way which is correct in principle and workable in practice. Let us assume companies whose earning positions are as follows: Company "A" earns nothing on its stock and makes no provision for depreciation. Company "B" earns and pays 6 per cent on its stock and makes no provision for depreciation.

Unless Company "A" is growing in earnings density I have nothing to suggest other than to keep going as best it can, in the hope that something may happen to improve its earnings. Unless something does happen there is no remedy.

Company "B," if growing in earning density and desirous of maintaining the dividend rate, may devote all earnings above 6 per cent on its stock to the creation of a depreciation reserve until the accruing depreciation is adequately met. It would also be well to reduce the dividend rate unless there is a large surplus. Depreciation which has accrued previous to the date when adequate provision for it is made in expenses will have to be met by charges to surplus to cover the cost of renewals made on account of such depreciation; or, if surplus is not available, by charges to current operating expenses in sufficient amount to maintain a credit balance in the depreciation reserve. This is visiting the sins of the father upon the son, but it will not be the worst inheritance.

HOW ELECTRIC RAILWAY RESERVES SHOULD BE KEPT

Both of these companies should keep their books so as to show all of the appropriate depreciation accounts.

whether or not the amounts are adequate. For instance, in the case of an electric railway, reserves should be created for depreciation of (1) way and structures, (2) car equipment, shops and carhouses, and (3) power equipment.

If these reserves are to be created by charges to operating expenses, and net income is not large enough to stand the full amount required, there should be charged all that the net will bear, even if it is only a small amount per month for each account. It may be in some cases that it is not possible to tell in advance how much can be charged for depreciation without bringing the net income below the amount required for bond interest. In such a case the equalization accounts may be used as is illustrated below, in the case of depreciation of way and structures.

Suppose that the officers of a company believe that depreciation of way and structures requires a reserve of $1,000 a month above current maintenance. Assume that at the beginning of the fiscal year the officers think it would be unsafe to charge this amount monthly and reduce it to $500. This they know is inadequate, but they are hopeful that the results of operation for the full year will be such that $1,000 a month will not bring net earnings lower than the amount wished for interest and dividends. This problem can be solved by charging operating expenses monthly with $500 for depreciation and $500 for equalization. If later it appears that the net income is going to be satisfactory, in the last month or months of the year, $6,000 can be credited to depreciation reserve and the same amount charged to equalization reserve. On the other hand, if the results are not satisfactory from the point of view of net income, operating expenses can be credited in the last month, or during the last six months, with $6,000 or any part of it, and the same amount charged to the equalization reserve. This shows how a growing company can take on the burden of depreciation.

MEASURING THE DEPRECIATION BURDEN

The next thing is to measure the burden which is to be taken on. I do not attach much importance to the relative merits of straight-line, sinking-fund, or other methods of calculating depreciation. Public utility properties should be maintained in an average condition equal to 75 per cent to 90 per cent of new. If maintained in a better condition, the cost of service is too high. If maintained in a worse condition, the service is poor.

Assume a property costing $1, and maintained in an average condition equal to 80 per cent of new. That property should be represented by 80 per cent worth of property and 20 per cent in depreciation reserves. Unless it has an unappropriated surplus, the depreciation accrued in the past must be met out of the income of the future. One thing is certain, and this is that depreciation cannot be ignored.

No one can tell in advance the annual amounts required to meet accruing depreciation. Every experienced public utility manager of good judgment, however, can tell whether the appropriations of his company during the last five or ten years have been too much or too little. He can observe the development of his reserve balances and the condition of his property and increase or decrease the appropriations accordingly. The principal trouble about the whole thing is the lack of courage to try. There is no difficulty about it, and no mystery.

Obsolescence Is Serious Problem

How Massachusetts Commission Views Depreciation —Higher Fare Question Requires Considerable Experimentation—Electric Railways in Critical Period

BY FREDERICK J. MACLEOD

Chairman Massachusetts Public Service Commission

THE matter of depreciation involves a number of different elements, one of which, the element of obsolescence, is perhaps the most difficult of all to determine upon any theoretical basis or to make provision for in advance, according to any scientific standard. In the electric railway field there never was a time—at least since the electrification of the roads—when obsolescence was so large a factor as in the last three or four years. The art of electric railway operation has undergone practically a revolutionary change in the last three or four years, particularly in regard to the matter of equipment.

I was talking recently with the owner of one of the largest and most successful public utility properties in this country. The property is not in Massachusetts. He told me that he had bought and placed in service within the last three years a large number of cars, and that if he felt he could get the necessary capital it would be good business for him to scrap those cars and replace them with the best standard of equipment, according to the needs of to-day. If that statement is correct, it shows what an extraordinary element of uncertainty is inherent in the management and the operation of electric railways.

Some concerted effort must be made, and that effort should be initiated by the various electric railways, to try to make an intelligent investigation of the service life of the different units in their properties; to try to determine upon the basis of past experience what, under normal conditions, may be expected to be the future life of the property which is now in service, and to try, as far as possible, to determine just what amount should properly be laid aside annually, in order to provide for replacing those units because they are worn out, or because their replacement by some other form of equipment would be justified purely from a financial and operating standpoint.

ADEQUATE DIVIDENDS MUST BE PROVIDED

Of course, that is only the basis for providing for depreciation, because the question of depreciation and the question of fares must go together. In the last analysis, it does not do much good to work these things out on a scientific basis and take care of them in your bookkeeping unless you can take care of them also out of your treasury. I think there is coming to be a fuller recognition of what constitute the real elements of cost in electric railway operation and a fuller recognition of the fact that the cost of the money that goes into the property is just as much a necessary element of cost as the wages of the men who are operating the plant.

There has been a disposition—for which there is a certain justification in legal theory—to claim that if the company is confronted with a condition where, after it has paid its maintenance expenses, it must either sacrifice dividends or a provision for depreciation, there is an absolutely clear obligation on the part of the company to pass up dividends altogether and pay the entire operating surplus into a reserve fund for depreciation. Now, in so far as dividends represent profits beyond a fair rate of return on the investment, that principle is entirely sound. But in so far as it is necessary to attract money to the properties to keep them going, I can see no escape from the conclusion that dividends must also be provided in sufficient amount to enable the company to preserve its credit and to go forward in making the improvements and extensions that are absolutely demanded, not only in the interest of the integrity of the company and its stockholders, but in the interest of the public which it serves.

HOW THE MASSACHUSETTS COMMISSION HAS HANDLED DEPRECIATION IN RATE-MAKING CASES

The problem which confronted the Massachusetts commission, in the first instance, was to determine just what recognition should be given to accrued depreciation in determining the fair value of the property upon which a company is entitled, under the law, to a fair return. The commission was faced with that problem, shortly after its organization, in the Middlesex & Boston rate case. We found that throughout the country at large the theory which had received recognition far and away beyond any other theory, and which had almost become crystallized into a legal rule, was the rule that a return should be allowed only upon the value of the property less depreciation. The commission did not believe that this rule was sound or just to the men who had put their money into the properties. Furthermore, it did not believe that the application of any theory of this kind could be enforced without risking the practical bankruptcy of a large number of the electric railways in the State.

The consequence was that the commission adopted the theory that if the money was honestly invested in the properties, in the first instance, and they were maintained with anything like a decent degree of maintenance, the companies and the investors were not to be penalized, in the absence of mismanagement, for any depreciation of the property that had been brought about in the public service, unless it could be shown that the company had profited from that situation rather than the car-riding public. It was found on examination that few, almost none, of the companies in the State had been paying excessive dividends in the past. On the average, in the State, the returns were less than a fair investment return on the money put into the properties. If the companies had allowed their properties to depreciate in the public service and had not made any undue profit, the depreciation which ought under normal conditions to have been represented in a reserve, or similar account, had really gone to the car-riders in the form of fares which were lower than they would otherwise have been obliged to pay.

In dealing with the Middlesex & Boston rate case the commission also had to determine to what extent depreciation should be considered as an element of cost in electric railway operation, to be provided for out of fares. From the very start the commission has consistently taken the view that proper depreciation charges, in order to keep the property up to a proper operating standard and to have a fund which will permit replacements to be made when due, are absolutely fair, just and legal charges against car-riders, and must be provided for in the rates which are fixed by the public regulating authorities.

PROPER FARE BASIS NOT YET DETERMINED

When it comes to the question of how companies are going to get additional gross revenue through fares I do not know of any one in this room (and if there is no one here, I believe there is no one outside) who can give a categorical statement as to the methods which are best adapted in the way of fare standards. I am of the opinion, from such experience as I have had in observing the results of different fare increases in Massachusetts, that none of us has yet hit upon the exact method of fare increase which is calculated to produce the maximum result in the way of corresponding increases in gross revenue. I believe there must be a considerable degree of experimentation with different methods of fixing fares before we can be sure that in the case of any particular property the right result is reached.

It is clear beyond any reasonable question that for certain companies, in certain kinds of territory, and upon certain lines, an increase of the unit of fare to 6, 7 or 8 cents is not going to cure the situation and give the companies the relief to which they are entitled, to which all are agreed they are entitled, and which might, from a superficial examination, appear to be predicated upon the increase in fares actually allowed.

The commission has recently allowed fares to be charged by certain companies upon a different basis, which, with a 2-cents-a-mile charge, recognizes distance as perhaps the controlling factor in the fixing of rates. This experiment has not been tried long enough for the commission to be able to reach any final view in regard to the efficacy of that method of fixing fares. My personal view, based on such observation as I have been able to make of the operation of this system, is that upon certain lines it will prove to be the most satisfactory method of fixing fares that has yet been adopted.

With city fares, the plan of charging on a strictly mileage basis is perhaps not practicable. I believe, however, that there are likely to be attempts made by Massachusetts companies to put into effect the system known as the Milwaukee fare system, with a central single-fare zone outside of which increments of fare are provided by successive and graded steps rather than by an immediate horizontal increase of 100 per cent. The inflexibility of the 5-cent zone system, where the moment the passenger reaches the limit of the first zone he is obliged to have his fare doubled, is responsible in large measure for the fact that in a large number of cases the single-fare zone in the cities has been extended beyond the limits to which a passenger can reasonably be carried for a single fare. As communities have been built up the companies have felt that they could not, at any rate without absolutely arresting the growth and development of the new sections, put their fares on a basis 100 per cent higher than their neighbors were paying. If there were some system of intermediate steps it would be much easier to keep the fare limit within proper bounds.

INDUSTRY IS IN CRITICAL PERIOD

The situation is not one for panic, but it is distinctly one which is a menace to the whole fabric of community life at the present time. The time has come when the public is bound to recognize, and I believe is recognizing, the fundamental importance and necessity of co-operative action in bringing about the solution of a problem that is of absolutely commanding interest to every citizen. We must have the electric railway employees and the managers pulling together. We must have the capitalists, whose support has done so much for the companies in the past, put their shoulders to the wheel. We must have the support of the local authorities. We must have the help of the Legislature, and we must have, and I can assure you that you are going to get, the support of the Public Service Commission.

The Science of Preparing Car Axle Steel

Analysis of Causes of Failure and Discussion of Special Treatment Devised to Eliminate Weaknesses and Increase Desirable Properties—Stresses to Which Axles Are Subjected and Their Effect on the Steel

By W. L. ALLEN
President Valley Steel Company, St. Louis, Mo.

THE history of car-axle failures indicates that for most service a grade of steel known as normal steel may stand up indefinitely. At the same time, it frequently happens that cars are removed from service on account of a bent or broken axle. The causes of these failures and the means devised to overcome them have developed, through many years of experience, a most scientific treatment of steel for this use.

By normal steel is meant a product which, after forging or rolling is not subjected to any further process of refinement, such as heat treatment. The physical properties of such an axle are somewhat as follows:

Ultimate tensile strength	75,000 lb. per square inch
Yield point	35,000 lb. per square inch
Elongation in 2 in.	18 per cent
Reduction of area	24 per cent

The yield point and ultimate tensile strength of an axle represent the strength of the material, or its resistance to breakage through the application of static load, while the elongation in 2 in. and the reduction of area indicate the toughness or ductility of the steel and represent the resistance to fatigue, alternating stresses or dynamic blow. In a comparison of the toughness of normal steel with that of heat-treated steel, it is better to consider the respective reduction of area of the two pieces rather than their elongation, because of the fact that a test piece of normal steel will elongate over its entire length of 2 in., while a test piece of a quenched and tempered steel will "neck down" and elongate over a length of only about ½ in. The difference in the action in the two cases is illustrated in Fig. 1.

Because of this difference in the manner in which the two steels draw out, the elongation of the quenched and tempered steel should really be taken in 1 in., or even better within ½ in., rather than within 2 in. as is the usual custom. However, as the original area of each test piece is the same, a comparison of their respective reduction of areas is truly representative of their toughness.

In the designing of axles for any given service, it is considered good practice to use a fiber stress of 8000 lb. per square inch. From the table above, it can be seen that the normal steel provides a good factor of safety against bending or breaking of the axle. The fact that a normal steel axle can be bent almost double before breaking seems to indicate that it has sufficient toughness. It is nevertheless true that no matter how much care is used in the manufacture of axles or in their inspection, an occasional failure as the result of defective steel is unavoidable. A typical failure is shown in the sketch reproduced in Fig. 2.

In this case a crack had developed in the axle and had gradually extended through it until there was insufficient section remaining to carry the load; hence failure resulted. At the point of fracture a coarse structure will frequently be observed, and this fact has given rise to the claim that the failure was due to crystallization. Such a claim is entirely unscientific and incorrect, as steel does not crystallize in its cold state when subjected to working stresses. The start of such a failure may be due in reality to either of two causes:

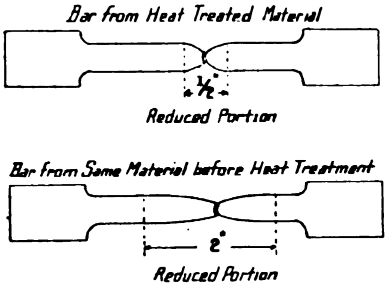

Bar from Heat Treated Material
½"
Reduced Portion
Bar from Same Material before Heat Treatment
2"
Reduced Portion

Fig. 1

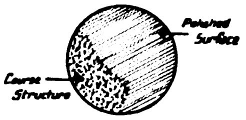


Fig. 2

HEAT TREATMENT FOR AXLES—FIG. 1—DIFFERENCES IN ELONGATION BETWEEN TEST PIECES OF TREATED STEEL AND NORMAL STEEL. FIG. 2—SECTION OF BROKEN AXLE SHOWING TYPICAL FAILURE

1. Inherent forging strains set up in the axle during the process of manufacture; or
2. Inability of normal steel to withstand the stresses to which axles are subjected in actual service.

In the forging of an axle, it is certainly true that strains are set up within the metal which may not be entirely eliminated in the subsequent cooling from the forging heat. The possibility of the development of such strains depends somewhat upon the process of manufacture and is greatly minimized by modern practice. However, the fact that some axles in which there are no defects and in which the pulling test indicates the physical properties to be satisfactory, fail soon after being placed in service, shows conclusively that these strains may be sufficient to approach so closely the yield point and the tensile strength of the steel that the increase in stress added when the axle is placed in service will exceed the strength of the steel and cause a failure to start. If these combined stresses are sufficient to exceed the tensile strength of the entire axle, breakage will result immediately; but if on the other hand these combined stresses are merely sufficient to exceed the strength of the outer fiber, a small hairline crack may develop on the surface of the axle and gradually extend until failure results. Annealing of axles after forging has greatly minimized such breakage, but even the annealed axle will not stand up satisfactorily under certain conditions of service. Such a service is one in which heavy cars are operated at high speed or where, in order to lighten the weight of the cars, the section of the axle has been greatly reduced.

It is therefore felt that there are stresses to which axles are subjected in service other than those brought about by the normal static loads, and in fact even superficial investigation proves conclusively that such is the case. For example, when a car is operated over crossings, the axle is required to withstand a very severe dynamic shock, which tends momentarily to increase the amount of deflection in the axle and set up an alternating impact stress. Furthermore, it sometimes happens that car wheels will momentarily roll on the flanges, and then when these wheels again bear on the tread, a very severe bending action is set up, causing not only an alternating impact stress but a deflection in the axle sufficient frequently to cause it to bend. There can be no question, therefore, but that in normal operation an axle is required to withstand a combination of static load with a very severe alternating impact. This is the very hardest service to which steel can be subjected. Steel under the stress of alternating impact must ultimately fail even though these stresses do not exceed the elastic limit of that steel. Furthermore, the life of steel under such stresses is dependent upon how nearly the elastic limit is approached.

The life of an axle in any given service is therefore largely dependent upon the elastic limit or yield point, and while some failures undoubtedly result from other causes most failures may be traced to the fact that the combined static and alternating impact stresses approach too nearly the yield point or elastic limit of the steel. Such failures can be minimized or entirely eliminated through the use of a steel having a higher elastic limit. Such an axle can be produced through heat treating. By this is meant the alternate heating and cooling of an axle after forging in such a manner as to refine the grain structure and improve the physical characteristics of the steel.

THEORY OF HEAT TREATMENT

If a piece of steel is heated to a high temperature and allowed to cool slowly from that temperature and its rate of cooling is carefully noted, it is found that the cooling proceeds for a time at a uniformly retarded rate, and then, when a certain temperature is reached, a most interesting and significant phenomenon takes place. The cooling is momentarily arrested and for a time no drop in temperature results. In fact, the metal actually gives out heat or recalesces. Hence, the temperature at which this occurs is termed the "recalescense point." After a certain lapse of time, the metal resumes the normal rate of cooling. This phenomenon is shown in the accompanying curve (Fig. 3).

Since during this action the surrounding atmosphere does not cease to abstract heat from the metal, it is evident that there is a spontaneous generation of heat within the metal itself sufficient to exceed the heat lost in radiation. This is caused by a molecular rearrangement in the metal. In heating, the reverse condition takes place. The steel absorbs heat at a uniform rate until a temperature is reached at which the rise is momentarily retarded or stopped. This is known as the calescense point. On account of a certain hysteresis, frequently noted in such phenomena, the calescense and recalescense points for any given steel do not coincide, the former point being higher than the latter.

It has been found that the amount of carbon manganese, silicon, phosphorous and sulphur in combination with iron, as well as the amount of nickel, vanadium, chromium, etc., which are sometimes added, have an effect on the calescense and recalescense points, or critical points, as they are sometimes termed. As these elements, particularly carbon and manganese, are increased, the critical points are lowered. For example, a steel having 1 per cent carbon has a lower critical temperature than a steel with 0.2 per cent carbon.

When molten steel is cooled to atmospheric temperatures, the carbon chemically combines with a molecular proportion of iron to form an iron carbide. When this steel is reheated to a temperature above its calescense point, the carbon is thrown into solid solution and in cooling becomes harder or softer according to the carbides formed. These carbides are controlled by the rate of cooling and the carbon content of the steel. This heating and cooling of steel, by which the physical properties may be changed, consists of three distinct operations—annealing, hardening or quenching, and drawing or tempering—and collectively they are termed the "heat treatment of steel."

Annealing of steel may be done either for the purpose of increasing its softness for machining purposes or to relieve any strain set up in the metal during forging. The process consists of heating and slow cooling and is generally done by heating the steel to some temperature immediately above its calescence point and cooling either by allowing the piece to remain in the furnace and reduce its temperature gradually or by removing it from the furnace and cooling in the air.

In hardening steel, it is first necessary to heat it above the calescence point in order to break up the existing condition of the carbides. The temperature should not be carried much above the calescence point, as any heating above this does not materially affect the resultant hardness but does tend to make the grain of the metal more coarse. When the steel has attained uniformly the desired temperature, it is removed from the furnace and cooled rapidly by quenching in some solution, such as oil, water, brine, etc. The higher the carbon content and the more rapidly the steel is cooled, the greater is the increase in hardness, while the grain structure is more highly refined as the rate of cooling is increased. The rate of cooling is sometimes considered a function of the heat conductivity of the cooling medium.

Repeated experiments have determined that the quenching of steel in some solutions is not as effective as in others; for example, oil is less effective than water or brine. The effect on the hardness and structure of a given steel resulting from quenching in various solutions may be observed from the micro-photographs, Fig. 4 and Fig. 5 reproduced herewith. The test pieces used in making these photographs were of the same analysis throughout, the only variable being the solution in which each was quenched. A Brinell test was made on each piece, a section of each polished and a micro-photograph taken showing the structure magnified 400 diameters.

While the water-hardened specimen is harder than the oil-hardened, the most noticeable difference is in the refinement of the structure of the two specimens. With the hardening process properly carried out, it is frequently true that while the structure is highly refined and the material made very hard, its hardness is greater than necessary, and the metal is too brittle or is weakened by shrinkage strains set up in quenching. In order to relieve brittleness or shrinkage strains or reduce the hardness, the piece is drawn back or tempered.

Tempering consists of reheating a hardened piece of steel to a temperature below its critical points and then allowing it to cool slowly in air. In this process the unstable condition of the carbides brought about in the hardening operation, can be somewhat changed. The extent of this rearrangement is controlled by the temperature to which the piece is reheated and the length of time it is held at this temperature. The result is to decrease the hardness of the metal and increase its toughness. The arrangement of the carbides thus produced is stable at atmospheric temperatures, or in fact at any temperature below the draw back or tempering point. Heat treatment is complete with this operation.

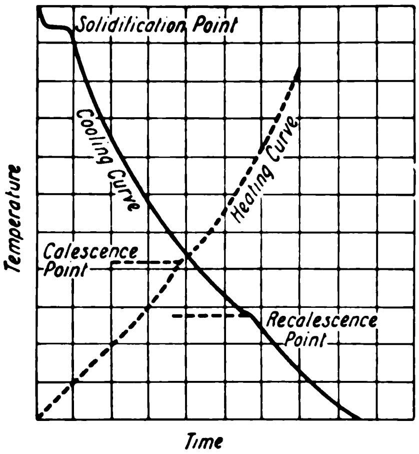


Fig. 3

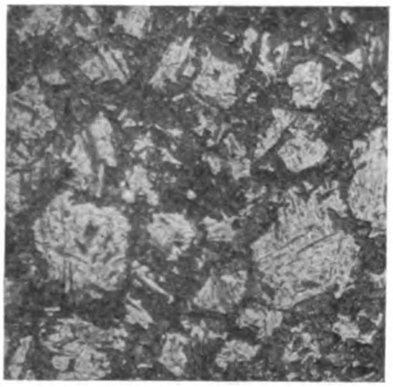


Fig. 4

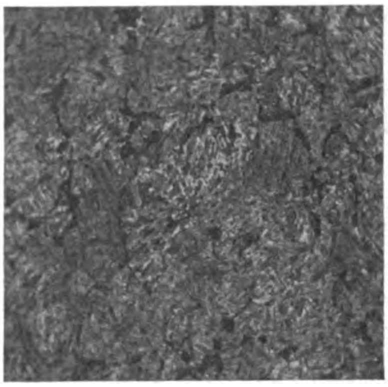


Fig. 5

HEAT TREATMENT FOR AXLES—FIG. 3—HEATING AND COOLING CURVES OF STEEL. FIG. 4—MICRO-PHOTOGRAPH OF OIL-QUENCHED STEEL, BRINELL HARDNESS 364. FIG. 5—MICRO-PHOTOGRAPH OF WATER-QUENCHED STEEL, BRINELL HARDNESS 555

HEAT TREATMENT OF CAR AXLES

While the fundamental reason for annealing is to relieve axles from any forging strains which may have been set up, this operation can be so conducted as somewhat to increase the elastic limit over that of normal steel. For example, a comparison of the physical properties of a normal axle with an annealed axle will show a slight increase in the elastic limit of the latter, as seen in the table opposite.

If the process of annealing is intelligently conducted with adequate equipment for a uniform heating and cooling of each piece, a grade of axle is produced which is free from internal strains and possesses an elastic limit somewhat higher than a normal axle. Such a grade of axle will therefore undoubtedly give much better service and greater life than will a normal steel axle. However, if the assumption that the life of an axle is largely dependent upon its elastic limit is correct, any process which will materially increase its elastic limit and which does not develop other inherent bad qualities, will unquestionably increase the life of such an axle. Such an improvement can be brought about through the medium of quenching and tempering the axles. The process of heat treatment can be so conducted as to increase very materially the elastic limit of the steel without decreasing the toughness, or better still, it can be so conducted as to increase both the strength and the toughness. A comparison of the physical properties of a normal steel axle with a quenched and tempered steel axle will show the extent of this improvement.

In addition to an increase in the strength and toughness, proper annealing will develop a closer and denser grain, and quenching and tempering will increase the extent of this refinement. A tempered axle, therefore, has not only the advantages of the higher elastic limit with greater toughness but the additional advantage of a much higher refinement of grain structure. This property means an increase in the resistance of the steel to shock or alternating impact and also a decided increase in its wearing qualities when subjected to erosion, as is the case with axle journals. A properly quenched and tempered axle therefore not only minimizes the possibility of bending or breaking but also increases the life of the journals.

	Normal Steel Axle	Quenched and Tempered Steel Axle
Ultimate tensile strength per square inch	75,000 lb.	97,500 lb.
Yield point or elastic limit per square inch	35,000 lb.	60,500 lb.
Elongation in 2 in.	18 per cent	23 per cent
Reduction of area	24 per cent	46.7 per cent

IMPORTANCE OF UNIFORMITY IN TREATMENT

It is extremely important that any process of either annealing or quenching and tempering be conducted

	Normal Steel Axle	Annealed Steel Axle
Ultimate tensile strength per square inch	75,000 lb.	88,600 lb.
Yield point, or elastic limit per square inch	35,000 lb.	53,000 lb.
Elongation in 2 in.	18 per cent	26.5 per cent
Reduction of area	24 per cent	43.9 per cent

under the most uniform conditions and with the application of the greatest intelligence in order that the desired improvements may be brought about. As some electric railways have had unfortunate experiences with heat-treated axles, it may be well to point out just what procedure is necessary in a successful treatment.

In the first place, it can readily be appreciated that if the axles under heat for either annealing or quenching and tempering are subjected to a rash heat in which the outside of the axle becomes much hotter than the center, that additional internal strains will be developed which may be more detrimental than any strains set up through forging. In fact, it is known to be true that these strains may be sufficient actually to crack the axle when it becomes cold. If any such strains are set up in the heating of an axle, quenching will accentuate them. Such a condition has been noted by some railways when a new axle has broken in the lathe while being finished or has shattered when dropped on the floor.

If a uniform product is to be obtained, the heating must be maintained absolutely uniform. Cases have been observed where the heating has varied so much that only part of the axle was heated above the critical temperature while the rest of the axle did not reach this temperature. This resulted in a product in which there was virtually a line of demarkation between the refined and the unrefined steel. Such an axle is almost sure to fail. Because of the importance of the uniformity of heating, the character of the furnace in which the heating is done is of first consideration. It must be so constructed that the axles will be heated to a uniform temperature throughout their entire length and thickness, and the method of heating must be such as will not rashly force the operation. There are several types of furnaces used in this kind of work, and in the order of their metallurgical efficiency they are the coal fired, producer gas fired, natural gas fired, oil fired, muffle furnaces fired by any of these fuels, and electric furnaces. The last is so much superior for this work that it stands out far above all other types of furnaces insofar as uniformity and control of the heat are concerned.

The heating must not only be done uniformly and with a mellow heat, but the steel must be raised to exactly a certain temperature in order to accomplish the desired results. For example, in annealing, it is sometimes possible very materially to decrease the strength or somewhat increase the strength through the use of slightly varying temperatures. This control of the heat to exactly the proper temperature is even more important in the process of quenching and tempering than in annealing, the best results being obtained by heating slightly above the upper critical point. Any increase in temperature above this point will not increase the strength or toughness but will coarsen the grain structure.

After axles have been uniformly heated by soaking at the proper temperature, it is extremely important that the method of cooling be scientifically carried out. If they are removed from the furnace and allowed to cool in the air, they will have greater strength and less toughness than if allowed to cool more slowly in a soaking pit or in the furnace. It is very necessary, however, that care be exercised when the axles are cooled in the air to keep them free from air current, for this might set up sufficient strains actually to bend the axle. It is also extremely important that the entire heat cycle be completed without any lapse of time between steps in the process. For instance, after the axles are quenched they must be removed from the quenching bath before becoming cold and immediately put back in the furnace for tempering. The reason for this is that in quenching axles, particularly large sizes, certain quenching strains are set up, due to the fact that the outer surface of the axle will cool more quickly than the center. If the axles are permitted to cool down to atmosphere temperatures and these strains are permitted to develop, they may be sufficient to set up minute hairline cracks in the surface. On the other hand, if the axles are removed from the quenching bath at just the proper temperature and immediately put back in the furnace, these strains are not permitted to develop to such an extent as to cause cracks in the surface and are subsequently entirely eliminated through the drawing or tempering.

It will readily be appreciated from the above statements that if satisfactory results are to be obtained in the heat treatment of axles, this work must be carried out under the most ideal conditions and under the most intelligent supervision. For this reason it has become general to look upon the electric heating furnace as the type of furnace best adapted to commercial heat treatment. The product of this type of furnace is as much superior to that of the ordinary furnace as the product of an electric melting furnace is to Bessemer or open hearth steel. By means of the electric furnace, the rate of heating and the exact temperature required may be absolutely controlled. It is also possible to bring about the proper heating without bringing any flame in contact with the steel so that the steel simply absorbs the heat radiated from the furnace and thus makes it possible to conduct a heat for annealing, quenching or tempering without setting up detrimental heating strains. Tests made in furnaces of this type show that there is no variation in the temperature from end to end or at various heights within the heating zone.

As the result of the use of an electric furnace and an arrangement of quenching tanks and cooling pit which makes possible very efficient handling of axles through the complete heat cycle, the Valley Steel Company has been able to produce a steel for car axles known by the trade name of "Electroheat" axles which compare favorably with the standard specifications of the American Society for Testing Materials and the American Electric Railway Association.

	A. S. T. M.	A. E. R. A.	Electroheat
Ultimate strength per square inch	85,000 lb.	85,000 lb.	95,000 lb.
Elastic limit per square inch ...	50,000 lb.	50,000 lb.	60,000 lb.
Elongation in 2 in.	20.5 per cent	22 per cent	20 per cent
Reduction of area	39 per cent	45 per cent	40 per cent

In conclusion, it is well to point out that the heat treatment of axles should not be applied except in the most scientific manner and that this is only possible in a plant laid out in such a manner as absolutely to insure the results. Axles produced under such conditions will reduce to the minimum the possibility of inherent defects and result in a material which will minimize or entirely eliminate axle failures.

Illinois Association Lays Plans for War Board Co-operation

Also Has Meeting with Shippers and Secretaries of Association of Commerce to Learn What the Principal Transportation Needs Are and to Inform Them of the Tentative Plans of the Electric Railways

A MEETING of the Illinois Electric Railway Association was held at the Sherman Hotel, Chicago, on Nov. 21, for the purpose of devising ways and means of co-operating with the Electric Railway War Board at Washington, and to lay plans for a wide expansion of the freight business now carried by the electric railways of the State. Britton I. Budd, member of the War Board and chairman of the subcommittee on traffic, addressed the meeting, giving the plans of the War Board as far as they had been formulated and enlisting the active co-operation of the association in the important transportation work they must undertake in order to relieve the steam railroad congestion. Acting in this direction the association passed the following resolution:

"Resolved, that the railway members of the Illinois Electric Railway Association, in meeting assembled, hereby offer to the United States government the services and facilities of their lines individually and collectively for the transportation of passengers and freight wherever and whenever they can be made available for the benefit of the government."

A resolution was also passed by the members of the association to the effect that the War Board at Washington be informed that it was the sense of the meeting that the member companies of the association would place their properties entirely under the jurisdiction of the War Board and give it full power to dictate the policies and practically operate all these properties as a single system. Copies of this resolution are being sent to all member companies for their individual approval.

In order to determine the physical obstacles to interchange of freight traffic among different electric railway lines, and to make a general survey of the field for bringing out the full possibilities of handling freight shipments over the electric lines, the association voted that a committee should be appointed to make these studies, and President C. F. Handshy appointed the following members: F. E. Fisher, general superintendent Chicago, Ottawa & Peoria Railway, chairman; F. W. Shappert, traffic and industrial agent Chicago, North Shore & Milwaukee Railroad; R. Breckinridge, general freight and passenger agent Aurora, Elgin & Chicago Railroad; H. G. Faithorn, traffic manager the Chicago, Lake Shore & South Bend Railway, and J. R. Blackhall, general manager Chicago & Joliet Electric Railway. This committee began at once the work of compiling such data and information as are necessary to derive the traffic interchange possibilities.

A MEETING WITH THE SHIPPERS

On Nov. 22 a second meeting of the Illinois Electric Railway Association was held at which some thirty representatives of prominent local shippers and secretaries of associations of commerce from the cities surrounding Chicago were present by invitation. In general, these men expressed interest in the possibility of the electric lines being able to handle more or less of their freight shipments in the local territory and assured the association members that if they could provide the facilities the shippers would furnish all the shipments they could handle. A representative of the Carson, Pirie, Scott & Company wholesale house stated that they shipped an immense quantity of l. c. l. merchandise to local points around Chicago and that the delivery over the steam roads is exceedingly slow. He said that if shipments could be made from Chicago to Louisville by way of electric lines entirely, his firm could give the lines all they could handle.

The president of the Joliet (Ill.) Chamber of Commerce referred to the very satisfactory service he had received in shipping merchandise from Joliet to Michigan points by way of the lake boats and interurban lines in Michigan. He spoke in particular about shipments of large quantities of calendars which must be delivered on time, especially monthly calendars, and how the electric lines had handled this business with great dispatch, whereas the steam roads had injected considerable trouble into the business transactions for him through the long delays. Because of this service, he expressed interest in any plan which would make it possible for him to use the electric lines to greater extent.

Some of the electric railway men and the shippers were surprised to learn that the Illinois Traction System had joint arrangements with the Chicago & Eastern Illinois and the Rock Island railroads, whereby it was possible for shippers in Chicago to reach more than 100 towns on the Illinois Traction System and to make l. c. l. and carload shipments in M. C. B. equipment all the way. This information was given by C. E. Bode, general freight agent I. T. S., who also stated that joint arrangements were in effect with the Chicago & Alton, the Michigan Central and the Wabash Railroads, for service to points on the Illinois Traction System.

The shippers generally lamented that it was necessary at the present time to haul shipments for the electric lines out of Chicago by team or truck from the business district from 8 to 12 miles out to reach the electric railway terminals. The Chicago traffic manager of Butler Brothers stated that but for this condition his firm would be glad to make extensive use of the electric lines, but that it was impossible to send a truck or a team so great a distance. He said that it cost more than $20 a day to operate a 5-ton truck and more than $14 a day for a 3-ton truck.

G. T. Seeley, assistant general manager Chicago

Elevated Railways, explained briefly the franchise limitations which at the present time prevent the hauling of freight over the surface or elevated lines in Chicago. He said that this was principally an outgrowth of an antagonism of long standing against the handling of freight through the streets, but that he could see no difference whether it was handled in electric cars or in enormous motor trucks, which have a particularly deteriorating effect on the pavement. He thought that if the shippers would start an agitation to gain the privilege of the use of the streets between the hours of 1 and 5 a. m. for the electric lines to haul freight, an immense benefit could be derived for all concerned. He said it was difficult for the electric railways to accomplish this themselves on account of the political situation, but the time seemed particularly propitious for bringing about such an arrangement.

H. C. Barlow, chairman of the traffic committee Chicago Association of Commerce, addressed the meeting briefly and stated that as the steam roads are fast arriving at the point at which they will be unable to handle the transportation of the country, the present seems to be a most auspicious time for the electric railways to make themselves felt in the commerce of the country. He thought the question for that meeting to consider was: "How can the commerce of the country best utilize the electric lines, not only in and of themselves, but in connection with steam lines?" He said that Chicago shippers had become accustomed to using the electric lines in Michigan to quite an extent in conjunction with the lake boats, but that the government was now taking the boats so that this traffic was waning.

Mr. Barlow thought the time to ask for steam railway connections was right now. The electric railways should get a man in the field who is familiar with all the joint facilities and who could serve as an information bureau as to the service the electric lines were capable of giving. He wondered if it would not be possible to bring about some connection between the interurban lines coming into the outskirts of Chicago and the Chicago Tunnel Company, which serves directly forty of the largest shippers and, indirectly, all shippers through five universal transfer terminals. He said that if this could be accomplished so that the long haul now necessary to reach the electric lines were eliminated, the Chicago shippers would welcome the electric lines with open arms. In answer to a question from a member of the association, he said that the traffic committee of the Association of Commerce would be very glad to meet a committee of the electric lines after Dec. 1, to formulate plans whereby the obstacles which at the present time prevent the electric lines from serving the shippers of Chicago might be removed.

Numerous instances of the slowness of the freight service from Chicago into the surrounding territory, which could be greatly improved if the electric lines were made available, were cited. It was pointed out that while La Porte, Ind., is only 59 miles from Chicago, it takes three and four days to get a shipment. A peddler car service from Chicago to Cadillac, Mich., requires six days, while the same service can be given over the Chicago, North Shore & Milwaukee Railroad and the lake boats in less than two days. Shipments of meat from the stock yards in Chicago to the cantonment at Rockford, Ill., are of such slow movement that it requires five days for a car to make one round trip. The same service could be given by electric lines over the elevated structures, the Aurora, Elgin & Chicago, the Elgin & Belvidere, and the Rockford & Interurban railways, leaving the stock yards at 1 or 2 a. m. and arriving at the cantonment early the next morning, and thus avoiding the necessity for icing. By this means also one round trip a day could be had out of each car. Such service as this, for instance, would release five car-days to the steam roads for long-haul service for every carload hauled by the electric lines. Thus the use of the electric lines will operate to greatly relieve the steam-road congestion, when the summation of all such possibilities is considered.

Speaking of how additional equipment could be secured promptly, the electric railway men expressed the idea that summer passenger cars could be used by taking the seats out and putting a temporary lining inside. Also practically every road has more or less construction equipment which is not in use during the winter time and on account of shortage of materials will likely not be in use next summer, and that these could be used for hauling certain classes of freight.

COMMERCE ASSOCIATIONS INTERESTED

In a great many of the replies to the letters which F. W. Shappert sent to the associations of commerce in a large number of cities in Wisconsin, Illinois, Indiana, Michigan and Ohio, inviting them to have a representative at this conference, there is a marked interest in the contemplated plans of the electric railways to engage in the handling of freight as far as possible. Many of the letters carry a tone of eagerness for such facilities to be made available, thus indicating the great difficulty they are now experiencing with slow deliveries and inability to get cars on the steam roads. Almost without exception the secretaries asked to be informed of the outcome of the meeting, if it proved to be impossible for them to have a representative present.

Women in Railway Work

A paper on this subject was read at a meeting of the New York Railroad Club on Nov. 16 by Stuart Brady, special agent Philadelphia, Baltimore & Washington Railroad. The paper contained a table showing that the number of female employees of the Pennsylvania Railroad lines, east of Pittsburgh and Erie, has increased from 1494 on May 1 to 3730 on Sept. 1, and the statement is made that the figure for Oct. 1 will be approximately 35 per cent in excess of the Sept. 1 figures. On the Maryland division, only women over twenty-five years of age are taken. The paper is illustrated by views showing women in such capacities on the Pennsylvania lines as crossing guards, signal tower operators, storeroom attendants, baggage checkers, machinists and telegraphers.

Employees of the several public-utility properties controlled by the Illinois Traction System, Peoria, Ill., subscribed for a total of $82,000 of the government's Second Liberty Loan Bonds. This subscription was made possible by an easy-payment plan offered by the company.

American Association News

C. Loomis Allen Appointed Resident Director at Washington of Electric Railway War Board—He Issues Statement Outlining Possibilities of Board's Work—Headquarters Are at 908 Munsey Building—Board Met Nov. 23 and Will Meet Again Dec. 7

War Board Meets Again

B. I. Budd Reported Successful Conference Regarding Income of Freight Traffic—Entire Board Will Attend Forthcoming Transportation Conference in Washington

The Electric Railway War Board held another meeting in Washington on Friday of last week. All of the members were in attendance as were also President Stanley, C. Loomis Allen, Secretary Burritt and H. C. Clark. The principal business accomplished was the appointment of a resident director in Washington and the selection of headquarters in that city. The office selected is No. 908 Munsey Building, and C. Loomis Allen, president of the firm of Allen & Peck, was chosen resident director. An interview with Mr. Allen appears in an adjoining column.

In reporting for the sub-committee on the promotion of freight traffic, Britton I. Budd said that several conferences on the subject of increasing the amount of electric railway freight traffic had been held in Illinois, in one of which representatives of chambers of commerce had participated, and that further conferences would be held.

The board decided that it would be desirable to appoint committees in the different states to compile information in regard to routes, rates, etc., useful for traffic men to have. The board also decided to appoint a traffic representative with headquarters at Washington.

Chairman McCarter explained that the fuel administration had asked the board to designate a representative to be sworn into government service and have a desk in the office of the fuel administrator, to take charge of electric railway coal matters, just as the electric lighting and gas interests have such a representative. The board decided to appoint a representative. This decision makes it very necessary for the association to have full returns on the electric railway coal situation in answer to the blanks issued to member companies last August. These blanks call for statistics as to the amount of coal consumed, sources from which it is obtained and other data. Some of these blanks have not yet been returned to the association, and an urgent plea is made that this information be filed at the New York headquarters at as early a date as possible.

The subject of the forthcoming conference of all the transportation interests to be held during the next week or two on the call of Daniel Willard, chairman Advisory Commission, Council of National Defense, was mentioned, and it was decided that the entire Electric Railway War Board would attend this conference.

Secretary Burritt reported that the subscriptions for the support of the board were coming in well.

The board decided to ask all electric railway companies to furnish the board with formal authority to take certain action for them in connection with transportation matters. This authority is somewhat like that vested in the Railroad War Board of the steam railroads but not so extensive. The agreement which the electric railways will be asked to sign reads as follows:

"The undersigned electric railways, acting through their proper officers, and actuated by an appreciation of the great opportunity offered the industry to be of service to the country in the present crisis, hereby pledge themselves with the government of the United States, with the governments of the several states, and with one another, that during the present war they will place at the disposal of said War Board the facilities of their respective companies, and co-operate in every practicable way in the attainment of the objects of said board."

The next meeting of the board will be held on Dec. 7 at Washington.

Statement by Director Allen

Fullest Co-operation Among All Means of Transportation Important—Economies Possible Through Assistance of Public

After his appointment C. Loomis Allen gave out a statement on the purposes of the board in which he said:

"The Council of National Defense has wisely decided to call into conference representatives of all forms of transportation for the purpose of co-ordinating their facilities. The success of our armies and the continuance of our industries depends upon the nation's ability to provide transportation. The problems involved may be solved if team work between the various interests can be brought about. Besides our steam railroads, electric roads, waterways and motor trucks can all be used for the transportation of materials and men.

"There are 41,000 miles of electric railway in the country. Of this a little more than 16,000 miles is interurban. Between five and six billion dollars are invested in electric railway properties. It is in order that the greatest possible use can be made of the resources of this system of transportation, both by the government and by industry that the association has organized a War Board. It is not a case of the electric railways competing for business with the steam lines, with waterways or motor trucks—it is rather a case of supplementing the service which these others perform. If the work is to be done successfully, it will mean not only the fullest co-operation between the various transportation interests but the equal co-operation on the part of the public.

"For instance, electric railways in some cases parallel and in many cases serve the same territory as steam roads. It is entirely possible so to arrange schedules as to allow electric lines to take over much of the local work of the steam roads and so release equipment for through service.

"It is possible also, in many cases, to arrange for interchange of traffic between electric lines which are now in the main operated independently of each other, thus avoiding congestion in steam road terminals and enabling quick shipments.

"The steam roads have furnished to the priority boards and to the fuel administration a list of some 450 commodities which they declare to be non-essential, and upon which it is proposed to place an embargo. It is entirely possible that arrangement can be made to transport some of these commodities by electric railways.

EMERGENCY SHIPMENTS POSSIBLE

"Emergency shipments may also be handled by the electric lines. The other day two carloads of goods, by arrangements made by telephone over night, were shipped from Boston to New York by electric lines. The coal supply of one of the large cantonments in the Middle West is now being assured by an arrangement with an electric line by which the congestion of an important steam-road terminal is avoided.

"An important function which electric lines, both urban and interurban, can perform in conjunction with the Food Administration is in the collection and distribution of food products, first in the country—from the farmer; and second, in the city—between the wholesaler and the retailer. Extensive experiments are now being carried on with a container system, which, if successful, will enable goods in quantities as high as 5 tons to be carried directly from the producer to the store where it is sold to the consumer.

"This all means that new uses are being found for the electric roads, and that more new uses will be found. There are, of course, some engineering problems to be overcome, and difficulties may be encountered in the restrictions which some communities have placed upon electric railway operation. That is why the assistance of the public is necessary. These are war times, and transportation agencies must not be hampered in the rendering of service. I am firmly convinced that the public will throw no obstacles in the way of putting our roads in such shape that they can render the fullest service to the government.

COAL ECONOMIES SUGGESTED

"Electric railways are among the largest users of coal and the largest employers of labor. Coal and labor are, with food, the things which above all else must be conserved in the interest of the nation. We are willing and anxious to do our part, and the effort of every electric railway manager of the country is being exerted to effect economy. In this effort we can, I believe, look for the co-operation of the regulatory commissions, both state and local, and of the public itself. Unnecessary service causes waste of fuel and waste of labor. It means that just so much less of each will be available for other essential war-winning purposes.

"The Public Service Commission of Oregon, realizing this fact, has ordered an extensive cutting down of service in the city of Portland. Other commissions are acting on similar lines. I believe that we must all come, as they have already come in a number of places, to 'staggered' hours for factories and business houses. It is the 'peak load' that wastes coal and wastes labor. In every city in the country, at a certain hour each day, thousands of workmen and workwomen are dismissed, and the service required of the companies is increased in an instant 150 or even 200 per cent. If the load thus forced on electric railways during the hour of closing could be distributed over a longer period of time, the saving in coal consumption and in labor would be large. 'Staggered' closing hours have been tried in the Ford plant at Detroit, where 40,000 employees were formerly turned loose at the same time and the street car service disrupted. Now they are dismissed at different hours, and the service is not only immensely improved but a large saving has been effected. In Seattle's new industrial district a similar arrangement of hours has been put into effect with equally good results, because the credit of our companies will not permit capital expenditure, which would use money needed for war purposes.

"The board has placed its services entirely at the disposal of the government. The Council of National Defense will name a representative on the board in order to bring the two bodies into direct touch. The board proposes to co-operate in every way in the solution of what is to-day the greatest problem facing industrial America—that of transportation—and it believes that it can count upon the aid and assistance of the public, without which little can be done."

Patriotism the Keynote of Chicago Section Meeting

Several patriotic demonstrations were features of the meeting of the Chicago Elevated Railroads section, held on Nov. 20. About 150 members and guests were present. B. J. Fallon, engineer maintenance of way and president of the section, delivered a short address, in which he reviewed the past and future work of the section. H. A. Johnson, master mechanic, outlined briefly what had been accomplished with coasting clocks, saying that the results were highly encouraging in view of the short time they have been installed.

The entertainment of the evening was begun by the singing of "America" by the entire audience. Mr. Murphy, one of Chicago's "Four Minute Men," next gave a short talk on "What We Are Fighting For." He was followed by Sergeant Desmond, of the British-Canadian Recruiting Mission, who told of his training and service in France. J. H. Mallon gave several recitations, and Mr. Foldvary, of the treasurer's office, rendered some violin solos. Mr. Tobin played several selections on his Irish bagpipe, which were novel, as many in the audience had not previously heard the instrument. The program was concluded with the singing of "The Star Spangled Banner."

The address delivered by R. E. Danforth before the Public Service Company section at Camden last spring has been reprinted by the company from the issue of the ELECTRIC RAILWAY JOURNAL for Oct. 20, 1917. Each member of the section has received a copy.

The Moose Jaw (Sask.) Electric Railway desires to adopt one-man cars and will ask the Saskatchewan Legislature to amend the section of the railway act which specifies that two men shall be in charge of a car. The City Council, it is said, will support the amendment.

EQUIPMENT and MAINTENANCE

HAVE YOU A GOOD WAY
OF DOING A JOB?
—Pass It Along

These Articles Have Been Selected to Provoke Thought and Stimulate Discussion. All .of the Technical Departments Are Represented

Rail for Paved Streets

The Tram Girder Rail Possesses a Number of Advantages Over the Grooved Section and Is Being Extensively Used

BY MARTIN SCHREIBER
Chief Engineer Public Service Railway, Newark, N. J.

It may be of interest to electric railways to be apprised of the recent decision of the Public Service Railway Company with regard to proper rail for paved streets. To be sure, many of the franchises specify the type of rail. Still others leave it to the governing authorities. But, in the final analysis, the matter generally resolves itself into a discussion and often a mutual agreement between the railway company and municipality. For this reason, the Public Service Railway Company has taken the initiative and approved the following types of construction:

Our first choice is the 80-lb. standard section of the American Society of Civil Engineers T-rail, laid with stone block pavement flush with the head of the rail and with the flangeway cut into the stone abutting the gage line. Fig. 1 shows a model of this type.

Our second choice is to lay a high T-rail, American Electric Railway Engineering Association 80-lb. standard section, with stone block pavement depressed under the rail. Fig. 2 is a view of track in Main Street, Fort Lee, N. J., showing an example of this second choice of construction.

Our third choice is the tram girder rail, Lorain section No. 101/486, with stone block pavement, as indicated in Fig. 3. In our practice with this rail, the paving, as shown, is brought up flush with the head of the rail on the outside and is raised ½ in. above the lip of the rail on the inside, and the edge of the block is finished with a crown.

Our fourth choice is Lorain No. 116/434 section, grooved girder rail, practically the American Electric Railway Engineering Association standard, with stone block pavement, for congested parts of cities where vehicular traffic is concentrated. Fig. 4 shows a model of this type.

Of course, there will be no question about T-rail for the first choice, but perhaps some may wonder about the revival of the tram girder rail. The revival of the tram section on Public Service Railway property is principally due to the splendid performance of this section compared to the grooved girder rail, or trilby section. This is especially true where streets have not been kept clean. While in the design of the groove, the modern grooved rail is largely self-cleaning, still it will catch and hold sand, grit, pieces of metal and other debris. In winter also the groove tends to become clogged with snow and ice. The flange of the wheel traveling through this grooved rail causes unnecessary wear from grinding on the sand and grit, and due to the fact that after a few years the rail is not kept exactly to gage, there will be contact of the flange with each side of the groove. In consequence the life of the grooved rail is not more than 75 per cent that of the tram girder rail. Likewise, the equipment maintenance is increased when cars are operated over the grooved rail, due to the wearing of the wheel flanges to sharp edges. There is also greater energy consumption due to the wear and the necessity of the wheel flanges forcing this material out of the groove.

Probably a more important objection is the annoyance to property owners from the greater noise that we have in operating over the grooved rail, due to the flange of wheels grinding through the debris in the groove, and on account of the wheel treads running over

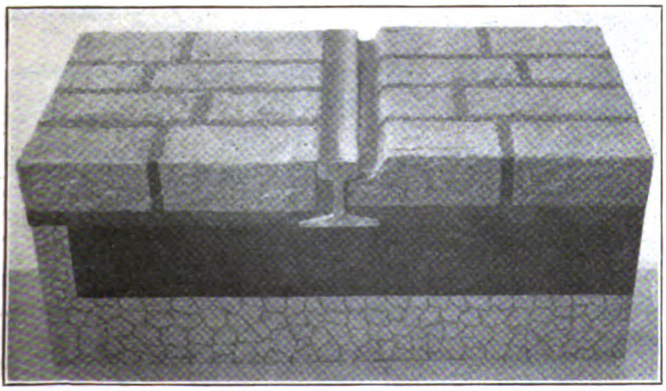


FIG. 1—STANDARD 80-LB. 5-IN. T-RAIL, A.S.C.E. SECTION—FIRST CHOICE

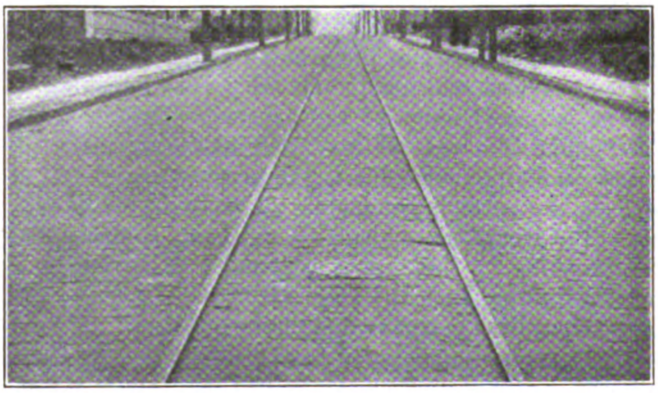


FIG. 2—STANDARD HIGH T-RAIL A.E.R.A. SECTION AS LAID IN FORT LEE, N. J.—SECOND CHOICE

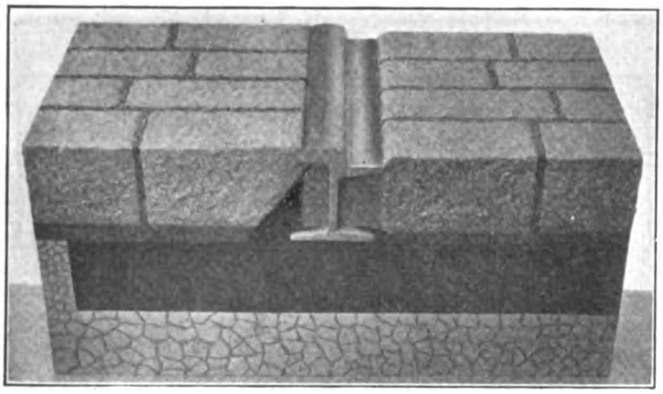


FIG. 3—LORAIN TRAM GIRDER SECTION, NO. 101-486, THIRD CHOICE

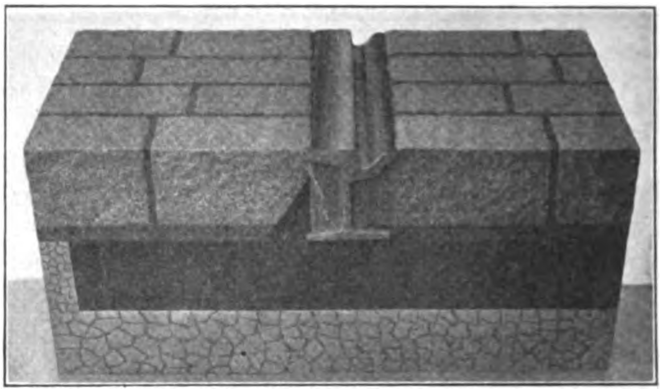


FIG. 4—LORAIN GROOVED SECTION, NO. 116-434, FOURTH CHOICE

the sand and grit that is fanned out of the groove on to the head of the rail. Another point is that the probability of derailments is considerably minimized in the tram section from the fact that the flanges are not interfered with, as in the case of flanges operating in a groove. It is plain that when the back of the wheel flange is worn to a sharp edge it is much more difficult to keep cars on the track through special work, as the wheels have a tendency to climb points of curves, switches and frogs.

Again, the flanges of wheels running in an uneven groove cause oscillation of the wheels that would be favorable for corrugations.

One of the chief objections to the tram section, when it was in vogue, was the difficulty of steel-tired vehicles crossing and turning in and out of the tracks. This one phase of the performance of the tram rail probably had as much to do with its abandonment for the trilby rail as the fact that the trilby rail gave a smooth pavement. The advent, however, of the automobile and motor truck has largely eliminated this difficulty. A considerable quantity of new rail of the tram girder section described has been laid by the Public Service Railway in paved streets during the past two years, notably in Orange, Montclair and Plainfield.

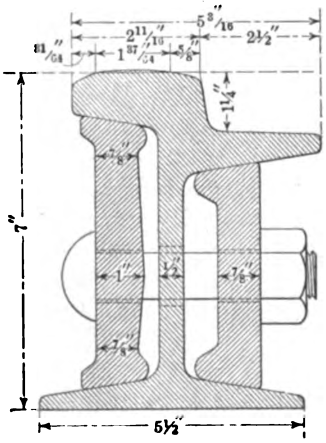


FIG. 5—LORAIN SECTION NO. 101-486, WITH DIMENSIONS

No claim is made here that the tram girder rail can wholly take the place of the grooved girder rail. In case of the heaviest vehicular traffic where any breaking of the smooth continuity of the pavement surface is the forerunner of a rut, we may well countenance the increase in maintenance due to the grooved girder rail as well as the possible complaints of noise from the citizens. But where the vehicular traffic is not so dense that the breaking of the smooth continuity of pavement is not controlling, then the tram girder rail is better for both the railway company and public at large.

The tram section selected by the Public Service Company is a new section shown in Fig. 5. This is a 7-in. rail, weighing 101 lb. to the yard. The principle of the design includes the offset of the gage line from the center of the web, the thick web and wide base, the same principles that control in the standard grooved girder rail of the American Electric Railway Association.

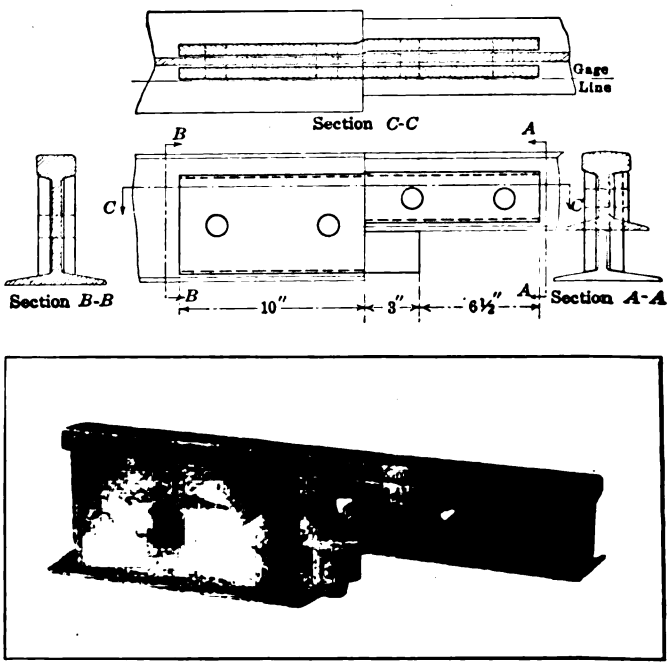
Probably, in view of the fact that we now have had substantial and practical experience with the grooved girder rail, along with that with the tram girder rail, it would not be out of place for the way committee of the American Electric Railway Engineering Association to consider the adoption of the standard tram girder rail on those properties of the electric railway industry that saw fit to use it in their construction.

It should be noted in the illustrations that the pavement happens to be reclipped block.

Compromise Joint Made of Special Plates Held by Four Bolts

BY R. A. WILLSON
General Superintendent Washington Water Power Company, Spokane, Wash.

Compromise joint troubles on the system of the Washington Water Power Company have been practically eliminated by a joint designed by the writer and shown in the accompanying halftone and drawing.



DRAWING AND VIEW OF NEW FISH PLATE FOR COMPROMISE JOINT

It is a very simple joint consisting of two fish plates, the wider sections being milled so that the smaller section of rail can be forced in, leaving a projecting anvil to support the light rail. Four bolts hold the plates and rails firmly together.

Application has been made for a patent on this joint, and it is expected that in the near future it will be modified and manufactured by the Rail Joint Company of America.

Restoring Worn Journal Boxes and Pedestals

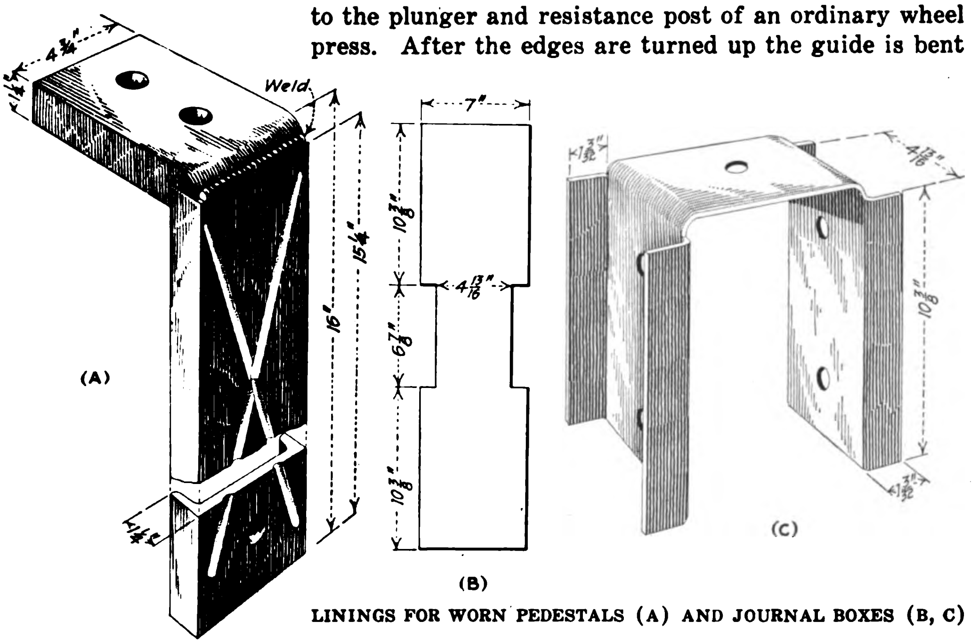
Wearing Plates Applied to Pedestal Guides and Journal Boxes Keep Axles Properly Aligned with Respect to Trucks

BY R. W. PALMER
General Manager Auburn & Syracuse Electric Railroad, Auburn, N. Y.

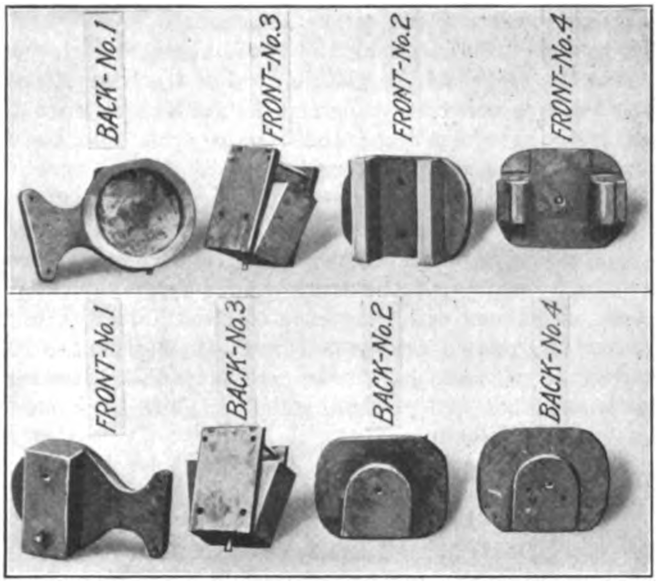
One of the important considerations in connection with truck maintenance as far as wheel wear and efficient braking are concerned is the proper alignment of axles with reference to the truck frames. It is not only important that the axle centers be spaced the same on both sides but the axles themselves should also square up with the truck frame proper. When trucks are new this condition should and does exist on all well-built trucks, but in service, due to the wear on pedestal guides and journal boxes, the condition is considerably changed, and unless corrected will cause unequal flange wear and inefficient braking.

If the play between the pedestal guides and the journal box is abnormal, it is impossible to keep the truck frames and axles in proper alignment, as the position of the axle centers is subject to change due to the driving effect of the motors and the application of the brakes. The writer was able to secure very satisfactory results when overhauling Baldwin M. C. B. trucks which had been in operation for five years by adding wearing plates to both pedestal guides and journal boxes. The wearing plates for the pedestal guides were made from standard Carnegie C-8 section, 9-lb., 5-in. steel channel iron, machined on the face and edges to the dimensions given.

From drawing *A* it will be noted that the pedestal guides have been machined so that the channel fits over them in such a manner that the flange as well as the face of the channel provides wearing surfaces for the side of the journal box and for the front and back guides on the box which prevent its longitudinal movement.



LININGS FOR WORN PEDESTALS (A) AND JOURNAL BOXES (B, C)



DIES USED IN FORMING WEARING PLATES

In machining the pedestal guides a sufficient amount of material is removed so that when the machined channel is placed in position the dimensions of the pedestal guides will be the same as they were originally (1¼ in. x 4¾ in.). After the machining has been done on both pedestal guide and channel iron, the two pieces are clamped together and the wearing plate is spot welded to the pedestal at the top edge, the bottom edge of the wearing plate being held in position by the clamping effect of the bolt and spacing spool located at the lower ends of the pedestal guide and under the journal box.

The wearing plates on the journal box are made from standard ⅛-in. x 7-in. steel bars cut into 27¾-in. lengths and machined as shown in drawing *B*. After the center portion has been cut out the edges are turned up with the use of dies No. 1 and No. 2, shown in the accompanying illustration, these being attached respectively to the plunger and resistance post of an ordinary wheel press. After the edges are turned up the guide is bent to the form shown in drawing *C* by using dies No. 3 and No. 4 in a similar manner. Only die No. 1 is fitted to the plunger head, and die No. 3, when used, is fastened to No. 1 by the side plates.

After the plates have been formed, the worn surfaces on the journal box are machined to receive the wearing plate as shown in drawing *C*, measurement for doing this work being taken from center lines, the proper location of which can be secured from a new box. The wearing plates are attached to the journal box by spot welding along the lower edges and at the hole in the center of the plate on top of the box. After the dies have once been made and the guides and journal box have been machined the repair parts described can be replaced at a very nominal cost.

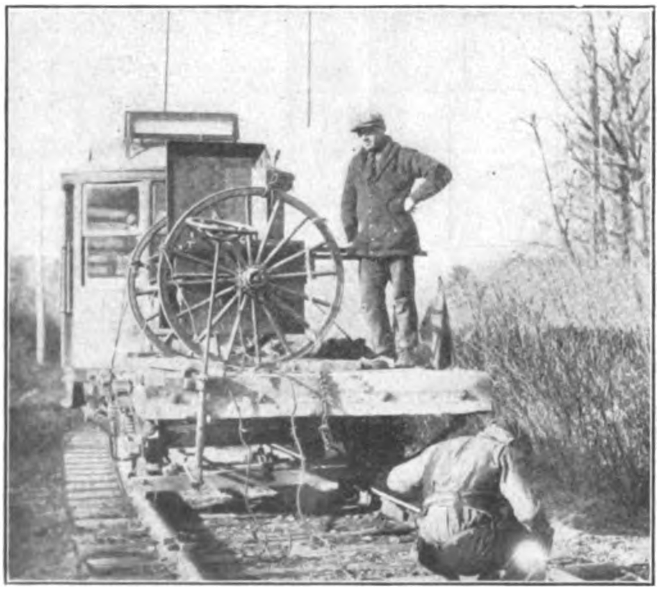
It is, of course, appreciated that a part of the unequal flange wear may be caused by improper center bearings or side bearings, which, on account of unnecessary friction, tend to prevent the trucks from assuming their proper alignment with reference to the car body after the car has passed around a curve. If this matter is taken care of, and also the unnecessary play between the journal box and pedestal guide, the life of wheels can be materially increased.

Bond Welding Costs and Practices at Springfield and Worcester

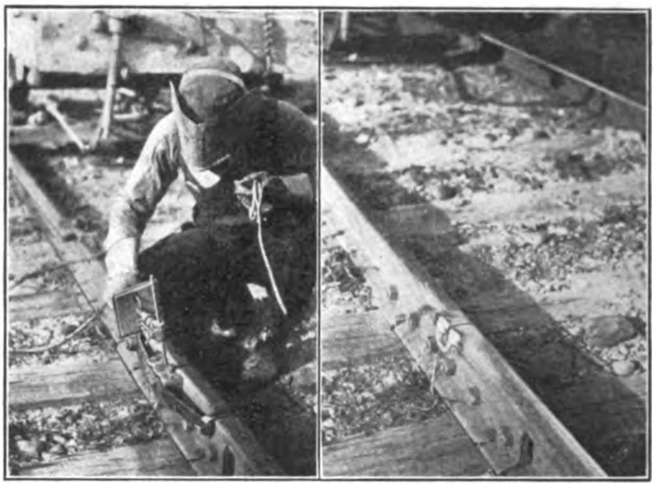
The Springfield (Mass.) Street Railway, like its associate, the Worcester Consolidated Street Railway, operates a Lincoln bond welder, which it purchased in August, 1916. With this machine it has installed about 6000 bonds to date, the maximum being eighty to ninety in a nine-hour day on city lines.

The company has had no trouble in welding the copper terminal to the rail. Instances of poor welds are very rare. No change has been noted in the material of the rail at the point where the terminal is applied, except that the copper and steel alloy at the point of application of the bond. In fact, one bond which was removed from the rail had enough iron in the terminal to affect a compass needle! Incidentally, it may be noted that the intense heat of the welding process oxidizes the copper bond and makes it less conspicuous to possible thieves.

Most of the bonds have been installed on the ball of the rail, and no trouble has been experienced in the way of changes in the steel. It is the opinion of the engineering department that, due to the fact that the bond is installed on the outside of the ball of the rail, there could be considerable change in the structure of the rail at this point without causing any trouble. Usually the bonds are No. 0000.



GENERAL VIEW OF ELECTRICAL BONDING OUTFIT



WELDING BOND ON 80-LB. T-RAIL. BOND IN PLACE

Besides installing the bonds the machine has been used in Springfield for welding 500,000 circ. mil supplementary wires, the wire being welded to the rail at the junction of the base and web.

No difficulty has arisen from loosening of bond terminals, but there has been some breakage of copper strands in cases of loose joints. Breakage of the strand appears due to the working of the joint, to dirt working in between the strands, and to freezing. The Springfield company has not found it necessary to use the steel cover furnished by the Lincoln Bonding Company.

Data for a typical job are given in the following table:

INSTALLATION COST PER BOND, BASED ON 1400 BONDS IN CITY TRACK

(Bonds fairly close together)

Bonds	$0.3600
Carbon pencils	0.0051
Pencil holders	0.0064
Carbon molds	0.0106
Copper	0.0200
Labor, bonding	0.1017
Labor, opening and filling	0.0509
Total	$0.5547

On this job the bonds were No. 000, and they were installed on 5-in., 80-lb. T-rail in exposed track.

The headway of the interurban cars on the line limited the work to about forty-five-minute periods, when the car carrying the bonder was withdrawn to the nearest siding. The crew can put in fifteen bonds in the period mentioned.

In work of this kind mold plates are renewed twice per day, and carbon pencil holders give about one hour each of active service. Carbon pencils last for about ten bonds each.

For each weld about 10 in. of copper wire is required. This is discarded motor field coil wire, salvaged into bond welds. A copper bottom plate furnished by the Lincoln Company is now used on the under side of the welding mold. This, by reducing the resistance, increases the life of the carbon plates in the mold.

The welding apparatus comprises a 7-kw. motor-generator set, adjustable rheostat, and circuit breaker, all mounted in a steel cradle carried on wheels. In city service this arrangement is a great convenience.

On the interurban line the bond crew is made up as follows: One man to tend trolley circuit-breaker and rheostat; one man to operate bonder under mask protection; one supervisor; one motorman. On city work, or wherever track is submerged, one additional man is required for excavation and replacement of street surface around joints.

Relation of Resin to the Life of Southern Pine Timbers

Resin Not a Safe Index of the Durability—Conclusions of Series of Tests to Determine the Influence of Physical Properties on Durability Are Given

The influence of the various physical properties of wood upon its durability as structural timber has been more or less an open question. A paper presented to the American Railway Engineering Association by Sanford M. Zeller, Washington University School of Botany, brings out the results of a series of investigations on this subject as carried out by the author at the Graduate Laboratories of the Missouri Botanical Garden. The experiments covered three varieties of Southern pine—longleaf pine, shortleaf pine and loblolly pine. The conclusions reached are summarized as follows:

Resin is not a safe index of the durability of the three species of yellow pine investigated. It is not only undesirable as an index, but it is not satisfactory because of the expenditure of time and labor necessary to make the resin percentage determination. The specific gravity or density of the wood materially influences its resistance to decay, the denser wood being the more durable. Specific gravity, however, cannot be determined from inspection, but it can be estimated by noting the proportion of summer wood to spring wood in the growth rings. This proves to be a safe criterion of the durability of heartwood, an increase in summer wood resulting in an increase in specific gravity.

The width of the growth rings furnishes a further index of durability, for the narrower rings show more resistance to fungus attack than broad, open rings. The age or distance of the wood from the pith of the heartwood shows no relation to durability, at least up to 16 in. in diameter. Sapwood decays irrespective of resin content, specific gravity, width of annual rings, or species of pine. Shortleaf heartwood or loblolly heartwood is as durable as longleaf heartwood, provided it has the same density. Specifications for durability of the three species of pine considered should be based on a judicious combined consideration of specific gravity, number of rings per inch and percentage of sapwood.

The results have shown that resin has no toxic effects on the fungus decay of wood, but that there are other important relations of resin to decay. For instance, its waterproofing effect on wood has much to do with the rate of decay. It is well known that wood containing less than a certain minimum or more than a certain maximum of moisture will not support the growth of Lenzites saepiaria and other similar fungi. Any property of the wood which will influence this balance of moisture is of importance in decay resistance. Thus if the wood contains enough resin to have a material waterproofing effect it must play a role in the durability.

However, the percentage of resin necessary for such an influence is at present unknown, and while it may be assumed that it is at least 5 per cent or more, this would not be a safe basis for specifying decay resistance, since a piece of timber of low summer wood percentage might contain this amount of resin and yet be porous enough to be attacked by fungi. On the other hand, it is generally true, although not an absolute rule, that a dense piece of heartwood showing dark summer wood is more likely to contain at least 5 per cent resin than is a lighter piece. Hence, specifications based on higher percentage of summer wood in most cases would more nearly fulfill the requirements for durability than those based on resin content, at least until more is known concerning the influence of resin on the moisture-absorbing power of wood.

A Possible Source of Dry Sand

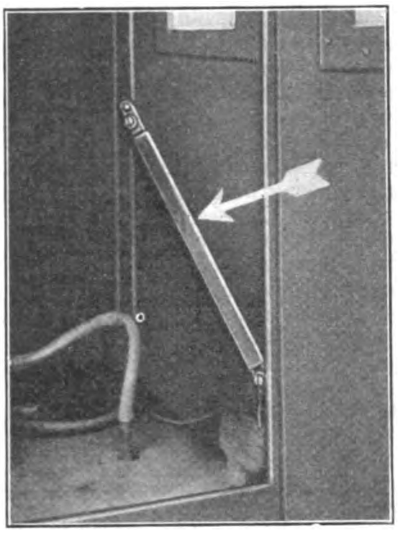
BY THOMAS W. BULPIN

Chief Engineer Los Angeles Railway

Urban and interurban electric railways and steam railroads use dry sand for sanding tracks to prevent skidding and facilitate braking. To insure dryness of their sand many roads have installed extensive and sometimes costly driers. Such driers, of course, require space and attention.

The following suggestion may apply to some roads whose plants are situated in or near cities of reasonable size. If there is in the vicinity an asphalt paving plant where ordinary asphalt paving is prepared, it will be found that driers of the most approved pattern are used in connection therewith. Arrangements can undoubtedly be made with the operators of the plant to provide a supply of hot sand, absolutely dry, delivered at any part of the railway system for little more than the cost of hauling. This procedure under ordinary circumstances would simplify what has been to many a very difficult problem.

A Compact Steel Jacketed Heating Unit



STEEL-CLAD ELECTRIC HEATER

A flat heating unit, 3/8 in. x 1½ in. x 23¾ in. in size, has been developed by the Cutler-Hammer Manufacturing Company, New York works, for use in locations where economy of space is desirable. One is shown herewith mounted on the wall of a small shelter house. The unit is protected by a steel cover and is provided with substantial terminals. The units are of 500-watt capacity and are suitable for use in multiple up to 250 volts. Two can, of course, be used in series on a 500-volt circuit.

London Letter

Receipts in Liverpool Increase—Parcel Department at Bradford Very Convenient—Other Parcel-Handling Schemes Under Consideration

(From Our Regular Correspondent)

The Liverpool tramways show larger operating returns during the first nine months of the present year than during any previous corresponding period according to a report just submitted. The receipts amounted to £603,317, an increase over last year of £53,417; the passengers carried numbered 127,419,194, an increase of 9,868,437; the mileage, 9,414,628, showed a decrease of 90,303; and the earnings per car-mile were 1s 3.43d, an increase of 1.55d. The work of the department during the period under review was carried out under very strenuous conditions. The difficulty of obtaining supplies of material to maintain the rolling stock and overhead equipment in an efficient state of repair, together with the difficulty of finding substitutes for the large number of employees who had joined the forces, viz., about 2200, to repair and operate the cars, was a constant source of anxiety to those responsible. All vacancies were filled with men unfit for military service or women. In regard to war bonus to employees, the chairman said the amount paid to the various employees receiving wages or salary up to £400 a year was approximately £41,000 per annum, while the amount payable by the tramways department in making up the difference in wages between army allowance and standard rate of pay to employees who have been mobilized for military service was approximately £30,000 per annum. Up to the present, free military passes have been issued to the number of 2,950,803, equal to £13,819, and free passes to nurses to the number of 165,550, equal to £775.

The parcel department of the Bradford City Tramways has proved a great convenience, although the operations of that department have suffered from the all-round scarcity of labor. There is every probability after the war of a great development of the municipal parcel delivery service by the operation of special vans to be run on the tram lines, thus relieving the passenger cars. The introduction of the stamp system of payment for parcels on the tramways has proved a great economy, reducing the necessary number of servants very considerably. From the shopkeepers' point of view this reform may be considered a disadvantageous one, since the charges must always now be prepaid. In adopting the prepaid system, however, the tramway authorities were but copying the example set by the railway companies. In Bradford there does not appear to be any disposition to limit the distance which retail parcels shall be forwarded. By an arrangement with other tramway authorities (except at Leeds, where there is no tramway parcel delivery scheme in operation), parcels can be forwarded by tramway from Bradford for long distances. Nothing definite has as yet been done in Bradford with regard to the co-ordinating of transport services between town and town, but the subject is being carefully considered, and it is believed that a feasible scheme will be formulated soon.

The question of utilizing tramway lines for the transport of goods was brought before the Dundee tramways committee recently, when it was reported that there had lately been great developments in the south, particularly in Leeds. The Lord Provost said he should like to know the views of the tramway manager on the subject, in view of the increasing difficulties in securing sufficient horsepower. The manager stated that he believed the lines could be used profitably for commercial purposes, and it was agreed that he should frame a report on the subject.

The Wallasey Tramway employees, especially the women, express themselves as highly satisfied with the findings of the Committee on Production with regard to their application for advances in wages. The award increases the war bonus to 12s per week, in the case of the men over eighteen years of age; and to 9s per week for the women concerned aged eighteen years and over. All employees concerned under eighteen receive an increase of 1s 6d per week.

At a recent meeting of the London County Council, some criticism was expressed in regard to recent restrictions placed on the use of transfer tickets. It was contended that there had been practically no increase, pro rata, in the traffic revenue, and great inconvenience had been caused to the traveling public. The chairman of the highways committee, in reply, said the changes were war expedients and were necessary to carry on the service at all. They had reduced the work of the conductors with good results, and he asked the Council to suspend judgment until the effect was better known. Replying to questions, he said that motormen and conductors on the Council's tramways had been required to conform to an order made by the Field Marshal commanding the home forces in November, 1916, to the effect that during air raids "the normal service of cars must be maintained." In view of recent experience, however, it had been decided, with the consent of the Field Marshal, that notwithstanding that order the cars might be brought to a standstill, and motormen and conductors take cover, but not until anti-aircraft gunfire was heard in the vicinity, the motormen and conductors to rejoin their cars as soon as gunfire had ceased in the vicinity.

At a meeting of the Bradford tramways committee recently, the application for an advance in wages of £1 per week over pre-war rates, which has been put forward by the Amalgamated Association of Tramway & Vehicle Workers, came up for consideration. The men are already receiving 12s over pre-war rates, with pay at the rate of time and a half for overtime, and the additional 8s, combined with other concessions which are being asked for, would cost the department £42,000 a year. It is a sum which the committee feels it is utterly impossible to meet without a serious increase in fares, and it has referred the question to the war wages committee, with a recommendation that the advance be not granted. The tramways committee, however, is willing that the matter should be referred to arbitration under the provisions of the munitions of war acts.

The report of the Board of Trade on the tram accident at Dover, which resulted in the death of the conductress and ten passengers, has been issued. It holds that the accident was caused by the driver failing to cut off the power as he approached the compulsory stopping place on the summit of Crabble Hill, and by his further failure to utilize properly the sand and brake equipment. It says further that the driver was discharged from the army because of nervous breakdown due to heat and overwork, after fifteen months' service in Egypt, that nerve and experience are necessary qualifications for tramway drivers, and that men discharged as unfit for military duties owing to nervous breakdown are unlikely to prove suitable, two months later, as drivers on difficult routes. The fact must be faced, the report says, that the war has materially reduced safe working conditions on tramways. It is better policy to close a route of this description if the number of experienced drivers is insufficient to work it than to employ men who have not, as a general rule, sufficient experience.

The threatened strike on the Leeds city tramways has been averted. It is said, however, that the situation still requires careful handling and the utmost toleration on the part of the authorities if disaffection is to be avoided. The trouble arose over the appointment, for the duration of the war, of six women inspectors to supervise the work of the women conductors on the tramcars. The appointments were made from among the women themselves, but at once there were protests. The contention was that the inspectorships should have been given to former employees of the corporation tramways department who have recently been discharged from the army. The tramways committee pointed out that before considering the appointment of women as inspectors it had carefully examined all male conductors in the service who were suitable for appointment to the full duties. At a meeting between members of both parties the representatives of the employees brought forward the names of several conductors with records of long service and suggested that if these men could be appointed, even though they were not able to perform the full duties of ticket inspectors, it would meet the situation. This has been agreed to, and it is hoped that one or two of the men will be selected for modified duties. These appointments will be in addition to those of the six women. The committee will endeavor to make appointments in the future, as in the past, from men returned from active service or any other male employees who may be found suitable. A. C. S.

News of Electric Railways

Traffic and Transportation
Financial and Corporate Personal Mention Construction News

Commissioner Discusses City Ownership

Neither the Pursuit of a Political Theory Nor Ready Relief to Distressed Companies Should Impose Upon the City the Ownership of Properties That Business Judgment Would Not Advise

Travis H. Whitney of the Public Service Commission of the First District of New York discussed the transit situation in New York on Nov. 22 at Flushing, Long Island, before the Chamber of Commerce of the Borough of Queens. Mr. Whitney said that he was not interested in possible municipal ownership of the surface railways from the point of view of political propaganda or from the point of view of financial difficulties of the street railroads. His interest was this, that having invested more than $200,000,000 in transportation during the course of nearly twenty years, the city, from a business point of view, should have the power to secure such control or ownership of the surface lines as would allow synchronization of rapid transit and surface lines. Mr. Whitney said in part:

"The original layout of the dual system will be completed within two or three years, yet the dual system is not likely to be finished for many years to come. Great as is the investment in new facilities, the present dual system does not provide a permanently adequate and comprehensive transportation system. There are congested sections still uncared for, and there are still great areas that cannot develop properly until they are provided with transportation.

"Already the commission has under consideration certain important additions to the system in Brooklyn: The Ashland Place connection, the Adams Street relocation, and two or three new stations. The commission also felt strongly that the Third Ward of Queens should be brought within the sphere of rapid transit, and ultimately it will be. Under the dual contracts the city may, from time to time, build extensions which the companies are obliged to operate.

"Wise as was the provision in the dual contracts for the operation of new extensions, it is now fairly clear that a further step must soon be taken. The war is already rapidly convincing the public of the necessity for direct governmental control, and even operation of activities necessary to the national interests.

CITY OWNERSHIP PLAN

"Two decades ago the city of New York determined upon the municipalization of transportation. The city now has more than $200,000,000 invested in transit properties, and has, in municipal ownership, the great trunk transit lines, those municipally owned as well as those privately owned.

"At the present moment I am interested in the problem of co-ordinating the various classes of transportation into a comprehensive transit development. Has not the time now been reached when consideration should be given to bringing the street surface systems into a relation with rapid transit lines perhaps similar to that of the privately-owned elevated lines? As new rapid transit lines are placed in operation it becomes apparent that the public is not completely served exclusively by a rapid transit system or exclusively by a street surface system.

HOW CO-ORDINATION OF LINES WOULD HELP

"The most striking illustration of this is in Brooklyn, where subways and elevated roads built by the city are being operated as a unit with privately-owned elevated lines. At the same time, a great network of surface lines, although controlled by the same holding company, is being operated as an independent system. Yet there are many portions of the borough that could be better served if it were possible to co-ordinate the surface with the rapid transit lines. In many instances the surface lines would be good feeder and distributer lines or could supplement the rapid transit lines.

"It is not sufficient, however, to say that transfers can be provided, for a system of exchange of transfers between privately-owned and operated surface lines and a municipal system where the city is responsible for deficits, would be of serious financial concern to the city. The surface lines would profit by increased short-haul traffic and the rapid transit lines would suffer by securing long-haul traffic at half-fare. Manhattan is another illustration, with crosstown lines that could be utilized.

CONTROL OF SURFACE LINES

"Consequently, the commission cannot hope to utilize the surface lines in the proper way until there is a more complete method of public control of the surface lines. It should be possible to work out a plan whereby leasehold or ownership of surface lines could be secured and thus make possible a more satisfactory unification of transportation. The city through the dual contracts now controls the transportation field, and it is inevitable that such control shall be further extended.

"The surface companies are alleging a serious financial situation resulting from increased cost of labor and material, taxes, competition of rapid transit and bus lines, and other causes with which you are doubtless familiar. They will proceed shortly to the presentation of evidence bearing upon such allegations. They are completing expensive and detailed valuations of their properties, useful alike for rate purposes and for sale purposes.

MUNICIPAL OWNERSHIP THE VOICE OF A FRIEND

"It may be that the surface companies regard their financial condition as so serious that they did not consider recent political propaganda as an unfriendly act, but rather as the voice of a friend expressing a principle that with proper relations and sympathies could afford relief of a most satisfactory character. It is therefore most important that neither the pursuit of a political theory nor ready relief to distressed but deserving companies should impose upon the city municipal ownership of properties that cold business judgment would not advise.

THE CITY IN BUSINESS

"The city is in the business of transportation, and should extend that business as the interest of the city requires. It should not extend the business if interests other than those of the city would solely be benefited, and it should not extend the business merely because it is a beautiful thing to be in the business of transportation.

"The rapid transit act now authorizes the commission, in co-operation with the Board of Estimate, to lay out and construct rapid transit lines, and to contract for their operation, or, if no contract can be made for operation, to operate the lines directly. The commission may also lease trackage rights, or even purchase lines for rapid transit purposes. It would be comparatively easy to extend the rapid transit act so as to authorize the purchase or lease of surface-line properties useful for transit purposes and their operation in conjunction with the city's rapid transit lines.

"If from any point of view the acquisition of public-service properties by the city is contemplated, the closest scrutiny and the best co-operation will be essential to insure, first, that the city gets only property necessary and useful to it, and, second, that the terms of acquisition are reasonable."

Basis of Northern Ohio Settlement

The proposition of the Northern Ohio Traction & Light Company, Akron, Ohio, upon which the recent strike was settled, was as follows:

In reference to the conference held to-day between your representatives and the officials of this company, we have expressed to you a desire to do everything in our power to bring an end to the deplorable conditions now existing. With that thought uppermost in our minds, and confirming what we have verbally said, we propose that all existing contracts between the company and its motormen, conductors and brakemen be continued to May 1, 1918, which is the date of their expiration. Further, that the present wage scale be increased as of Nov. 1, 1917, as follows:

	Present Wage	Proposed Wage
ALL CITY DIVISIONS		
First year	28 cents an hour	33 cents an hour
Second year	30 cents an hour	35 cents an hour
Third year and thereafter	33 cents an hour	38 cents an hour
ALL SUBURBAN DIVISIONS		
First year	29 cents an hour	34 cents an hour
Second year	31 cents an hour	36 cents an hour
Third year and thereafter	34 cents an hour	39 cents an hour
ALL INTERURBAN DIVISIONS		
First year	30 cents an hour	35 cents an hour
Second year	32 cents an hour	37 cents an hour
Third year and thereafter	35 cents an hour	40 cents an hour

These revised wage scales shall remain in effect until May 1, 1918.

There shall be added to each of the existing contracts an arbitration clause to cover any disputes that may arise between the parties as to working conditions up to May 1, 1918.

There shall also be added to each of the existing contracts a provision that the parties to the existing contracts shall, on April 1, 1918, begin negotiations for new contracts between the company and the motormen, conductors and brakemen, which contracts shall cover wages and working conditions from May 1, 1918, to May 1, 1919.

In the event that the said parties are unable to formulate contracts agreeable to both, then the subject shall be submitted to arbitration.

The wage scales and working conditions of the new contracts of May 1, 1918, shall be binding upon all parties for one year, effective from May 1, 1918.

Power Agitation in Kansas City

Factional agencies in business and politics are making use of war-time conditions to keep unsettled the attitude of the people in regard to public service corporations that furnish electricity to the consumers in Kansas City, Mo. These agencies appear to be divided in two, the city officialdom and those who favor municipal ownership of public utilities.

In Kansas City the city has a member on the board of control of the Kansas City Railways. This member favors the present arrangement whereby the city has a share in selling electricity made by the railway. This company pays the city a percentage of the receipts from current sold to the Kansas City Light & Power Company. The State Public Service Commission has ruled that the railway and the light company shall be permanently divorced. The light company, therefore, contemplates building additional plants to make its own current. This move is opposed by the city officials because of the resultant loss of revenue to the city.

Other persons are seeking to secure a municipal plant in the city and are opposed to the present light company building a new plant. They believe that if matters remain as they are at present the light company will be unable to give good service during the war times and the municipal argument will have been thereby enhanced at the close of the stringent times.

As a result of the work of these two factions, and due partly also to the tendency of the public to guard against extravagance in the use of building materials at this time, complaints have reached the priority board asking that the light company be not allowed to build the new $4,500,000 plant which it had counted upon to fulfill service needs in the city. Others have appealed to the priority board, carrying to it the other side of the question. As a result the board is now considering both angles before passing a rule regarding the shipment of materials for the new plant.

The city contends that the Kansas City Railways should enlarge its present power plant and continue selling electricity to the light company. The railway officials believe that their plant would not need additional equipment if the light company were allowed to build its plant.

New Franchise for Cincinnati Interurban

The first move of the interurban railways to improve their service in Cincinnati, Ohio, and co-operate with the city in its plans to the same end indicates that the city government is willing to forego some of the old-time precedents to aid them. A new franchise for the Cincinnati, Lawrenceburg & Aurora Electric Street Railway, presented to the City Council on Nov. 20, contained a requirement that the company should pay an annual rental of $1,500 a year after the first five years. At a hearing before the street railway committee the following day, Attorney Stanley Shaffer asked that the beginning of payment of rental be placed at a later date, as the company was now in the hands of a receiver and was finding it difficult to finance improvements. Members of the committee agreed to amend the draft to make the payments begin at the end of ten years. They said they wished to encourage interurban roads to come into the city and to co-operate with plans that have been made for rapid transit service.

Under the new franchise the company will abandon the old route on the Lower River Road at a point 3 miles west of Anderson's Ferry and build a new track on private right-of-way along Commercial Avenue. Application has been made to the Public Utilities Commission to abandon this portion of the track.

As far as practicable the ordinance follows the form of the franchises granted the Cincinnati Traction Company and the Cincinnati, Newport & Covington Street Railway. The city reserves control of operation and the company must give bond to restore the streets to their original condition.

Change of Venue Proposed

Court Feels This Course Desirable on Account of Prejudice Growing Out of Strike

The Springfield (Ill.) Consolidated Railway has been conditionally allowed a change of venue in twenty-six damage suits, totaling approximately $200,000, on the grounds that prejudice existing in Sangamon County, Illinois, in the Circuit Court of which county the cases are now resting, would make impossible the insuring of a fair trial. Announcing that he would grant the petition Judge Norman L. Jones said that he would take under advisement the selection of the counties to which the cases would be transferred. He said that the transfer of the cases would be conditional upon agreements being made in the meantime between the attorneys for the litigants relating to the continuance of the cases until the present unsettled condition due to the strike has been ended. In deciding in favor of the company, Judge Jones said:

"There has been tremendous feeling here. I do not know who is to blame, nor does that concern this case; but there has been a condition here which has made the average citizen feel that it is unsafe to ride on the cars. The denial that the acts against the company—and the acts have not been denied—have been committed by the labor men makes the stronger case for the petitioner. It is evident that the feeling has spread to further bounds than that of organized labor. This condition is not over. The situation is such that it cannot help breed prejudice. I would rather leave these cases here where they ought to be tried under normal conditions, but where the parties to a suit cannot be assured of a fair trial in their home county it is the duty of the court to send the trial where they can get justice. I shall let this matter hold over as to term and as to place of trial and give that decision later. Unless the attorneys in these suits can come to an agreement as to the continuance of the cases until this prejudice ceases to exist I shall grant the change of venue and shall be governed largely by the convenience of the parties in the selection of the places for trial."

Labor Charges Not Sustained

Charges against the Twin City Rapid Transit Company, Minneapolis, Minn., by representatives of striking employees were found to be without foundation after investigation and hearing by a special committee of the Public Safety Commission. A recommendation that insignia of organization be dropped was included in the resolutions. The committee was made up of Rev. Dr. S. F. Kerfoot, president of Hamline University; W. M. Jerome, Minneapolis, attorney, and Norman Fetter, St. Paul, credit man. The recommendations follow:

"1. The total disuse is recommended of buttons or other insignia, symbolizing the union or the non-union organizations, except that the committee sees no objection to the use of the badge of the Employees' Mutual Benefit Association, to which all employees receiving a salary less than $2,500 a year are eligible.

"2. All solicitation for membership for the union as well as for the non-union organizations shall cease on the company's property.

"3. The company should post in all its stations rules for the purpose of effectuating the foregoing recommendations, with a provision that a violation shall be cause for discipline.

"4. Your committee recommends that the employees and the public be requested to avoid unfriendly discussion."

Wages Increase in Spokane

C. R. Stiles, superintendent of the Washington Water Power Company, Spokane, Wash., on Nov. 13 announced another increase in wages for conductors and motormen. The increase was voluntarily granted. It is the third this year and means a further advance of practically 9 per cent for the men who have been for five years or more in the company's service. According to Mr. Stiles, conductors and motormen on the regular runs can now earn from $125 to $140 a month. The average wage of the 200 men affected will exceed $100 a month. The new schedule is based on the one recently adjusted by mediation in Tacoma. A table giving the new and the old scales in cents per hour follows:

New Scale	
First six months	31
Second six months	32
Second year	33
Third year	35
Fourth year	35
Fifth year	35
After fifth year	38
Operating one-man cars per hour additional over above	4
Instructing students, extra per hour	5
Minimum wages for extra man, per month	$80

Old Scale	
First six months	30
Second six months	31
Third six months	32
Fourth six months	33
Third to fifteenth year, inclusive	35
After fifteen years	37
Instructing students, extra per hour	5
Additional per hour for operating one-man cars	4
Guarantee for extra man, per month	$65

Temporary Restraining Order in Seattle

Judge Calvin S. Hall of the King County Superior Court, at Seattle, Wash., in the case of T. N. Haller against the city of Seattle, seeking an order restraining the city from proceeding with the construction of an extension of the municipal railway from the north end of the Ballard bridge over Fifteenth Avenue N. W., and Leary Avenue to its intersection with Market Street, on Nov. 7 granted a temporary restraining order. The court, however, approved the ordinance adopting a plan for an extension of the city line to Market Street and Leary Avenue, and the issuance of $40,000 of utility bonds therefor, interest and principal to be paid from the earnings of the municipal railway system. The city had until Nov. 16 to submit proof by affidavit or otherwise of the solvency of the street railway construction fund, created by the authorization by the Council of a bond issue of $40,000.

The temporary orders were dissolved which restrained the city from proceeding with an approach to the Ballard bridge from Thirteenth Avenue W., and Nickerson Street, with $17,000 appropriated from the bridge bond fund, and for the purchase of a submarine cable to transmit power to the bridge.

Cleveland Commissioners Accept

Charles A. Otis, Charles E. Adams, M. A. Bradley, Street Railway Commissioner Fielder Sanders and City Finance Director C. J. Neal on Nov. 21 filed with Mayor Harry L. Davis their acceptances of appointment as members of the rapid transit or subway commission of Cleveland, Ohio. The appointments were made more than a week before. Their duties in connection with the proposed subway system and underground terminal will be much the same as the local Cincinnati Commission, which has prepared the way for building a rapid transit loop.

Officers of the Cleveland Rapid Transit Railway Company, organized to build underground railways, said that before the new commission can commence construction work on municipal subways, its franchise must be formally revoked by the City Council. This franchise was granted in 1909 and has since been renewed several times to allow the company to finance its proposition. Although the company has done no work, it is contended that the franchise is valid until formally revoked. W. R. Hopkins is president of the company and Thomas P. Schmidt, secretary and treasurer.

Injunction Against Strikers

The Chattanooga Railway & Light Company, Chattanooga, Tenn., has been granted an injunction against the Amalgamated Association. The injunction was filed in the form of an amendment to the original bill filed several months ago seeking to prevent the employees of the local union from going on strike a second time after entering into agreements with the company. The original bill was filed several hours after the men went out on a strike. The amendment restrains the defendants from in any manner undertaking to induce, persuade or coerce the employees of the company to breach their contracts of employment or to leave the employment of the company. The bill further charges that the company in order to continue in business and perform its duties has been compelled to procure the services of other employees with which to operate its cars, and now has in its employ, as operatives, about 160 men, each of whom has signed a definite individual contract.

First Gas Squad Organizing

The first battalion of American soldiers to meet offensively the gas and fire which the enemy introduced in warfare is being organized as the Thirtieth Engineers, Gas and Flame, with headquarters at Camp American University, Washington, D. C. Major E. J. Atkisson, Corps of Engineers, a graduate of West Point and of Cornell, is in charge of organization. Although the gas and flame service was authorized as recently as Oct. 15, rapid progress has been made in organization, but there is still an opportunity for a limited number of enlistments for electrical experts, mechanics, blacksmiths, carpenters, clerks and muscular, quick-thinking, resolute men, between the ages of eighteen and forty years. Any man possessing the necessary qualifications may volunteer at any recruiting station by asking to join the Thirtieth Battalion Gas and Flame, forming at Washington.

Increase in Wages in Charleston

The officers of the Charleston Consolidated Railway & Lighting Company, Charleston, S. C., have signed a contract with a committee representing the trainmen which gives the men an increase of 3 cents an hour, effective immediately. The question of wages is the only change made in the agreement. The contract is for one year. The men are paid according to term of service and classification, which ranges from 19 cents an hour for extra men to 25 cents an hour for men who have been in the service of the company continuously for four years. The following table shows the old and new rates in cents per hour:

	Old Rate	New Rate
Extra men	19	22
Regular men	21	24
Two-year men	23	26
Three-year men	24	27
Four-year men	25	28

Increase in Wages in Louisville

An increase rated at 3 cents an hour has been awarded to the 1200 conductors and motormen in the employ of the Louisville (Ky.) Railway by a decision of the board of directors made on Nov. 23. It dates from Nov. 16 and supersedes a 7½ per cent bonus which became effective last May, graduating the increase according to the length of a man's service. For example, the motorman or conductor who had served five years or longer was paid at the rate of 25 cents an hour and with his bonus added received $2.69 a day on a ten-hour basis. Under the new system this employee will receive $2.80. The old rate was 21 cents an hour for the first year men; 22 cents for the second year; 23 cents for the third year, 24 cents for the fourth year and 25 cents for all who had served five years or more. The increase means a flat advance of 3 cents an hour to all trainmen. It will add about $150,000 a year to the payrolls.

Trenton Officials Indicted

The officers and directors of the Trenton & Mercer County Traction Corporation, Trenton, N. J., have been indicted by the Mercer County Grand Jury on charges of maintaining a common nuisance in illegally having poles and wires on certain streets of the city of Trenton, N. J. The indictments followed action by the members of the City Commission. The indictments contain fifteen counts, specifying the illegal use of that number of streets. Indictments were also found on fifteen counts against the directors of the three corporations from which the present lines were leased. Three separate indictments containing fifteen counts each have been found against Messrs. Riggs, Roebling, Ginnelly, Jones and Grookett because they are all directors in three of the corporations owning the Trenton system.

San Francisco Strike Declared Off

The strike declared by conductors and motormen of the United Railroads, San Francisco, Cal., last summer was formally abandoned on Nov. 24 when the union asked the local labor council to remove its boycott, which was done. The men organized a union and demanded $3.50 for an eight-hour day. The company refused to recognize the union. Permission is given the men to seek work with the company as individuals. The progress of the strike was reviewed from week to week in the Electric Railway Journal so long as the controversy was regarded as a real issue.

Men Balk at Arbitration Provision

Following the refusal of the Twin City Rapid Transit Company, Minneapolis, Minn., to allow trainmen wearing buttons to take out cars during the week beginning Nov. 26 the Minnesota Public Safety Commission gave the union men until Nov. 29 to decide to return to work. The company was instructed to reinstate applicants who obeyed the commission's order. When the commission ended the recent brief strike it named an investigating committee on unsettled complaints. This committee, as noted on page 1005 of this issue, recommended that all union insignia be removed. The company enforced this recommendation on Nov. 25. On the following day the commission made the order mandatory. The union men rebelled and the Trades & Labor Assembly asked the removal of Commissioner J. F. McGee. R. S. Coleman, local federal mediator, is at work. The company claims that its service is 91.76 per cent normal. It says it is up to the men to carry out the commission's order.

Municipal Officials Demand Valuations.—In a recent letter to the Public Service Commission for the Second District of New York the committee of city attorneys appointed by the Mayor's Conference urged the valuation of electric railway property before the granting of fare increases. It was alleged that the petitioning companies are overcapitalized.

Request for Increase in Wages in Toledo.—Motormen and conductors of the Toledo Railways & Light Company, Toledo, Ohio, have requested an increase of 10 cents an hour in wages. The present contract with the men expires in April, 1919. The scale of pay now in force is from 27 cents to 31 cents an hour, according to the length of time the men have been in the service.

Objection to Bus Grants at This Time.—Mayor-elect John F. Hylan of New York sent a letter to the Board of Estimate on Nov. 27 protesting against any grant to the Fifth Avenue Coach Company of rights to operate in streets not covered by the company's present franchise. In his letter Judge Hylan urged that any new grant to the company be deferred for at least ten days to enable the incoming administration to investigate, and that nothing be done until there had been adequate publicity regarding the terms on which the grant was to be made.

Women Car Cleaners in Trenton.—The Trenton & Mercer County Traction Corporation, Trenton, N. J., has been compelled to engage women as car cleaners at the carhouses because of the scarcity of male help. Both day and night shifts of women are engaged in the work. It is the first time in its history that the corporation has taken such a step. Rankin Johnson, president of the company, said to the correspondent of the Electric Railway Journal in Trenton: "We must now look to women to do the work in the carhouses. Men will apply for work and remain only a day, being offered better wages elsewhere. The women will receive every protection and will be paid good wages."

West Side Commission Completed.—The commission appointed to inquire into the progress made in the settlement of the West Side improvement plan for New York has been completed by the appointment of Hiram C. Todd, Saratoga Springs. He was named by Senator Brown, temporary chairman of the Senate. The other members are Danforth E. Ainsworth, named by Speaker Sweet, and the following named by the Governor: W. H. Van Benschoten, chairman; Prof. Charles A. Beard, Cyrus C. Miller, Henry L. Stoddard and Ralph S. Rounds. The West Side improvement contemplates the rebuilding and electrification of the line of the New York Central Railroad on the west side of the city of New York along the Hudson River front.

Fare Pleas Widely Distributed.—E. J. Cooney, executive assistant of the Rhode Island Company, Providence, R. I., has distributed widely throughout Rhode Island to business men, state and city office holders and members of business organizations, etc., copies of the paper read by Rathbone Gardner, chairman of the board of directors of the company, and copies of a paper read by A. E. Potter, president of the company, at a recent hearing held in the State House relative to a 6-cent fare. These papers were read in answer to criticism by members of the People's Forum, Socialists, etc., and are believed to have had a great deal to do with impressing people with the necessity of an increase in revenue for the company. The statements were referred to at length in the Electric Railway Journal of Nov. 3, page 818.

West Side Improvement Report.—The joint conference committee of the Public Service Commission for the First District of New York and of the Board of Estimate and Apportionment of New York City, on the New York Central Railroad west side improvement, of which Public Service Commissioner Charles S. Hervey is chairman, has adopted and submitted to the Board of Estimate and Apportionment and the Public Service Commission a report indicating the different steps which the committee has taken since its organization last June. The committee has asked the Board of Estimate and Apportionment, as the next step in the solution of the West Side problem, to repeal the municipal ordinance of 1847 and subsequent resolutions under which the railroad holds its present rights to the use of public streets. The committee also stated in its report that additional facts in reference to the real estate rights of the railroad would be the subject of a later communication These matters, the committee reported, required consideration and action, separate and independent of the power granted to the Public Service Commission, which on and after Dec. 1 will have the duty of eliminating grade crossings on the railroad's lines on the West Side. The committee also reported that the New York Central Railroad had declined to enter into any agreement with the city under the Ottinger-Ellenbogen act, which created a joint committee.

Financial and Corporate

Annual Report

Virginia Railway & Power Company

The comparative income statement of the Virginia Railway & Power Company, Richmond, Va., for the years ended June 30, 1916 and 1917, follows:

	1917		1916	
	Amount	Per Cent	Amount	Per Cent
Revenue from railway operations	$3,256,791	53.88	$3,172,862	56.20
Light, power and gas revenues	2,787,704	46.12	2,472,296	43.80
Total operating revenues	$6,044,495	100.00	$5,645,158	100.00
Railway operating expenses:				
Maintenance of way and structures	$238,681	7.33	$251,424	7.92
Maintenance of equipment	201,849	6.20	180,611	5.70
Traffic expenses	8,707	0.27	8,725	0.27
Transportation expenses	1,095,157	33.63	1,006,422	31.71
General expenses	338,294	10.38	342,205	10.79
Total	$1,882,688	57.81	$1,789,387	56.39
Light, power and gas expenses	1,058,604	37.97	886,792	35.87
Total operating expenses	$2,941,293	48.66	$2,676,179	47.41
Operating income	$3,103,202	51.34	$2,968,979	52.59
Other income	98,391	1.62	96,610	1.71
Gross income	$3,201,593	52.96	$3,065,589	54.30
Taxes and licenses	387,672	6.41	327,631	5.80
Income applicable to fixed charges and rentals	$2,813,921	46.55	$2,737,958	48.50
Fixed charges and rentals	1,429,385	23.65	1,415,036	25.05
Surplus over fixed charges and rentals	$1,384,536	22.90	$1,322,922	23.44
Depreciation	....	....	$100,000	1.77
Proportion of discount on securities	$30,315	0.49	30,316	0.54
Net miscellaneous charges not operating	162,133	2.69	38,488	0.68
Total direct charges	$192,448	3.18	$168,804	2.99
Surplus over fixed and other charges	$1,192,088	19.72	$1,154,118	20.45

The gross earnings, in both the railway and the light and power departments, increased in the last year more than the normal growth, owing to army and navy camp traffic in the latter part of the period. The gross earnings from operation increased $399,337, or 7.07 per cent. The greater part of this gain, $315,408, or 12.8 per cent, was in the light and power department, while the railway increase was $83,928, or 2.6 per cent. The gross income from all sources increased $136,003, or 4.44 per cent.

The operating expenses, however, showed a rise of $265,114, or 9.90 per cent, divided $93,301, or 5.2 per cent, for the railway department, and $171,812, or 19.4 per cent, for the light and power department. Most of the increase in the railway department was for conducting transportation, which cost $88,735 more than the year before. Maintenance of way and structures decreased $12,742, but maintenance of equipment rose $21,237. The maintenance expenditures amounted to 13.53 per cent of the gross railway earnings in 1916-1917, as compared to 13.62 per cent the year before.

In the last year the policy of setting aside a reserve for depreciation was discontinued. The directors, however, authorized the transfer from the surplus as of June 30, 1917, of the sum of $359,903 to the accumulated reserve. This amount was equal to 6 per cent of the gross earnings of the system, except the Norfolk & Ocean View Railway, which had no surplus earnings. The balance in the reserve at the end of the year was $1,342,781.

The company experienced difficulty in holding competent men in all departments, notwithstanding voluntary wage increases granted to the men. The higher rates of compensation were largely influenced by the high wage scales paid in munitions plants and construction work for the government, both of which were extensive in the company's territory. The wages of motormen and conductors were increased by a total of 5 cents an hour during the year. This alone will mean an annual increase of $162,000.

The expenditures for additions, extensions and betterments were $444,244 for the last year. Of this amount $88,376 was for the railway department. Various statistics follow:

	1917	1916	Change
Revenue passengers carried	69,807,331	67,226,456	+2,580,875
Transfer and free passengers	17,865,823	16,980,726	+885,097
Total passengers carried	87,673,154	84,207,182	+3,465,972
Percentage of passengers using transfers	19.56	19.33	20.23
Average fare per passenger, including transfers	$0.037	$0.037	....
Car-mileage	13,547,644	13,750,325	—202,681
Car-hours	1,618,215	1,645,521	—27,306
Total revenue per car-mile	$0.240	$0.231	+$0.009
Total revenue per car-hour	$2.013	$1.928	+$0.085
Operating expenses per car-mile	$0.139	$0.131	+$0.008
Operating expenses per car-hour	$1.164	$1.088	+$0.076

O., A. & E. Rehearing Denied

California Railroad Commission Will Insist Upon the Fulfillment of the Requirement for the Readjustment of Finances

The Railroad Commission of California has denied the owners of a small percentage of the outstanding bonds of the Oakland, Antioch & Eastern Railway and the Oakland & Antioch Railway a rehearing of the commission's decision, in which it authorized a refinancing of the Oakland, Antioch & Eastern Railway by an issue of $1,095,000 of first mortgage bonds, and $262,000 promissory notes. The applicants for a rehearing stated that they had not properly exercised the authority granted by the commission; that the company was insolvent, and that the issue of bonds would be in violation of the lawful rights of the bondholders.

In the commission's decision rendered on Nov. 19, it said that the railway had in 1914 fallen into financial difficulties so that to avoid receivership, it was necessary to take care of the interest on its funded debt, which its revenues were not sufficient to meet; that a large majority of the bondholders and the managers agreed upon a financial plan waiving the payment of interest to Jan. 1, 1918; that under a stockholders' agreement an assessment was changed into a loan by the stockholders, and that the commission authorized the company to issue the bonds and notes under certain provisions. The protesting minority bondholders insisted that the plan was doomed to failure, but the commission says that a careful reading of their petition did not disclose the results hoped to be accomplished by a revocation of the commission's order. The commission says:

"No time need be wasted discussing the so-called financial plan of the company, as it is admitted on all sides to be a failure. Nobody connected with this company or any of its securities has the slightest intention of attempting to carry out this plan. Further it is conceded that a complete and drastic reorganization of the capitalization of both companies will be necessary. The managers of the two companies and the majority bondholders insist that a plan is now being discussed for complete financial reorganization, and the commission is urged not to revoke the orders made, because such revocation would be ineffective, in that notes and bonds have been issued under it, and a revocation would not change the status of such bond and note holders. Further, the activities of the interested parties will result in a complete reorganization on which any action of the commission revoking the order would have little effect."

The commission says that the Oakland, Antioch & Eastern Railway and the Oakland & Antioch Railway are not in sound, financial condition, that the plan now in effect will in no wise improve this financial condition, and that it is necessary immediately to reorganize the companies. While the revocation of the orders would not necessarily bring about the desired result, and the application for this revocation is therefore denied, the commission calls the attention of the two railways to that part of its order, dated Nov. 20, 1915, which reads as follows:

"On or before Jan. 1, 1918, the applicant shall report to this commission a plan for the readjustment of its finances to meet its maturing obligations and to place it upon a permanent basis to meet its financial necessities."

The commission says that it will insist on the fulfillment of this requirement.

Electric Railway Statistics

Comparison of Returns for August, 1917 and 1916, Shows Increasing Cost of Operation—Operating Ratio Has Risen to 64.33 per cent

A comparison of electric railway statistics for August, 1917, with figures for the corresponding month of 1916, made by the information bureau of the American Electric Railway Association, indicates a continued rise in operating expenses. This condition is noticeable throughout the country, although in the Southern District traffic in connection with the operation of military camps has apparently tended to accelerate somewhat the rate of increase of operating revenues.

Data for August, 1917, representing 7838 miles of line of electric railways scattered throughout the country, figured on the per mile of line basis, indicate an increase in operating revenues of 8.27 per cent, in operating expenses of 12.15 per cent and in net earnings of 1.92 per cent. Data representing approximately 70 per cent of the above-stated mileage show an increase of 7.27 per cent in taxes paid and 0.40 per cent in operating income.

The returns from the city and interurban electric railways, as shown in detail in the appended table, have been classified according to the following geographical grouping: Eastern District—East of the Mississippi River and north of the Ohio River. Southern District—South of the Ohio River and east of the Mississippi River. Western District—West of the Mississippi River.

Of the three groups shown in the accompanying table returns for the Southern apparently indicate a slight degree of improvement over the corresponding period of the previous year, while returns for the Eastern and Western are somewhat unsatisfactory. Data for the Eastern group, representing 5295 miles of line, indicate an increase in operating revenue of 7.96 per cent, in operating expenses 12.62 per cent and in net earnings 0.14 per cent.

Returns for the Western group, representing 1584 miles of line, show an increase in operating revenues of 7.33 per cent, in operating expenses 10.08 per cent and in net earnings 2.84 per cent. Returns representing approximately 95 per cent of this mileage indicate an increase of 15.38 per cent in the amount of taxes paid and a decrease of 0.36 per cent in operating income.

The operating ratio for the country as a whole increased from 62.10 in August, 1916, to 64.33 in August, 1917. The operating ratio of the Eastern District increased from 62.66 in 1916 to 65.36 in 1917, while that of the Western group increased from 62.02 in 1916 to 63.61 in 1917.

Government Commandeers Railway

Road About to Be Abandoned Will Be Continued in Service by the Government

The United States Navy Department has commandeered the beach front electric railway of the Cape May, Delaware Bay & Sewell's Point Railroad proper for war purposes. Last spring the road was sold at receiver's sale to a junk dealer. After several contests before the Board of Public Utility Commissioners of New Jersey in an effort to have the road run for the benefit of the public the commission decided that the purchaser could do as he pleased with it. Congress has appropriated $15,000 for placing the electric railway in shape for government use.

Capital Traction Company, Washington, D. C.—The Capital Traction Company has declared an extra dividend of 1¼ per cent. George E. Hamilton, president of the company, announced that the dividend was declared because of the increased business during the last six months.

Columbus Railway, Power & Light Company, Columbus, Ohio.—Permission has been asked by the Columbus Railway, Power & Light Company to issue $276,500 of preferred stock and $1,000,000 of bonds to pay for extensions, betterments and improvements. The bonds are to be sold at 90 or better or pledged at not less than 80.

Danbury & Bethel Street Railway, Danbury, Conn.—Judge Lucien F. Burpee in the Superior Court sitting in Danbury has named Attorney J. Moss Ives of that city as temporary receiver of the Danbury & Bethel Street Railway, vice Judge James F. Walsh, Greenwich, whose confirmation was sought. Counsel for different interests were unable to agree upon a receiver, and finally submitted a list of six names to Judge Burpee, who selected J. Moss Ives, one of the more prominent of the Danbury lawyers, for the place. George Tweedy, Danbury, and Frederick Jackson, New Haven, have been named appraisers.

Massachusetts Electric Companies, Boston, Mass.—A committee has been formed to protect the interests of holders of preferred shares of the Massachusetts Electric Companies. Robert C. Mores of Jackson & Curtis is chairman. The circular says in part: "On April 1, 1918, $3,000,000 of notes of the Massachusetts Electric Company will fall due. The principal asset is its interest in stocks of the Bay State Street Railway, a majority of the common stock of which is pledged as security for the notes. We believe these notes will not be paid and probably cannot be renewed in full. This will bring to an acute issue questions affecting the relative positions of the preferred and common shareholder."

COMPARISON OF REVENUES AND EXPENSES OF ELECTRIC RAILWAYS FOR AUGUST, 1917 AND 1916

	United States				Eastern District				Southern District				Western District			
		Per Mile of Line				Per Mile of Line				Per Mile of Line				Per Mile of Line		
Account	Amount, July, 1917	1917	1916	Increase Over 1916, per Cent	Amount, July, 1917	1917	1916	Increase Over 1916, per Cent	Amount, July, 1917	1917	1916	Increase Over 1916, per Cent	Amount, July, 1917	1917	1916	Increase Over 1916, per Cent
Operating revenues	$15,183,651	$1,937	$1,789	8.27	$10,701,600	$2,021	$1,872	7.96	$1,492,854	$1,557	$1,376	13.15	$2,989,197	$1,888	$1,759	7.33
Operating expenses	9,762,716	1,246	1,111	12.15	6,995,532	1,321	1,173	12.62	864,712	902	803	12.33	1,902,472	1,201	1,091	10.08
Net earnings	5,420,935	691	678	1.92	3,706,068	700	699	0.14	628,142	655	573	14.31	1,086,725	687	668	2.84
Operating ratio, per cent	1917, 64.33; 1916, 62.10				1917, 65.36; 1916, 62.66				1917, 57.93; 1916, 58.36				1917, 63.61; 1916, 62.02			
Average number of miles of line represented	1917, 7,838; 1916, 7,766				1917, 5,295; 1916, 5,257				1917, 959; 1916, 955				1917, 1,584; 1916, 1,554			

COMPANIES REPORTING TAXES

Operating revenues	$9,640,061	$1,770	$1,654	7.01	$5,863,585	$1,732	$1,630	6.26	$813,886	$1,552	$1,410	10.07	$2,962,593	$1,925	$1,793	7.36
Operating expenses	6,251,629	1,148	1,042	10.17	3,902,437	1,153	1,049	9.91	466,290	889	805	10.43	1,882,902	1,224	1,110	10.27
Net earnings	3,388,435	622	612	1.63	1,961,148	579	581	†0.34	347,596	663	605	9.59	1,079,691	701	683	2.64
Taxes	640,352	118	110	7.27	347,362	103	102	0.98	61,508	117	107	9.35	231,482	150	130	15.38
Operating income	2,748,083	504	502	0.40	1,613,786	476	479	†0.63	286,088	546	498	9.64	848,209	551	553	†0.36
Operating ratio, per cent	1917, 64.86; 1916, 63.00				1917, 66.57; 1916, 64.36				1917, 57.28; 1916, 57.09				1917, 63.58; 1916, 61.91			
Average number of miles of line represented	1917, 5,448; 1916, 5,381				1917, 3,385; 1916, 3,347				1917, 521; 1916, 524				1917, 1,539, 1916, 1,510			

†Decrease.

Springfield (Mass.) Street Railway.—The Springfield Street Railway has passed its dividend for the six months' period ended June 30 last and will pass its dividend for the second six months' period ending Dec. 31. Action on the first period was announced at a recent stockholders' meeting and a definite statement for the second period was made a few days ago. This is the first time that the company has passed its dividend, the lowest rate ever paid heretofore being 6½ per cent. From 1893 to 1910, inclusive, the company paid 8 per cent per annum. The next four years it paid 7 per cent per annum; in the year 1914 to the year ended June 30, 1916, it paid 6½ per cent.

Toronto (Ont.) Railway.—William A. Reed & Company, New York, N. Y., have sold $750,000 of Toronto Railway one-year 6 per cent sinking fund notes. The proceeds of this issue are to be used to retire a similar amount of notes which fall due on Dec. 1. The plan under which the new notes are issued stipulates that the company shall set aside $50,000 monthly from Feb. 1, 1918, to Dec. 1, 1918, as a sinking fund. This will take care of $500,000 of the notes at maturity. The new notes were offered at 99, yielding 7 per cent.

Tri-City Railway & Light Company, Davenport, Iowa.—John G. Huntoon, general manager of the Tri-City Railway & Light Company, has been elected a director of the company.

United Light & Railways Company, Grand Rapids, Mich.—The United Light & Railways Company has authorized a new issue of $1,500,000 of 6 per cent bond-secured gold notes. The proceeds are to be used to retire $750,000 of 6 per cent notes due on Jan. 1, 1918, and to take care of additions, extensions and improvements to the company's properties.

Waycross Street & Suburban Railway, Waycross, Ga.—Suit is pending in court over the question of dismantling the entire system of the Waycross Street & Suburban Railway, which has suspended operation.

Electric Railway Monthly Earnings

LAKE SHORE ELECTRIC RAILWAY, CLEVELAND, OHIO

Period	Operating Revenue	Operating Expenses	Operating Income	Fixed Charges	Net Income
1m., Sept., '17	$167,622	*$105,687	$61,935	$35,187	$26,748
1 " " '16	152,529	*89,152	63,377	36,334	27,043
9 " " '17	1,332,785	*891,423	441,362	311,527	129,835
9 " " '16	1,207,012	*753,129	453,883	327,306	126,577

PADUCAH TRACTION & LIGHT COMPANY, PADUCAH, KY.

Period	Operating Revenue	Operating Expenses	Operating Income	Fixed Charges	Net Income
1m., Sept., '17	$24,478	*$18,486	$5,992	$7,593	†$1,601
1 " " '16	26,019	*17,033	8,986	7,128	1,858
12 " " '17	304,292	*229,334	74,958	88,354	†13,396
12 " " '16	309,432	*201,118	108,314	87,345	20,969

PENSACOLA (FLA.) ELECTRIC COMPANY

Period	Operating Revenue	Operating Expenses	Operating Income	Fixed Charges	Net Income
1m., Sept., '17	$31,397	*$17,491	$13,906	$7,803	$6,103
1 " " '16	23,920	*12,997	10,923	7,712	3,211
12 " " '17	326,874	*189,832	137,042	93,312	43,730
12 " " '16	280,503	*155,104	125,399	90,585	34,814

PUGET SOUND TRACTION, LIGHT & POWER COMPANY, SEATTLE, WASH.

Period	Operating Revenue	Operating Expenses	Operating Income	Fixed Charges	Net Income
1m., Sept., '17	$805,827	*$490,110	$315,717	$204,211	$111,496
1 " " '16	690,475	*412,714	277,761	184,760	93,001
12 " " '17	8,953,076	*5,465,562	3,487,514	2,294,644	1,192,870
12 " " '16	7,855,965	*5,013,664	2,842,301	2,206,485	635,816

RHODE ISLAND COMPANY, PROVIDENCE, R. I.

Period	Operating Revenue	Operating Expenses	Operating Income	Fixed Charges	Net Income
1m., Sept., '17	$513,773	*$440,248	$73,525	$121,880	†‡$47,173
1 " " '16	515,820	*363,735	152,085	120,714	‡33,072
9 " " '17	4,549,281	*3,669,960	879,321	1,085,879	†‡119,743
9 " " '16	4,401,182	*3,126,395	1,274,787	1,041,899	‡322,537

SAVANNAH (GA.) ELECTRIC COMPANY

Period	Operating Revenue	Operating Expenses	Operating Income	Fixed Charges	Net Income
1m., Sept., '17	$82,258	*$57,223	$25,035	$24,207	$828
1 " " '16	70,466	*48,070	22,396	23,570	†1,174
12 " " '17	926,005	*614,589	311,416	288,264	23,152
12 " " '16	802,270	*540,849	261,421	26,422	†19,535

TAMPA (FLA.) ELECTRIC COMPANY

Period	Operating Revenue	Operating Expenses	Operating Income	Fixed Charges	Net Income
1m., Sept., '17	$79,666	*$46,236	$33,430	$5,067	$28,363
1 " " '16	79,285	*43,303	35,982	4,255	31,727
12 " " '17	1,007,242	*554,845	452,397	53,294	399,103
12 " " '16	966,673	*526,254	440,419	52,217	388,202

WESTCHESTER STREET RAILROAD, NEW YORK, N. Y.

Period	Operating Revenue	Operating Expenses	Operating Income	Fixed Charges	Net Income
1m., Sept., '17	$22,168	*$22,475	†$307	$2,573	†‡$2 855
1 " " '16	18,372	*19,805	†1,433	1,865	†‡3,269
12 " " '17	189,172	*209,024	†19,852	19,443	†‡39,041
12 " " '16	181,108	*191,447	†10,339	16,102	†‡26,204

*Includes taxes. †Deficit. ‡Includes non-operating income.

Traffic and Transportation

Report on B. C. Electric Railway

Summary Presented of Recommendation of Expert Appointed by the Provincial Government

Dr. Adam Shortt, appointed by the provincial government to investigate transportation conditions in Vancouver and Victoria, B. C., following the strike of the trainmen of the British Columbia Electric Railway last June, has filed his report. His investigation included an inquiry as well into the electric light and power system. The report contains 110 typewritten pages. It was made public in Victoria on Nov. 20. Dr. Shortt makes the following recommendations:

ELECTRIC RAILWAY SYSTEM

Complete elimination of jitney competition in Vancouver and between Vancouver and New Westminster.

Retention of present fares, and transfers within "city population area" to be agreed upon.

Readjustment of fares and service on outside lines at a conference to take place between company and municipal representatives.

Discontinuance of transfers from city to interurban lines and vice versa.

Fair trial of one-man car on certain lines.

Increased speed; skip-stop plan of operation and special through cars to New Westminster.

LIGHTING SYSTEM

Reduction in lighting rates on Jan. 1, 1918, to 8 cents net; on Jan. 1, 1919, to 7½ cents net; on Jan. 1, 1920, to 7 cents net.

Discontinuance of meter rentals but minimum charge of 50 cents a month.

Payment of 6 per cent interest by the company if security deposits are retained; a surcharge of 10 per cent on all accounts overdue for twenty days, if security deposits are not retained.

GENERAL

Formation of a public utilities commission for the province.

FREE COMPETITION MUST CEASE

Dr. Shortt says that the financial condition of the British Columbia Electric Railway as regards its electric railway system is impossible of continuance on the basis of the last three years. Long and wide experience has proved that the urban and interurban electric railway business cannot be continued on a basis of free competition. Jitney competition on a considerable scale has destroyed the normal basis on which the electric railway system of the company was built up and on which it can be maintained. He says that the jitneys in competition with the electric railway must be eliminated. In addition, at least until more prosperous conditions return, certain other changes and economies must be introduced. If the electric railway was to operate on a basis which would compel it to meet jitney competition the railway would at least have to abandon the more unremunerative of its lines, reduce the frequency of service on others, discontinue all transfers and exact a 5-cent minimum fare from all passengers, including children under twelve years, school children, workmen, etc.

The fate of the jitney is regarded as being wrapped up in the report of Dr. Shortt, because the company intimated at the time of the strike and contended during the investigation that its inability to pay the increased wages demanded by the men was due in a large measure to the depletion of its revenue by jitney competition. The company asserted that it could not continue in operation and pay the men their increased wages so long as jitneys took the cream of the business and so long as certain fares and transfer regulations were in force on some of the lines.

Dr. Shortt finds that the jitney has no place in the transportation service of a community. That part of his report dealing with this mode of transportation covers more than forty pages of the whole decision. He takes the view that the jitney or the electric car must go. He says finally that "an open-minded examination of the jitney service as it exists at present should convince anyone that while it may be a useful supplement to an electric railway service it cannot possibly take the place of that service."

Dr. Shortt accepts the company's figures of its return on the capital investment. With the elimination of $3,785,460, which was not used for plant and other public utility property, he finds that the return for the last fiscal year was only 2 per cent. This was not enough to pay debenture interest. In recommending the elimination of the jitney, he points out that the extra income of $245,000 on city lines would not convert the present deficit into a surplus, but would tend to bring the earnings of the company on its electric railway business to the point of at least meeting its outlay.

Agreement Recommended on City Population Area

He also recommends a conference between representatives of Point Grey, South Vancouver and Burnaby and the management of the company "with a view to the recognition of the city population area"—within which fares are to remain as at present—"and the consequent readjustment of fares, transfers and time-tables and any other details which they may mutually agree upon. At such a conference there is no doubt that at least temporary arrangements might be made which would enable the company to continue a reasonable service on practically all of its outlying lines."

Dr. Shortt admits that the intricate and voluminous tabulations on fares which were placed before the commissioner made it impossible, even in a report of 110 pages, to deal with them in detail, but suggests that the rates must be revised and simplified to make them uniform and equitable, referring evidently to the interurban fares. Beyond the limits of a city area to be defined, he states that the suburban areas should bear not the full but some approximate share of the cost of the service rendered. On this point he says: "In practically all cases this will involve the canceling of transfers from urban or interurban lines to city lines—of course, meaning by the city lines those within the city population area to which reference has already been made."

New York Surface Strike Lost 100,000,000 Passengers

Public Service Commission Has Compiled Traffic Statistics for Last Fiscal Year—Rapid Transit Lines Had Increased Patronage

The surface railway strike in New York City during August and September, 1916, caused a loss in patronage of one hundred million passengers, equivalent to $5,000,000, according to compilations prepared by A. F. Weber, chief of the Bureau of Statistics and Accounts of the Public Service Commission for the First District of New York. Despite this tremendous loss, traffic generally showed an increase of 20,076,611 for the year ended June 30, 1917, the loss in surface railway traffic being offset by an enormous increase in travel on elevated and subway lines. This increase on rapid transit lines is attributed to two causes—first, to traffic diverted from the surface lines during the strike months, and, second, to new traffic created by the opening of rapid transit lines in several sections of the city.

The total gain shown was the smallest in any one year in the last seventeen years, with the sole exception of 1915, when traffic showed an actual decrease of 5,500,000 in passengers, attributed to the depressed business conditions prevailing in the latter part of 1914. The traffic in the year ended June 30, 1916, showed an increase of 91,102,889, or nearly four and one-half times that of the last year, and this figure was exceeded only by the traffic increases in 1906 and 1910.

In seventeen years passenger traffic has increased in New York City more than one billion. The figures for 1900 show that on the elevated railways and surface railways there were carried 846,353,058 passengers, the first subway not being placed in operation until 1904. In 1917 the total traffic was 1,918,812,226. The following table shows the figures of traffic year by year, together with the annual increases:

Year Ended June 30,	Number of Passengers	Annual Increase
1900	846,353,058	....
1901	881,344,801	34,991,743
1902	938,989,964	57,645,163
1903	1,000,767,483	61,777,519
1904	1,065,984,910	65,217,427
1905	1,130,982,696	64,997,786
1906	1,251,841,175	120,858,479
1907	1,315,381,388	63,540,213
1908	1,358,000,407	42,619,019
1909	1,402,417,642	44,417,235
1910	1,531,262,914	128,845,272
1911	1,603,901,397	72,638,483
1912	1,680,913,935	77,012,538
1913	1,769,876,508	88,962,573
1914	1,813,204,356	43,327,848
1915	1,807,632,726	*5,571,630
1916	1,898,735,615	91,102,889
1917	1,918,812,226	20,076,611

*Decrease.

Study of these statistics in connection with the statistics of population, Mr. Weber says, reveals the fact that electric railway passenger travel increases at a much more rapid rate than population. This is indicated by a table showing the average number of fares paid or rides per capita, as follows:

Year	Fares Per Capita	Year	Fares Per Capita
1860	43	1900	246
1870	103	1905	283
1880	152	1910	321
1890	218	1917	353

Traffic Changes in Last Year

The largest single item of growth in the last year is represented by traffic in the first subway, operated by the Interborough Rapid Transit Company, with its new extensions. This showed a growth of 42,688,674 for the year, with the Interborough elevated lines next with an increase of 37,133,297. Fully 19,000,000 of the traffic increase in Interborough subways is believed to be new traffic created as a result of opening new lines and extensions. Brooklyn Rapid Transit elevated and subway lines showed an increase, taken collectively, amounting to 19,417,243.

Indication that the surface railway strike of 1916 was largely responsible for the falling off of travel in that year is found in the fact that the surface lines in Brooklyn and Richmond Boroughs, which were practically unaffected by the strike, made substantial traffic gains, that in Brooklyn amounting to nearly 9,500,000 passengers. The largest single decrease in traffic was in the Borough of Manhattan, totaling 77,585,733; the Bronx being next, with 13,287,710, and Queens (exclusive of Brooklyn Rapid Transit lines) being third, with a decrease of 3,260,722. The following comparative summary gives the statistics of travel for the years ended June 30, 1916 and 1917:

	Revenue Passengers Carried		Year's Increase	
	1916	1917	1916	1917
Elevated and Subway Lines:				
Interborough elevated lines	312,246,796	349,380,093	10,454,279	37,133,297
Interborough subway lines	371,505,318	414,193,992	25,919,569	42,688,674
B. R. T. elevated and subway lines	207,098,269	226,515,512	24,562,372	19,417,243
Hudson and Manhattan tubes	62,293,534	68,556,999	4,327,120	5,263,405
Total	954,143,917	1,058,646,596	65,263,340	104,502,679
Surface Railways:				
Borough of Manhattan	427,373,947	349,788,114	11,822,731	*77,585,733
Borough of The Bronx	84,535,737	71,153,027	3,032,934	*13,382,710
Borough of Brooklyn	363,630,177	373,079,651	8,930,064	9,449,474
Borough of Queens (exclusive B.R.T.)	54,167,403	50,906,681	1,481,295	*3,260,722
Borough of Richmond	14,884,534	15,238,157	572,525	353,623
Total	944,591,698	860,165,630	25,839,549	*84,426,068
Grand total	1,898,735,615	1,918,812,226	91,102,889	20,076,611

*Decrease.

San Francisco Trans-Bay Rate Case

Cost of Operating and Plans for Improving Key Route System Announced—Discussion on Consolidation with Southern Pacific and on Purchase by Municipalities

Hearings on the application of the Southern Pacific Company and the San Francisco-Oakland Terminal Railways for fare changes were resumed by the State Railroad Commission of California on Nov. 12. The Southern Pacific Company informed the commission of the specific rates it desired to establish, both by its direct passenger routes through Oakland and Alameda piers, and by way of the Creek route. The company desires to graduate the rates according to distance. For example: The one-way fare between San Francisco and Seminary Avenue, Oakland, is 10 cents, with a commutation fare of $3, the distance being 12 miles. It is proposed to increase the rates, beginning at West Oakland, to which point it is desired to increase the one-way fare of 10 cents to 15 cents and the $3 commutation rate to $3.45, while the one-way fare to Seminary Avenue would be increased from 10 cents to 35 cents and the commutation fare from $3 to $5.50.

No specific figures were set forth by the San Francisco-Oakland Terminal Railways, but it asked that its trans-bay fares, both one-way and commutation, be increased. This company also sought authority to increase the interurban fares of its street railway system between points in Alameda County and between points in Alameda and Contra Costa Counties over what is known as the traction division.

ELIMINATION OF COMPETITION SUGGESTED

Opponents of the rate increase claimed that there is now an unnecessary duplication of service and that for rate-fixing purposes the Southern Pacific Company and the San Francisco-Oakland Terminal Railways together are entitled only to such return as would be permitted under a theoretical combination of existing facilities to give the same service as at present. Suggestion was made that one system could be constructed out of the present facilities of the two companies, which would entirely eliminate unprofitable competition and duplication of facilities, retain all the present gross revenue, reduce operating expenses and overhead and afford an adequate return upon the necessary investment. President Thelen of the commission requested C. W. Durbrow of the Southern Pacific, H. L. Creed of the Key Route and B. D. Marx Greene, representing Berkeley and Alameda, to confer with their principals as to whether they will abide by the decisions of the commission in regard to the removal of unnecessary tracks.

Additional capital of more than $3,000,000 will be required in the next five years by the San Francisco-Oakland Terminal Railways, according to testimony of W. R. Alberger, vice-president and general manager. The figure is made up of the following estimates:

Track construction	$1,390,416
Second track on existing lines	170,212
New track including a downtown loop	250,000
New lines in districts now developing	181,600
New equipment including eighty modern street cars	891,000
Miscellaneous new construction	155,000
Total	$3,038,228

JITNEYS AND BUSES DECREASE TRAFFIC

Decreased revenue traceable to jitneys for the year and a half ending with 1916 amounted to $750,000, and the buses are now costing the company more than $100 per day, Mr. Alberger stated. Because of the reduction in the number of working hours from 360 to 240 a month, the company has found it necessary to add two full boat crews. Wages of ferry boat employees have increased $41,850 a year. Mr. Alberger stated that the Key Route loss and damage account is 0.01812 per cent of the gross earning, while that of seventeen other Pacific Coast railway companies is 0.0313 per cent of their combined gross earnings. Construction costs per mile of single track with paving have steadily increased, according to Mr. Alberger's testimony. The cost for materials in 1912 was $19,639; in 1914, $24,595; in 1915, $26,630, and 1917, $30,752. A working capital of $50,000 is required for the Key Division, and $250,000 for the Traction Division, which money must be secured from stockholders or borrowed from banks. Mr. Alberger also testified that the resettlement franchise upon which a joint committee of nineteen, representing the municipalities affected and the traction company, would be ready before Feb. 1, and would be a model franchise when completed.

W. R. Scott, vice-president and general manager of the Southern Pacific, classified his corporation as an eleemosynary institution. He stated at the hearing that his company invested approximately $10,000,000 in electrifying lines in Oakland, Berkeley and Alameda from philanthropic motives. J. C. McPherson, superintendent of suburban traffic for the Southern Pacific, stated that the company operates 700 suburban trains a day out of the Oakland mole and 300 out of the Alameda mole. His estimated figures for passengers handled a year were 18,000,000 to 19,000,000 by the Southern Pacific and 15,000,000 by the Key Route.

HEARING GOES OVER UNTIL 1918

On Nov. 18 the hearing was adjourned until Jan. 24. This date was fixed by the commission to allow two months for the completion of the reports of its expert engineers investigating values, and one week for interested parties to examine these reports.

Another Indiana Line Seeks Increase

Indianapolis & Cincinnati Traction Company Wants to Change Fare Basis from Two to Two and One-Half Cents a Mile

The Indianapolis & Cincinnati Traction Company on Nov. 21 filed with the Public Service Commission of Indiana a petition asking authority to increase passenger fare rates on its lines, from a basis of 2 cents a mile to a basis of 2½ cents a mile. According to the petition the exigencies of the war have made it impossible for the company to operate on its present basis with an adequate return. The company says that the returns from the proposed increases will only take care of increases in operating expenses and the fixed charges of the company, leaving nothing for dividends to stockholders. When he filed the petition, Charles L. Henry, president of the road, issued a statement in which he said:

PRESIDENT HENRY EXPLAINS

"The petition just filed by this company with the Public Service Commission asks authority to increase its interurban fares on all of its lines from a basis of 2 cents a mile to a basis of 2½ cents a mile; allowing a reduction of 5 per cent on round-trip tickets; fixing the sale of mileage books at a basis of 2 cents a mile and the sale of commutation books at twenty-five times the new one-way fare for forty trips within a month and thirty times the new one-way fare for sixty trips within a month.

"The petition asks relief from the financial difficulties it is encountering on account of the increased cost of maintenance and operation growing out of the war conditions. The increase which it asks amounts on paper to 25 per cent, but the company does not expect to realize that much actual increase in money. In fact, it estimates that it will realize an increase of only 12½ per cent in money.

DEFICIT FOR LAST THREE YEARS

"The company, in its operation, has shown a deficit for the last three years and will show a deficit for the present year; that is, it has not received from operation of the road enough money to pay operating expenses and the fixed charges against the road, namely, taxes, interest on bonds, etc., without taking into consideration in any way any return on the capital stock of the company.

"No dividend has been paid on any of the capital stock since the organization of the company except the following small dividends on the preferred stock: April 1, 1911, one-half of 1 per cent; Oct. 1, 1911, 1¼ per cent; Oct. 1, 1912, 1 per cent. The petition sets forth the necessity for the increase of fares which is occasioned by the very high increase in material and labor, the largest single item being that of coal. It shows that the company will be compelled to pay for coal in 1918 $37,130 more than during the year 1917."

Fare Increase in Meridian

One-Cent Charge for Transfers and Abolition of Tickets Expected to Help Meet Increased Operating Costs

A higher schedule of fares has been put into operation by the Meridian Light & Railway Company, Meridian, Miss., on its railway lines. This readjustment in fares has taken the form of reducing the number of tickets sold at a flat price and instituting a charge for transfers.

Twenty-four Rides for One Dollar Abolished

The readjustment in regard to the price of tickets started out with the abolition of twenty-four rides for $1. No tickets for ordinary use are now being sold at a discount. The school ticket, however, has been retained, but at a greater rate per ride. Originally school tickets sold at 2½ cents each, in books of forty for $1. Under the new schedule, thirty tickets are being sold for $1. This increases the price per ticket to 3 1 3 cents.

These increases have been put into effect after explaining to the public that they were absolutely essential because of the greatly increased costs of operation. After the ticket fare schedule had been changed, a 1-cent charge for transfers was instituted. Before the transfer charge went into effect the following announcement was run as an advertisement in the Meridian newspapers:

The Newspaper Announcement

"During the past few months several articles have appeared in this paper giving you facts regarding the increased cost of street car rides.

"It is our desire to render at all times the best of service at a fair price.

"We realize that our company, like others, is absolutely dependent for its success upon the good service given, as well as on the good-will of the public served.

"As we have enumerated in previous articles, everything entering into the cost of the street car ride has mounted so rapidly that we are unable to meet these increased costs without asking your assistance. We are, therefore, forced to announce to our patrons that beginning Oct. 29 it will be necessary for us to make a charge of 1 cent for each transfer issued.

"While this charge will give us a small amount of relief, it will in no way offset the enormous increases in the cost of all materials and wages which go to make up the street car ride. We, therefore, ask the indulgence of our patrons for the necessity of making this nominal charge until at least conditions again become normal."

H. E. Brandli, general manager of the company, estimates that the charge for transfers will mean an addition of between $225 and $250 a month to net revenue. Discontinuing the sale of twenty-four rides for $1 is expected to add $125 to the monthly net revenue. According to Mr. Brandli's estimates, this makes a total increase of $375 a month to Meridian's net income.

Jitney Bond Law Sustained

In reaffirmation of two previous decisions sustaining the jitney bond law, the State Supreme Court in Seattle, Wash., has refused to grant Earl Hatfield and 197 other jitney drivers in Seattle an injunction to prevent Alfred H. Lundin, prosecuting attorney for King County, from enforcing the permit law against operators of jitneys in Seattle. To do so, the court holds, would be to amend the act of 1915, under the guise of construing it.

The jitney men claim that they are unable to procure the required bond, after the failure of the company that first indemnified jitneys, unless the Secretary of State is compelled to accept the bond of the Mutual Union Insurance Company, organized by jitney men of Seattle. This company was refused authority to write surety bonds on the amount of security it was able to furnish to the State insurance commissioner. Subsequently the Supreme Court sustained the insurance commissioner in the stand he took. The court declares that if the jitney men cannot procure the kind of bond defined by the statute, they are not entitled to street privileges.

Commission Overruled in Fare Case

Circuit Court of South Carolina Overrules State Railroad Commission

Circuit Judge James W. Devore, at Columbia, S. C., has overruled the State Railroad Commission and granted the petition of the Augusta-Aiken Railway & Electric Corporation for an increase in passenger rates to 2 cents per mile. The case will go to the Supreme Court. This company operates an electric railway between Aiken and Augusta. The distance is 23.77 miles. The present passenger fare for the trip is 25 cents. The company wanted to increase this to 2 cents a mile, or about double the existing tariff. This increase the State Railroad Commission refused to permit. The case has been in the courts in one form or another for several years.

Claud N. Sapp, assistant attorney general, representing the Railroad Commission, has served notice of intention to appeal to the Supreme Court.

Judge Devore in his decree discusses the case at length. His ruling in part is as follows:

What the Judge Said

"There is an estimate made by the railroad, and rebutted in no way by the record, which shows that if the rates are increased to approximately 2 cents per mile the net return on the investment will be 3 per cent a year. To deny persons who have invested in this enterprise a return on their money of 3 per cent a year would, in the judgment of the court, continue the case within that sphere in which the court must act and give relief. There is nothing in the record to show that the railroad is extravagant and that proper skill is not exercised in operating it. The Railroad Commission should not only have granted some increase of passenger rates, but should have granted rates asked for in the petition to it.

"How these passenger rates are to be applied is for the Railroad Commission to decide. That body approved a schedule filed by the railroad at one phase of the long-drawn out proceedings, and can with equal facility consider the same or some other plan that may seem proper to it. Upon this point the court will not touch.

"The prayer of the petition herein is therefore granted and the record is returned to the Railroad Commission with the direction that the prayer of the corporation for an increase to approximately 2 cents a mile be granted under such rules, regulations, zones or other details as the Railroad Commission may decide upon."

Cleveland Fares Discussed

Officers of City Concerned Over Seeming Need for an Advance in the Rate of Fare

Mayor Harry L. Davis of Cleveland, Ohio, has announced his intention of preserving, if possible, the present rate on the Cleveland Railway although indications point to the necessity of an advance on Jan. 1. Councilman J. W. Reynolds, chairman of the street railway committee, has asked the company for a statement of the condition of the interest fund.

In an address before the Cleveland Real Estate Board on Nov. 21 Peter Witt, former street railway commissioner, declared that the 3-cent fare had been maintained by the present administration by crippling the service. He said that if the administration had continued to buy cars and maintain service at the standard set when he left office, the maximum rate of fare would be in effect now.

Mr. Witt expressed approval of subway terminals, but opposed the suggestion that the Cleveland Railway pay rent for their use. He said that the establishment of the zone system for the preservation of low fare was at hand. He expected to see Cleveland take the lead in this movement.

Fielder Sanders, street railway commissioner, said that the highest rate of fare provided in the Tayler franchise was seven tickets for a quarter and that a 5-cent rate would never be possible. There were four separate fare levels higher than the present charge. The rate within the city of Lakewood was 3 cents and the franchise granted a year ago provided that the fare remain at 3 cents until 1934.

Suggestions Sought from Public

The management of the Trenton & Mercer County Traction Corporation, Trenton, N. J., wants to improve its service with the aid of the general public. Rankin Johnson, president of the company, has inserted the following advertisement in the newspapers:

"We are striving to give Trenton a good electric railway service. We ask your help. We want constructive criticism. If your service is poor and you know why, tell us why. Be specific, not general. For instance, don't say, 'Your cars are dirty.' If you see a car with a dirty floor or windows, tell us. Give the number of the car. Your suggestions will receive prompt attention and serious consideration. Your cars may not run on time. If so, tell us. We want to know it. If it is the company's fault we can eliminate the cause. If it is due to something over which we have no control, maybe you can help us to remedy matters. This company is poor. We haven't paid a cent of dividends. We hope eventually to prosper, but we realize we cannot prosper unless we give good service—unless you know your service is as good as that of any other city of Trenton's size. There are many problems confronting the company about which the people of Trenton should know. We are going to tell you about them through little leaflets we shall distribute in our cars. Help us with your suggestions."

The company hung in its cars a poster over the signature of Rankin Johnson, president, asking for suggestions. This poster was worded as follows:

"We ask your help. If there is anything about our service you don't like, please tell us. Make it specific. We want all the constructive criticism we can get."

Heat and Service Reduced in Pittsburgh

It was reported from Pittsburgh on Nov. 26 that, acting under instructions received from the War Priorities Board. the Pittsburgh Railways was reducing its traffic facilities during dull hours of the day by 20 per cent and that it would cease providing heat in cars during the six rush hours of the day unless a stiff protest made by the City Council results in the Washington board changing its attitude.

Another Pacific Coast Fare Request

Marshall E. Sampsell, Chicago, Ill., president of the Seattle & Rainier Valley Railway, operating in Seattle, formerly known as the Seattle, Renton & Southern line, will appear before the Seattle City Council and ask for the abolition of the 4-cent fare and the fixing of a charge of 2 cents for transfers to other lines, to care for the increasing operating costs and to meet the new wage scale of the men. If the Council refuses to grant this petition, the company will appeal to the State Public Service Commission for relief. Mr. Sampsell is in Seattle on his annual tour of inspection. He said:

"If the 4-cent tickets were abolished and a charge of 2 cents made for transfers it would bring the company additional revenue of between $36,000 and $40,000 a year. This sum would be entirely absorbed by increased operating costs, depreciation and the new wage scale."

The wage scale of the Seattle & Rainier Valley Railway was fixed automatically by the arbitration board which set the scale recently for the Stone & Webster men in Seattle and Tacoma. During the strike in Seattle employees of the Seattle & Rainier Valley Railway remained at their posts with the understanding that they were to share with the Stone & Webster employees any benefits of the strike. The new wage scale, according to Mr. Sampsell, will increase the payroll of the Seattle & Rainier Valley Railway between $7,000 and $8,000 annually.

New York City Fare Hearings Postponed.—The hearing on the applications of the Third Avenue Railway and other metropolitan companies for permission to charge higher rates has been postponed from Nov. 26 to Dec. 10. Adjournment for one week was taken at the request of the companies, and this was extended another week on motion of the commission. The two vacancies in the commission, it was said, will probably be filled by then.

One-Man Request Withdrawn.—By an agreement of all parties concerned and at the request of Governor M. Alexander of Idaho, the applications of the Boise Valley Traction Company and the Boise Railroad to the Public Utilities Commission for permission to install one-man crews on all of the cars operated over their city and interurban lines, have been withdrawn. Governor Alexander was warned that a strike might follow if the roads persisted in their request, and he urged the companies to avoid industrial disturbances and withdraw their applications.

Traffic Matters Before Detroit City Commission.—The Common Council of Detroit, Mich., has adopted a resolution presented by the public utilities committee in which all matters concerning electric railway service—skip stops, extensions, etc.—are referred to the City Street Railway Commission for consideration. Included in the matters referred were several resolutions pertaining to skip-stop operation as well as a resolution providing for an extension of the Grand Belt Line out Mount Elliott Avenue to the Lynch Road to give service to new munition plants.

Fare Increase Rumors in Louisville.—That the Louisville (Ky.) Railway will shortly apply to the city administration of Louisville for acquiescence in a plan to make a charge of 1 cent for all transfers issued to passengers on the company's lines is a current report in Louisville. T. J. Minary, president, and other officials of the company declined to discuss it, except to say that the report was premature as the company's directors have no plan before them at this time. Mr. Minary, however, stated that it was essential that the company find some means of increasing its revenue if it were going to continue to operate profitably.

Increase in Fare on Fort Smith Suburban Line.—Because the operation of the line at a 5-cent fare rate has been accompanied by financial loss to the Fort Smith Light & Traction Company, and because of the further fact that the shutting down of the Fort Smith Smelter Company's plant will reduce the traffic, the company has increased the fare on the South Fort Smith line to 10 cents. D. C. Green, vice-president and general manager of the company, in making the announcement of the higher rate of fare, explained that the company put the 5-cent fare into effect with much doubt, at the earnest solicitation of property owners and the managements of industrial plants in that section.

Safety Zones for Dallas.—Safety zones on downtown streets for patrons of the electric railways will be recommended by N. M. Baker, supervisor of public utilities of Dallas, Tex. The matter will be placed before the Dallas Railway and the city commissioners in an effort to reach an agreement. Under the plan as outlined, a zone extending 3 ft. from the tracks at all corners where cars stop to discharge or take on passengers will be marked off with iron railings or blocks placed in the pavement to prevent automobiles from running down people waiting for cars. This will make unnecessary the present city ordinance requiring automobiles to come to a full stop back of electric railway cars discharging or taking on passengers.

Abandonment Petition Renewed.—The Dunkirk (N. Y.) Street Railway, which is controlled by the Buffalo & Lake Erie Traction Company, has renewed its application before the Public Service Commission for the Second District of New York for permission to abandon its belt line service in Dunkirk. The company in its notice states that it has further evidence to offer. A hearing on the company's original application was heard in Dunkirk on Aug. 9 before Public Service Commissioner Barhite. As a result of the hearing the application was denied and the company, which had ceased operating its belt line cars for a time, was compelled to renew service. By the provisions of the order in the original case, reviewed in the ELECTRIC RAILWAY JOURNAL of Sept. 15, page 452, the right was reserved to the company to offer further or different proof as to the necessity of the abandonment.

Rush-Hour Problems in New York.—The Interborough Rapid Transit Company, New York, N. Y., has issued a pamphlet giving a "close-up" view of the subway rush hour. Every twenty-four hours the subway carries more than 1,350,000 passengers, 900,000 of whom ride between the hours of 6 and 9 a. m. and 4 and 7 p. m. It is pointed out for the benefit of the public that the trainmaster finds it necessary in running the system to make a constant study of the business habits of the people of New York. He must know approximately how many passengers to expect at each station in the morning rush and at what time. The actual work of getting the rush-hour trains under way starts about 5.30. A reproduction is made in the pamphlet of a card posted in the subway cars which states that in the year just ended the Interborough carried safely 763,574,085 passengers, 79,821,971 more than a year ago.

Coal Movement Helped by the I. T. S.—The Mayors of Danville, Champaign and Urbana, Ill., have given the Illinois Traction System permission to move coal through the streets of those cities at other hours and in larger sized trains than those prescribed in the various franchises held by the company. Under the franchises only eighteen cars of coal a day could be moved through Champaign and Urbana, but by eliminating the provisions which restricted transportation of coal through the streets of those cities to the hours between 11 p. m. and 5 a. m. the company is able to increase its coal delivering capacity to thirty cars a day for Champaign and Urbana alone. Danville had also imposed heavy restrictions inasmuch as not more than two cars of coal, or two freight cars of any description could be transported through the streets in one train at any hour. The period of free movement of coal cars is for the duration of war. The change was brought about by action of the local committee on fuel administration in Danville and Champaign-Urbana.

Metal Tickets Adopted in Kansas City.—Metal tickets of full fare and half-fare denominations will be placed in service by the Kansas City (Mo.) Railways on Dec. 1 to displace the present paper tickets. The first shipment calls for 25,000 full-fare and 15,000 half-fare tickets. The full-fare tickets have a 5-cent value, while the half-fare tickets for use by children have a 2½-cent value. A special use for the half-fare ticket also will develop in connection with the Independence (Mo.) Line. The plan here will be for the passenger to pay a 5-cent fare on boarding the car, and upon reaching the end of the 5-cent zone the conductor will collect another 5 cents and give the passenger a 2½-cent metal ticket in return. On the return trip the passenger will pay a 5-cent fare and turn back the half-fare metal ticket, making the round-trip rate 15 cents. The two classes of tickets to be used will be differentiated both by the size and the legend. The full-fare ticket will have the name of the company, "K. C. Rys. Co.", in raised letters on the bar across the middle of the ticket, and with "full" and "fare" printed on the rim above and below the cross bar. The half-fare ticket has the fraction "½" in large numerals reading vertically down the center bar, with "K. C. Rys. Co." around the rim at the top and "fare" on the rim at the bottom.

New Publication

Unified Accounting Methods for Industrials. By Clinton E. Woods. The Ronald Press Company, 20 Vesey Street, New York, N. Y. 550 pages. Half leather, $5.

Although this book deals with methods of accounting for manufacturing enterprises, it portrays a unified accounting system that should interest any electric railway accountant who desires to keep his mind in touch with the important developments in his profession. The comprehensive plan for developing the detailed figures of production, sales and finances shows how it is possible for the accountant to measure the efficiency of results in the whole business. The description should inspire the reader to a better appreciation of the accountant's important part in modern business. Moreover, the particular methods advocated would without doubt give valuable suggestions along purchasing, stores, shop and other lines.

Personal Mention

R. B. Kook has been appointed general manager of the American Traction Company, International Falls, Minn., a new position with the company.

K. E. N. Cole, who has been connected with the general offices of the Fort Smith Light & Traction Company, Fort Smith, Ark., has assumed the management of the Van Buren branch of the company.

G. B. Davis, who has been manager of the Van Buren branch of the Fort Smith Light & Traction Company, Fort Smith, Ark., will continue as superintendent of the Crawford County business of the company.

H. F. Ewing, superintendent of construction of the United Railroads, San Francisco, Cal., has been called to the army as captain in the Quartermaster's Corps and assigned to the ambulance section of sanitary trains, Camp Travis, Tex.

J. F. Strickland, Dallas, Tex., president of the Texas Electric Railway, the Dallas Railway, the Dallas Electric Light & Power Company and interested in other utility properties in Texas, has been elected Reigning Jupiter of the Jovian Order.

J. H. Pardee, president, and J. P. Ripley, railway engineer, The J. G. White Management Corporation, New York, N. Y., are visiting the Philippine Islands, making a general inspection of the Manila Electric Railroad & Light Corporation and other interests in the islands operated by the Management Corporation. They are expected to return to New York City about Jan. 15.

C. A. Goodnow, vice-president of the Chicago, Milwaukee & St. Paul Railway, who superintended the electrification of the railway between Avery, Idaho, and Harlowton, Mont., has arrived in Seattle, and will superintend the work of electrifying the line from Othello to Seattle. The contracts for locomotives and substation equipment for this branch were referred to at length in the ELECTRIC RAILWAY JOURNAL of Nov. 3, page 819.

Parker H. Kemble, formerly chief of the drafting department, motive power and machinery bureau, of the Boston (Mass.) Elevated Railway, and recently engaged in engineering work for utilities in New York, Toronto and Cincinnati, has entered the Sea Service Bureau of the United States Shipping Board for the duration of the war. Mr. Kemble has lately been engaged in aeroplane photography and special studies of navigation conditions for the government, and has taken special interest in the naval side of the war, besides having taken the Plattsburg course in 1916.

Oscar T. Crosby, assistant secretary of the treasury, it was announced in a dispatch from Paris on Nov. 26, will represent the United States at a meeting of representatives of all the Allies to be held in London soon to discuss the present economic and industrial situation. Mr. Crosby has been assistant secretary of the treasury since early in the present year, when he was nominated for appointment to that post by President Wilson. He was formerly resident manager in Belgium of the work of the American Commission for the Relief in Belgium and northern France. He is well known as a publicist, explorer, engineer and electric railway executive.

F. C. Potvin, for the last year secretary of the Northern Ohio Traction & Light Company, Akron, Ohio, resigned that office and left the service of the company on Nov. 8. He will engage in the drug business in Detroit. Mr. Potvin had been connected with the properties controlled by Hodenpyl, Hardy & Company, New York, N. Y., for about sixteen years. He started as a gas fitter with the Detroit Gas Company and after some years in the mechanical departments was promoted to the accounting department of a Michigan company. He served in this department in a number of places and prior to becoming secretary of the Northern Ohio Traction & Light Company was secretary of the Michigan Light Company, Jackson, Mich.

Leonard S. Cairns, assistant general manager of the Manila Electric Railroad & Light Company, Manila, P. I., has been appointed general manager of the Eastern Pennsylvania Railways, Pottsville, Pa., by The J. G. White Management Corporation, New York City, the operating managers of both companies. Mr. Cairns has arrived in the United States and has assumed the duties of his new position. He succeeds L. H. Palmer, who lately became assistant to the president of the United Railways & Electric Company, Baltimore, Md., as recently announced in these columns. Upon leaving high school Mr. Cairns entered the employ of the Twin City Rapid Transit Company, Minneapolis, Minn., and, after several promotions, was made general superintendent of that company. In 1912 he was employed by The J. G. White Management Corporation to fill the position of assistant general manager of the Manila Electric Railroad & Light Corporation.

W. E. Titus has been appointed superintendent of the Easton (Pa.) Transit Company. Mr. Titus began his career in 1903 as conductor for the Middlesex & Somerset Traction Company, New Brunswick, N. J., where he remained for about a year, when he was made night receiver for the company. In October, 1905, he was appointed motorman for the Trenton & New Brunswick Railroad, operating a high-speed electric service between Trenton and New Brunswick, N. J. He served in this capacity for about five years. He was then appointed superintendent for the receivers of the Trenton & New Brunswick Railroad in charge of all departments, including the power station. During this period the entire property was rehabilitated. For the last four years Mr. Titus has served as assistant superintendent of the Public Service Railway, Newark, N. J., in charge of the "Fast Line" operating between Newark and Trenton and between Newark and Perth Amboy.

H. M. Byllesby of H. M. Byllesby & Company, Chicago, Ill., operators of the Northern States Power Company and other utilities, at the request of the War Department, has accepted a commission as major in the aviation department of the United States Signal Corps. He will be executive officer of the personnel section in charge of recruiting the large number of flyers and mechanics needed for aviation service. His headquarters will be in Washington, but as his duties will require traveling he expects to visit Chicago frequently. As an organizer and presiding officer of patriotic meetings in Chicago, as a speaker in the Liberty Loan campaigns in Illinois and Wisconsin, and as a member of the executive committee of the Chicago Chapter of the Red Cross, Mr. Byllesby's patriotic efforts are well known. He is also chairman of the Chicago branch of the National Security League; member of the executive committee and one of the organizers of the Universal Military Training League; chairman of the allied committee for recruiting in Chicago; a member of a committee of the National Defense Council, and an active worker for the Navy League.

W. M. Irwin has been appointed superintendent of overhead lines and signals, of the Chicago, Ottawa & Peoria Railway, Ottawa, Ill. Mr. Irwin has served as general line foreman for the company under W. F. Carr, resigned, for the last seven years. His early experience in the electrical field was with the Graves & Hayer Telephone Company, then an independent system, and now a part of the Central Union Telephone Company. Later Mr. Irwin served as a lineman for the Chicago Telephone Company, the Cincinnati Bell Telephone Company, and the Kenlock Telephone Company at Mobile. Subsequently he was foreman for the Central Union Telephone Company at Indianapolis, the Kenlock Telephone Company at Paris, Ill., and the American Telephone & Telegraph Company in Michigan. He was also employed for a period by the Indiana Union Traction company at Anderson and Marion as a lineman. He was responsible for the building of the concrete pole transmission line from Morris to Ottawa, Ill., one of the first experimental lines in the State. Thereafter he became district manager for the Farmers' & Merchants' Telephone Company at Sheridan, Ill., with ten local exchanges under his direction. He became connected with the Chicago, Ottawa & Peoria Railway in 1910 as foreman on the Seneca-Morris extension, and later was promoted to the position of general line foreman, which he held until his recent advancement.

E. C. CLARKE

Eugene C. Clarke has resigned as supervisor of instruction for the Brooklyn (N. Y.) Rapid Transit Company to accept a position with the Tacoma Railway & Power Company, Tacoma, Wash., to direct the instruction of the trainmen and to handle general efficiency work. Mr. Clarke leaves Brooklyn after thirteen years of continuous service. His first employment there was in the shops of the elevated division after which he entered the transportation department, assuming successively the titles of electrical inspector of elevated lines, assistant chief instructor of surface lines, supervisor of motormen on the surface lines and finally supervisor of instruction. Mr. Clarke's activities, however, were much broader than these titles indicate, particularly in the advancement of safety-first work. He was one of the electric railway pioneers in this field, among his achievements being the first moving picture, "The Price of Thoughtlessness," in co-operation with a large film company, and a series of striking posters and car cards and stereoptican slides in co-operation with a prominent newspaper artist. Mr. Clarke's ability as an instructor has been so widely recognized that his services have been borrowed on several occasions by other electric railways who wished to make their motormen more efficient. Mr. Clarke is a native of Atlanta, Ga., where he received his school training and early technical education. On coming to New York his first employment was in the shops of the Interborough Rapid Transit Company and on the electrification of the Long Island Railroad.

S. W. HUFF

Slaughter W. Huff, who has been vice-president of the Brooklyn (N. Y.) Rapid Transit Company and other companies in the Brooklyn Rapid Transit System since January, 1914, was elected president of the Third Avenue Railway, New York, N. Y., on Nov. 27 to succeed Edward A. Maher, Sr., who tendered his resignation last August to take effect on Dec. 31. Mr. Huff was born in Virginia and was graduated from the electrical engineering course at Cornell University. He entered the electric railway field when it was practically in its infancy. His first experience was obtained in the shops of the Union Railway, Richmond, Va., at the time that Frank Sprague turned over his work to the local company. Subsequently Mr. Huff became general manager of the Raleigh (N. C.) Street Railway. He has been associated in various capacities with the Baxter Electric Railway & Power Company, Baltimore; United Railways & Electric Company, Baltimore; United Railroads, San Francisco, and the Virginia Passenger & Power Company, Richmond, Va. He resigned as general manager of the last-named company in 1908 to become president of the Coney Island & Brooklyn Railroad, the controlling interest in the stock of which was taken over by the Coney Island & Brooklyn Railway, a subsidiary of the Brooklyn Rapid Transit Company. Mr. Huff became identified with the Coney Island & Brooklyn Railroad following a change in ownership and during his connection with the property the system was very largely reconstructed and modernized. He succeeded the late John F. Calderwood as vice-president of the Brooklyn Rapid Transit Company.

C. R. LAHR

Charles R. Lahr has been elected secretary of the Northern Ohio Traction & Light Company, Akron, Ohio, succeeding F. C. Potvin, resigned. Mr. Lahr is the only person now connected with the Akron company who has been continuously in the service for more than twenty-five years. At the time he began work for the old Akron Street Railway in 1892, he was the only office employee engaged. His title was cashier and he also kept the books and looked after all of the office work. In 1897 the Akron Street Railway and the Akron Electric Light Company were consolidated under the name of the Akron Street Railway & Illuminating Company, and Mr. Lahr served in the capacity of cashier and bookkeeper. In 1899 this company went into the hands of a receiver, under whom Mr. Lahr served in the same capacity. In 1901 the Everett-Moore syndicate purchased the property at receiver's sale, retaining Mr. Lahr in his old position. In 1906 the company purchased the Cuyahoga Falls Rapid Transit Company, merged it with the Northern Ohio, and reincorporated as the Northern Ohio Traction & Light Company. At this time Mr. Lahr was appointed auditor of the company, which office he retained until elected secretary. In December, 1916, the property passed into the control of Hodenpyl, Hardy & Company, New York, who are now operating it. One hundred and fifty people are now employed in the department in which Mr. Lahr began as the only employee. Mr. Lahr was born on April 13, 1873, and lived on a farm until he was nineteen years of age. His connection with the Akron Street Railway Company was his first "city" job.

James Sweeney has been appointed auditor of the Northern Ohio Traction & Light Company, Akron, Ohio, succeeding Charles H. Lahr, promoted to the office of secretary. Mr. Sweeney began his business career as a clerk in the accounting department of the company eleven years ago and for the last five years has been chief accountant. George Wherley succeeds him in the latter position.

Obituary

Amos S. Crane, general traffic manager of the Boston & Maine Railroad and a director of the Conway (Mass.) Electric Railway, died at his residence in Weston, Mass., on Nov. 22.

Edward Rathbone Bacon, interested in tramway development in Europe in the latter part of the last century, died suddenly at his home in New York on Nov. 14 at the age of seventy-six years. Mr. Bacon was at one time president of the Cincinnati, Washington & Baltimore Railroad and later vice-president of the Baltimore & Ohio Southwestern Railway. He was also at one time a director of the Interborough Rapid Transit Company, New York, N. Y.

Clinton White, who retired in 1915 from membership in the Massachusetts Public Service Commission, died at his residence in Melrose, Mass., on Nov. 24. Mr. White was a native of Charlestown, Mass., and for many years was engaged in the lumber and teaming business. In 1897 he was appointed to the Massachusetts Harbor & Land Commission, where he served four years, leaving that post at the request of former Governor W. Murray Crane to become a member of the Massachusetts Railroad Commission. Here he served with great ability until his retirement on account of age from the successor to this board. Mr. White was specially noted for his grasp of finance, and was highly regarded by representatives of the press and especially by technical journalists who had occasion to call upon him for information or advice. He was at one time vice-president of the Charlestown Savings Bank. Mr. White was in his seventy-third year.

Construction News

Construction News Notes are classified under each heading alphabetically by States.

An asterisk (*) indicates a project not previously reported.

RECENT INCORPORATION

***Montgomery Transit & Light Company, Wilmington, Del.**—Incorporated to construct and operate electric railways and light plants. Capital stock, $1,000,000. K. E. Longfield, Wilmington, is one of the incorporators.

FRANCHISES

Cincinnati, Ohio.—A new franchise is being considered by the City Council of Cincinnati for the Cincinnati, Lawrenceburg & Aurora Electric Street Railroad. Under the new franchise the company will abandon the old route on the Lower River Road at a point 3 miles west of Anderson's Ferry and build a new track on private right-of-way along Commercial Avenue. Application has been made to the Public Utilities Commission to abandon this portion of the track.

Lorain, Ohio.—The Lake Shore Electric Railway and the Lorain Street Railway, a subsidiary, have received new franchises from the City Council of Lorain. The new grants provide for universal transfers and six tickets for 25 cents.

Harrisburg, Pa.—The Valley Railways has received a franchise from the City Council to double-track Walnut Street between Front and Second Streets, and providing for a terminal at Walnut and River Streets.

Charleston, W. Va.—The Charleston-Dunbar Traction Company has received a fifteen-year franchise from the City Council for the use of the Lovell Street bridge.

TRACK AND ROADWAY

Clear Lake Suspended Monorail Company, Hopland, Cal.—It is reported that the Railroad Commission of California has approved the application of the Clear Lake Suspended Monorail Company to build its proposed line from Hopland to Lakeport, 22½ miles. Rails and steel have been purchased by Guy L. Hardison, contractor for the bridge across Russian River, and work will be begun soon. [Oct. 27, 1917.]

Kankakee & Urbana Traction Company, Urbana, Ill.—The Kankakee & Urbana Traction Company is constructing a switch which will connect the tracks of the Urbana & Champaign Railway, Light & Gas Company, a subsidiary of the Illinois Traction System, with those of the Wabash Railway Company at Urbana, Ill. The Kankakee & Urbana Traction Company enters Urbana through trackage rights over the Illinois Traction System and the Urbana & Champaign Railway, Light & Gas Company. The special work being done will enable the Kankakee & Urbana Traction Company to deliver cars of grain from various elevators on its line direct to the Wabash Railway Company.

Tri-City Railway, Davenport, Iowa.—New special work is being installed by the Tri-City Railway on Twentieth Street, Davenport.

Wichita Railroad & Light Company, Wichita, Kan.—An extension will be built by the Wichita Railroad & Light Company on Osage Street from Douglas Avenue to Dayton Street, thence west on Dayton to Millwood Street and south on Millwood Street to the Orient shops.

Boston (Mass.) Elevated Railway.—Notice has been sent to Mayor Charles M. Blodgett that the proposed subway extension of the Boston Elevated Railway to Malden Square will, because of present conditions, be deferred. The company is completing the elevated structure across the Malden bridge, between Charlestown and Everett, and will establish a terminal on the Everett marshes off Main Street, northeast of the Cochrane Chemical Works. Surface cars operating in Everett, Malden and points further north will unload at this terminal, it is now understood. Eventually the site of the proposed terminal will be a station on the Malden subway. Work has already been begun filling in the marshy land for a foundation for the Everett terminal, and spur tracks are being laid from Main Street, Everett.

Detroit (Mich.) United Railway.—Plans are being considered by the Detroit United Railway for the construction of an extension of its Grand Belt line from Milwaukee and Mount Elliott Avenues east to Lynch Road, in order to serve the new munition factories which have been opened in that section.

St. Louis, Mo.—At a session of the Bridge Commission of St. Louis on Nov. 19, Mayor Kiel announced that the first street car permit on the municipal free bridge would be issued within sixty days to a line operating two cars at intervals of seven and one-half minutes during the rush hours. Eugene R. Sweeny, who promoted the Central Traction franchise in 1898, under which the United Railways Company was organized, will obtain the first bridge car permit in the name of the East St. Louis Interurban Electric Railway Company, a corporation just organized. It has leased a portion of the interurban line of the Southern Traction Company in East St. Louis and may operate cars from the post office there to the loop that the city expects to build at Chestnut Street. The line will be in operation within thirty days after a permit is issued, Mr. Sweeny promised the bridge commission. It will consist at first of only two cars and will operate only from one end of the bridge to the other. [Aug. 4, '17.]

International Railway, Buffalo, N. Y.—Grading is being completed on the extension of the International Railway through North Tonawanda and the work of laying tracks will be pushed throughout the winter until the line is completed. It is expected that the line will be in operation early next spring.

Interborough Rapid Transit Company, New York, N. Y.—The Public Service Commission for the First District of New York has asked the Board of Estimate to approve a contract for $64,000 to make a permanent shaft in the Steinway tunnel near First Avenue, Manhattan. The shaft has been in existence for ten years and needs a permanent concrete lining. The bureau of contract supervision of the Board of Estimate recommends that the improvement be postponed until market conditions are more favorable. It has been announced officially by the Public Service Commission for the First District of New York that the two new main line subways in Manhattan, to be operated by the Interborough Rapid Transit Company in connection with the old subway system, will be opened to the public about Jan. 15. They are the Lexington Avenue and Seventh Avenue lines. The former extends north from Forty-second Street and will be connected with the lower part of the present subway. The Seventh Avenue line extends south from Forty-second Street and will be connected with the upper half of the old line at Forty-second Street. This will give Manhattan two north and south trunk lines, one on either side of the city. They will be separate systems as far as through operation is concerned. Most of the work remaining to be done on these two lines consists of station finishing.

***Chillicothe, Ohio.**—Tentative plans for the construction of an electric railway from Chillicothe to Camp Sherman have been prepared by Capt. T. E. Rhodes, construction quartermaster, and several Ohio capitalists, who are financing the plan from patriotic motives.

Cincinnati (Ohio) Street Railway.—Street Railway Commissioner C. W. Culkins has under advisement the construction of a short line between Fairview incline and the eastern terminus of the crosstown line at Woodburn Avenue and Madison Road for the purpose of increasing the service of the Cincinnati Traction Company in the vicinity of Fairview.

Portsmouth Street Railroad & Light Company, Portsmouth, Ohio.—Directors of the Board of Trade of Portsmouth have approved the general plan of the Portsmouth Street Railroad & Light Company for extending its line to Nauvoo, West Side.

Pennsylvania Utilities Company, Easton, Pa.—Arrangements are being made by the Pennsylvania Utilities Company to provide for an electric railway connection from its Dock Street plant to the coal storage and ash-dumping grounds.

Dallas (Tex.) Southwestern Traction Company.—A contract has been awarded to the Missouri Valley Bridge & Iron Company, Leavenworth, Kan., at $63,300, to construct a bridge across Trinity River at the foot of Commerce Street, and to the Creek Construction Company, Sapulpa, Okla., at $15,000, to furnish materials; total cost $78,300. The bridge will be a three-truss, 132-ft. structure, of steel and concrete. Grading has already been begun through the Trinity River bottoms between Dallas and Cement City and another force has been put to work between Eagle Ford and Irving. It is announced that the Dallas-Irving line will be completed and in operation within eight months. Rails for the entire line have been purchased and promise of immediate delivery has been made. All financial arrangements for the completion of the entire line have been made. It has been found impossible to purchase ties for the line in the open market and the Creek Construction Company has organized a force of timber cutters and is now cutting ties from lands owned by it in eastern Oklahoma.

Texas Electric Railway, Dallas, Tex.—H. B. Ross, general superintendent of the traction lines of the Texas Electric Railway in Waco, appeared before the City Commission to outline numerous improvements contemplated by the company. Mr. Ross said the company had ordered electro-magnetic automatic switches for Fifth and Washington Streets, Fourth and Austin Streets and Eighth and Austin Streets, and said that when these are installed the congestion at these corners would be greatly relieved. Mr. Ross also outlined plans for double-tracking certain portions of some lines and for passing switches designed to improve the schedules maintained on these lines.

Petersburg & Appomattox Railway, Petersburg, Va.—This company is rapidly completing its double-track extension to Camp Lee, near Petersburg, and part of the line is already in use to headquarters.

SHOPS AND BUILDINGS

Tuscaloosa Railway & Utilities Company, Tuscaloosa, Ala.—This company reports that it will construct new carhouses and cold storage, equipment for which has already been purchased.

Waterloo, Cedar Falls & Northern Railway, Waterloo, Iowa.—A new passenger and freight station is being built by this company in Waterloo. The building will be of frame and stucco.

POWER HOUSES AND SUBSTATIONS

Tuscaloosa Railway & Utilities Company, Tuscaloosa, Ala.—A report from the Tuscaloosa Railway & Utilities Company states that it will construct new power stations, material for which has already been purchased.

Gary & Interurban Railway, Gary, Ind.—The substation of the Gary & Interurban Railway at West Gary was recently destroyed by fire, causing a loss of about $35,000.

Kentucky Traction & Terminal Company, Lexington, Ky.—An electric transmission line is being erected by the Kentucky Traction & Terminal Company from Georgetown to Cynthiana which, it is expected, will be completed about Feb. 1, 1918. The plant at Cynthiana will be closed down upon completion of the line.

Owensboro (Ky.) City Railroad.—A report from the Owensboro City Railroad states that it has purchased twenty GE-258 motors, to be delivered during the next twelve months.

Public Service Corporation of New Jersey, Newark, N. J.—Owing to conditions brought about by the war the Board of Public Works has sanctioned an agreement with the Public Service Corporation and the United Electric Company of New Jersey, which will release them from the necessity of expending $25,000 this year for underground work in Elizabeth.

West Virginia Traction & Electric Company, Morgantown, W. Va.—This company is installing new stoker equipment in its local power plant, and will also install a new Westinghouse 1250-kw. turbine.

Manufactures and Markets

Discussions of Market and Trade Conditions for the Manufacturer, Salesman and Purchasing Agent

Rolling Stock Purchases Market Quotations Business Announcements

New England Roads Buying Carefully

Assistance to Massachusetts Railways Expected at Forthcoming Legislative Session—Conditions of Prices and Deliveries

Inadequate revenues and high prices combine at present to create a rather quiet market for electric railway material in the Northeastern states. Hopeful signs are not lacking, however, of a better public understanding of the financial burdens of the operating companies. At the monthly meeting of the New England Street Railway Club last week Chairman Macleod of the Massachusetts Public Service Commission sounded a note of real encouragement to the struggling traction properties represented, and assured the roads of the support of the commission in meeting the present difficult situation. The special legislative commission investigating electric railways has returned from a two weeks' trip to Eastern and Middle Western cities impressed with the need of relief to the companies in this section, and there is ground for confidence that the forthcoming legislative session will witness some sorely required constructive assistance to the trolley properties.

Few substantial orders are being placed at the moment, but a new power plant is to be built at once to serve the Shore Line Electric Railway and other consumers in Connecticut from a site in Thamesville. The engineers and purchasing agents are the Harry M. Hope Engineering Company of Boston, Mass. The initial installation will comprise 20,000 kw. in two turbo units, with boiler equipment and auxiliaries. The Union Street Railway of New Bedford is also having a power plant built by the same organization, most of the equipment, however, having been purchased. Little transmission line and substation construction is under way at the present time, but the Boston Elevated Railway is in the market for about 12,000 ft. of 2,000,000-circ. mil cable, about 100,000 lb. of magnet wire and other conductors, anticipating requirements a few months ahead. Line and track construction by this company to the Squantum destroyer plant now under erection (capacity thirty-five destroyers in sixteen months, plant to be finished Jan. 1) is being handled from stock materials. On both the Boston Elevated and Bay State systems the demand for shop labor exceeds the supply. Government construction requirements have drained not a few maintenance organizations of valuable men.

Track construction is rather quiet at present except on work associated with war business. This is keeping special work makers unusually active and labor conditions are none too stable. Some private industrial track construction for electric railway service is under way at Greendale, an industrial suburb of Worcester, Mass. Track tools are quoted 75 per cent above a year ago and deliveries run from five to six months, compared with stock shipments in ordinary times. The government has commandeered practically the entire output of shovels for construction work in the war zone and in other military areas. Despite a very moderate demand for track construction equipment, deliveries are long, rail loaders being quoted at eight months (pneumatic type). Joints run from sixty to ninety days. Spikes have dropped in price from 7.5 cents to 4.1 cents per pound. Manganese frogs are 50 per cent higher than a year ago and deliveries run from six to eight months.

Car builders are actively engaged in filling previous orders, but little new business is being booked. Long and uncertain deliveries on steel are a serious handicap, and prices are unavoidably high on present rolling stock units. The larger New England car plants are engaged in government work at present. Requests for bids have lately been received for some outside interests, but costs are an obstacle to closing. Interest in the one-man car is growing, if somewhat slowly, and at a hearing last week Vice-President R. B. Stearns of the Bay State company said that it appears that fifty such units could be used on that road at an approximate investment cost of $300,000 and an annual operating saving of $600 per car. The company is not in the market as yet, however, for this equipment.

The demand for trolley line material is rather quiet just now. Deliveries are quoted at six months on porcelain strain insulators, and it is rumored that a further advance in the price of porcelain will take effect before long. There is a decided shortage of the foreign labor employed in the potteries. Deliveries are rather improved on overhead frogs and crossings, barring railroad congestion. One factory is shipping its products by motor truck to New Haven, Conn., and thence by rail, on account of the difficulties in obtaining cars for siding service. Keystone tool grinders are being shipped from stock, and a 10 per cent price advance went into effect Nov. 1. High tension switches and power plant specialties are feeling the shortage in insulating material. Railway motors are quoted at from five to eight months, according to size. Little new business is being taken. Rotaries and transformers run from six to nine months on deliveries, with small present railway demands. Curtains show a 25 per cent advance this month, due largely to the increased price of cotton.

Expediting All Orders of a "War" Character

Manufacturers Everywhere Give Priority to Work in Which the Government Is Interested—Method of Procedure

Manufacturers are being notified by distributers of raw materials and by manufacturers of parts that if shipments of material are directly or indirectly entering into the manufacture of munitions and other necessary supplies for the war the orders will be expedited in every possible way. In these commitments it is specified that the destination and how the merchandise is to be employed must be stated. It appears, in this particular connection, that advantage is taken of current conditions by some buyers—none too scrupulous, reports say, when it comes to gaining an advantage for themselves, or maybe a customer in dire need of equipment or supplies which ordinarily would be "held up."

One of the representative distributers, in referring to this matter, said that while no notice had been given the trade, nevertheless all orders requesting priority of shipment on government claims were subject to the most careful scrutiny. The War Department, for example, in making an inquiry for prices or in placing an order, used a definite number on all of its transactions. Consequently, if a customer stated that the material or accessories purchased were to be part of or wholly devoted to the purpose of the government, the official number was requested and must be "proved up" before preference was accorded the shipment.

Other prominent concerns follow the same procedure, even if buyers have not been cautioned in advance. A certificate from the Priority Board is frequently insisted upon before the order obtains immediate attention and delivery is hastened. In addition to priority of execution, the best prices are quoted on every description of government orders, and such delays as occur in their completion and delivery are charged up to interferences caused by labor agitations along obstructive lines.

Shipments of war material going abroad, to the British government, for instance, must arrange for cargo space through the Minister of Munitions. When the goods arranged for are ready for delivery to an "Atlantic port," a cable advises the English official to this effect, a priority order for quick transportation is forthcoming through the War Industries Board to the railroads, and the entire shipment, whatever it may be, is aboard the outgoing vessel without a hitch from the factory to the sea.

Condition in Wooden Pole Market

Railroad Embargoes Hindering Deliveries and Labor Situation in Woods Somewhat Disturbing

Considering the growing scarcity of suitable timber for poles and the reckless waste that has characterized this special kind of lumbering in the past, in common with wastage in other foresting operations, the demand is narrowing down to certain woods. That is to say, where trees peculiarly applicable from size and strength could be easily obtained in former times, local supplies were drawn upon to advantage when a favorable price and speedy and not costly delivery were paramount. In addition when timber, like chestnut and other woods, was of sturdy growth and plentiful, distant sections were not called upon for poles.

Within recent years disease has decimated chestnut trees in certain portions of the East to an alarming extent, but chestnut may still be cut in considerable quantities in some Eastern states and in the Middle West. Because of this situation to some extent cedar poles are being used more and more on Eastern lines.

Cedar poles are now coming from the South, Middle West, Northwest and Far West. An Eastern distributer said that no complaints of a serious shortage are reported, though the cut for the year is stated as being below the normal, on account of labor shortage. Also, though prices have advanced for reasons and along lines recognized as unavoidable, and while present conditions control, no further increase is anticipated, unless the unexpected happens. Deliveries, nevertheless, will continue uncertain, unless a certificate of official priority is attached. In such event the pole shipment will go forward with rapidity and reach its destination in record time.

One of the largest producers of chestnut poles states that the demand for poles is increasing. The increased demand, covering what is considered the selling period, i.e., Sept. 1 to May 1 last, was 149 per cent increase over gross sales for the corresponding months for the previous year. It is believed the current period will increase 25 per cent over this figure.

Because of the car shortage situation, and should the government request utility companies in general to utilize that product which is produced in their immediate vicinity, which would permit of a short haul and an early release of cars, a heavy demand in the East and Middle West for chestnut poles is expected to result, which it is felt will more than offset shipments which are made to other places.

A prominent pole authority expresses the opinion that it would not be at all surprising if during the period of the war the government should create zones in which the different varieties of woods, such as cedar, chestnut, yellow pine and cypress, would be assigned for exclusive use in certain territories. The purpose of such a plan, if it went into effect, would be to minimize cross shipments and tieing up of railway equipment.

The demand for cedar poles from the West during the first nine months of this year showed a marked increase over the same period last year. Shipments during August and September were somewhat below the shipments for the same months a year ago. The increase of sales this year over last year is largely accounted for by the development of business in new territory. A large number of cedar poles have been shipped into New York, Pennsylvania, New Jersey, Massachusetts, Kentucky and Nova Scotia during this year. Until this year there has been practically no demand in this territory for cedar poles cut in the West.

The stocks in the hands of Western distributers at the present time are considerably below normal, due to the very light production during the last twelve months. The curtailment of production has been due almost entirely to labor conditions, which have been particularly bad during the summer. There will be sufficient poles produced to take care of any reasonable demands during the next year, it has been announced, but the cost of producing them will be about double what it was two years ago. During the first part of the year shipments were badly delayed on account of car shortage, but the situation improved considerably during July, and there were practically no old orders unshipped at the beginning of the winter season.

The prices received this year are said to have been very satisfactory to the timber men, being considerably above those obtained during 1914 and 1915 and slightly above the prices of 1913.

The government is asking for and accepting almost anything to be had in the timber and lumber line for cantonment buildings. Quantity not quality is sought. The consequence is that in the South the yards are being cleaned up for the first time in their history and the wood pole supply and shipments suffer.

A week or so ago the government contracted for 200,000,000 ft. of timber, lumber and boards for shipment to France. This has disturbed the pole market considerably in the South, it is reported. Prices are constantly changing, the last advance, within a week or ten days, was $4 a thousand. Quotations on poles must primarily be had from the mills before it was safe to submit them to the buyer. Then the price is subject to immediate acceptance, with whatever advances on freight charges as may be announced prior to shipment additional and without notice. About 40 per cent of the orders on cedar poles cut in the South are filled. The scarcity of labor in the forests and at the mills is also causing additional trouble.

Shortage of cars is causing no end of trouble. When a shipment is ready for forwarding application for cars must be made, though not by the consignor. Instead, the petition must originate with the consignee, who is obliged to detail the use to which the timber is to be put and every other reason for its shipping and delivery. After a lapse of several weeks possibly a permit may be granted. On an order placed by a Massachusetts utility three months ago for six cars of poles, two carloads have been delivered. The remainder is reported en route "somewhere in the South." Southern roads, it is reported, cannot be made to believe or understand the meaning of the embargo in the East. Sales of Southern poles are up to the mark, but the extraordinary state of affairs, as particularized, is interfering greatly with the acceptance of orders to which promises of definite delivery can be attached.

Possible Call for Heater Economy Devices

Market for Heaters Now Largely for Replacement Work, with Deliveries from Thirty Days to Three Months

With deliveries on nearly everything so unsatisfactory and dilatory, there seems to be a difference of opinion respecting promises that can be lived up to. It is agreed that if the specifications run along standard lines and sufficient pressure is brought to bear, shipments can be arranged on a mutually satisfactory basis. On car heaters, which are being installed, not so much on new cars—for few are being purchased, for obvious reasons, just at present—but to replace worn-out or defective equipment, the delivery date varies. While one manufacturer positively states he can lay down his car heaters in thirty days, another is equally emphatic in asserting it is impossible to deliver under three months.

The season is here when cars—unless operated in the tropics—must be heated. Undoubtedly the authorities will be more lenient as regards heating this year than ever before. The Public Service Commission in Massachusetts and that in the First District, New York, have already indicated that they will take this attitude in the interests of fuel conservation, and there are rumors of federal sanction of such a plan. Nevertheless, some heat will be needed, and heaters will be required. The shortage of fuel may, however, direct renewed attention to devices to reduce the consumption of current—or coal—in heater operation; in other words, to secure greater fuel economy.

ROLLING STOCK

Voldosta (Ga.) Street Railway is in the market for two small one-man cars.

Grand Forks (N. D.) Street Railway is considering the purchase of four new one-man cars.

Sand Springs Railway, Tulsa, Okla., has ordered from the G. C. Kuhlman Car Company, Cleveland, Ohio, one two-man motor combination passenger and baggage car 57 ft. in length for its interurban service. Four additional passenger cars, motor type, to be placed in operation on the same lines, will be ordered from the Cleveland builders. Of the latter two are open and two closed cars.

Northern Texas Traction Company, Fort Worth, Tex., is reported to have purchased six cars of the double-truck type from the Colorado Springs & Interurban Railway Company, Colorado Springs, Col. The cars were bought in St. Louis, Mo., and have been put in operation to relieve the traffic congestion that has arisen in Fort Worth since the establishment of the army cantonment and aviation camp.

TRADE NOTES

William S. Boyd, formerly assistant in the purchasing department of the Crucible Steel Company of America at Pittsburgh, Pa., is now purchasing agent of the Page Steel & Wire Company, Monessen, Pa.

Connecticut Brass & Manufacturing Corporation, Waterbury, Conn., has been formed to acquire and consolidate the Connecticut Brass Corporation, West Cheshire, and the Pilling Brass Company, Waterbury, Conn.

Richard H. Rice of the steam turbine engineering department, General Electric Company, West Lynn, Mass., has been elected president of the National Conference of State Manufacturers' Associations, which convened at Indianapolis, Ind., on Nov. 22.

A. H. Peterson Manufacturing Company, Milwaukee, Wis., is the new corporate name of what was formerly the P. & B. Manufacturing Company. The company will continue to manufacture the "P. & B." products, and a substantial expansion along these lines will shortly be announced.

The Brooklyn (N. Y.) Rapid Transit Company has made arrangements with the Wendell & MacDuffie Company, New York City, to dispose of certain motor and trailer cars now in daily operation and which are being replaced by new all-steel equipment. The cars will be available as the new cars are received and put into service.

Southern Ferro Alloys Company, Chattanooga, Tenn., organized with an authorized capital of $210,000, advises that its plant is completed and in successful operation. The company believes it is a model of its kind. The Canada Carbide Sales Company of 30 Church Street, New York, has been appointed the Southern Company's exclusive sales agent.

J. S. Veatch is now the district sales agent of the Ohio Brass Company, Mansfield, Ohio, for the territory tributary to Denver, Col., in which city he will make his headquarters. With the new appointment the O-B Company has two generations acting as sales representatives; C. A. Veatch, the father, has for some years traveled through a section in the Middle West.

Westinghouse Electric & Manufacturing Company, Pittsburgh, Pa., has appointed J. W. White manager of the power and railway divisions of its Detroit office. Mr. White was formerly connected with the Pittsburgh office of the company, subsequently becoming associated with the Allis-Chalmers Company, but has now returned to the Westinghouse Company, assuming the position above noted.

Hale & Kilburn Company, New York, N. Y., in the readjustment plan submitted, contemplates the raising of $1,000,000 new cash capital. The additional working capital is needed in view of the interesting business and the larger volume of raw materials carried. The committee of stockholders, in a recent report, stated that "the plant is a large and valuable one in prime condition, with an able organization, and under its present management is being conducted on a profitable basis."

Bond Foundry & Machine Company, Manheim, Pa., has recently purchased, as a going concern, the property, plant and good-will of the Queen City Foundry Company, Toronto, Canada. In the future the Canadian plant will be operated as the Bond Engineering Works, Ltd., and in addition to continuing the manufacture of gray iron castings will make power transmission specialties. New buildings will be erected to take care of the increased business, which will be under the management of H. M. Lee.

Railway & Power Engineering Corporation, Ltd., Toronto, Canada, has been organized with headquarters in the Canadian Pacific Railroad Building, to conduct engineering and supply equipment for railway, light, power, mining and industrial plants. The president of the company is Theodore Malm, late of the Canadian Northern Railway System. Owing to the present abnormal conditions, the company announces that it has opened, temporarily, a "used equipment department" where all equipment sold is subject to the customer's inspection and that the company will give all possible advice and assistance in bringing the equipment up to its highest possible efficiency without added cost to the customer.

NEW ADVERTISING LITERATURE

Standard Underground Cable Company, Pittsburgh, Pa.: Bulletin 700-2 describes in detail and illustrates the company's outdoor cable terminals. Copies may be had on application.

Condensite Company of America, Bloomfield, N. J.: Illustrated booklet containing a brief but adequate outline of the properties and some of the use of condensite, the substances that the company describes as having broadened the field of plastic molding.

Standard Underground Cable Company, Pittsburgh, Pa.: A revised bulletin on Type D. O. A. outdoor cable terminals in which several new types of terminals are described and listed. Among these are the protected disconnection terminal, pipe-top terminal and borehole terminal. The bulletin gives tables of working voltages and sizes of conductors for which terminals of certain dimensions and weights are required, also instructions for ordering, installing, etc.

NEW YORK METAL MARKET PRICES

	Nov. 21	Nov. 28
Prime Lake, cents per lb	23½	23½
Electrolytic, cents per lb	23½	23½
Copper wire base, cents per lb	31	30
Lead, cents per lb	6½	6½
Nickel, cents per lb	50	50
Spelter, cents per lb	8	7.97½
Tin, Straits, cents per lb	77	80
Aluminum, 98 to 99 per cent, cents per lb	36	36

OLD METAL PRICES—NEW YORK

	Nov. 21	Nov. 28
Heavy copper, cents per lb	22	22
Light copper, cents per lb	19½	19½
Red brass, cents per lb	17½	17½
Yellow brass, cents per lb	14½	..
Lead, heavy, cents per lb	4¾	5⅓
Zinc, cents per lb	5¼	5¾
Steel car axles, Chicago, per net ton	$41.00	$42.00
Old car wheels, Chicago, per gross ton	$31.00	$31.00
Steel rails (scrap), Chicago, per gross ton	$34.50	$34.50
Steel rails (relaying), Chicago, per gross ton	$55.00	$55.00
Machine shop turnings, Chicago, per net ton	$15.50	$17.00

RAILWAY MATERIALS

	Nov. 21	Nov. 28
Rubber-covered wire base, New York, cents per lb.	32-35	34
Rails, heavy, Bessemer, Pittsburgh	$38.00	$38.00
Rails, heavy, O. H. Pittsburgh, per gross ton	$40.00	$40.00
Wire nails, Pittsburgh, per 100 lb	$3.50	$2.50
Railroad spikes, 9/16 in., Pittsburgh, per 100 lb.	$5.50	$5.50
Steel bars, Pittsburgh, per 100 lb	$5.00	$5.00
Sheet iron, black (24 gage), Pittsburgh, per 100 lb.	$5.80	$5.80
Sheet iron, galvanized (24 gage), Pittsburgh, per 100 lb.	$4.85	$4.85
Galvanized barbed wire, Pittsburgh, cents per lb.	$4.35	$4.35
Galvanized wire, ordinary, Pittsburgh, cents per lb.	$3.95	$2.50
Cement (carload lots), New York, per bbl	$2.22	$2.22
Cement (carload lots), Chicago, per bbl	$2.31	$2.31
Cement (carload lots), Seattle, per bbl	$2.65	$2.65
Linseed oil (raw, 5 bbl. lots), New York, per gal.	$1.20	$1.20
Linseed oil (boiled, 5 bbl. lots), New York, per gal.	$1.23	$1.23
White lead (100 lb. keg), New York, cents per gal.	10	10
Turpentine (bbl. lots), New York, cents per gal.	51	51

Electric Railway Journal

Published by the McGraw-Hill Publishing Company, Inc.
Consolidation of Street Railway Journal and Electric Railway Review

Volume 50 NEW YORK, SATURDAY, DECEMBER 8, 1917 Number 23

Can Electric Railways Save More Coal?

THIS week the United States Fuel Administration has transmitted to the fuel administrators of the several states a communication in which there is special reference to the opportunities for saving energy and therefore fuel on the part of electric railways. The circular has naturally stirred up interest in electric railway circles everywhere, as an appeal from national headquarters for assistance in any direction in the task of winning the war cannot fall upon deaf ears. The Massachusetts commission has already suspended its heating regulation so far as the electric railways are concerned, in response to this request from Washington. There is no doubt that of the present annual coal production of 600,000,000 tons or more, a great deal is being wasted, largely because in the past it has been considered cheaper to waste it than to save it. In other words, the cost of the immediate investment rather than the extent of the future saving has been the controlling factor. At an address delivered before the American Society of Mechanical Engineers on Dec. 5, D. M. Myers, consulting engineer, New York City, estimated that 117,000,000 tons of coal, worth $250,000,000, could be saved every year by efficient management of boiler furnaces. This is a startling claim, but when one compares the coal consumption per kilowatt-hour in the best plants with that in the average plants the claim seems less extravagant.

What Is the Situation in Our Field?

THE suggestions of the Fuel Administration naturally bring to mind a question as to the relative position of electric railways in comparison with other consumers, and as to the extent to which savings can be effected. An estimate made by this paper a short time ago for another purpose, which was checked for us by government bureaus, indicate that electric railways, in their own power plants, use approximately 9,000,000 tons of coal per annum. They buy energy from central stations which may be assumed to represent a consumption of 5,000,000 tons more. We may say, therefore, that they are, directly and indirectly, responsible for a total consumption of about 14,000,000 tons. This is roughly one-fortieth of the total production and represents in normal times 6 per cent, more or less, of the total electric railway operating cost. If 10 per cent of the fuel required for driving electric cars could be saved it would reduce the total consumption by more than two-tenths of 1 per cent and the operating expense by more than six-tenths of 1 per cent or relatively three times as much. In times of peace the possibility of cutting operating expense by the amount mentioned has caused the introduction of energy-saving devices and practices, but their use is not yet universal. War prices for fuel have made them more than ever desirable. Of late the element of patriotism has entered into the fuel situation as there is a 10 per cent shortage in the supply of coal needed to meet the increased requirements. This shortage must be made up by economy in all possible directions. If service can be cut and less heat supplied, while at the same time the use of coasting is extended and power-house economies are introduced, it is possible for electric railways to save more than the average requirement of 10 per cent. At least we can accept the responsibility for that much saving.

Care in Manufacture Controlling in Axle Steel

ONE of the interesting points brought out in the article on the science of preparing car axle steel, published in last week's issue of this paper, is the necessity for uniformity of production. It has been the general experience of electric railways that where one axle fails, others of the same lot show no signs of failure. Those responsible for the transportation of passengers feel very keenly the necessity of having axles as perfect as they can be made, and within recent years both manufacturers and electric railway companies have given a great deal of attention to the subject. This has resulted in improvements in the quality of the open-hearth steel itself, as well as in methods of forging and heat treatment. In the latter, control of the heating, as explained in the article last week, is essential, and to this end the electric furnace seems to afford a desirable means. It is well to sound a warning, however, that heat treatment of itself will not free axle steel from all of the defects existing in the ordinary grade or caused by lack of care in the preparation of the steel in the open-hearth furnace or neglect in the safeguards which should be followed during the process of forging and in other vital parts of the manufacture of the axle. For this reason, while heat treatment and the use of the electric furnace should add to the excellence of the finished article, the results which are sought in the finished axle depend finally on the personality and experience of the men actually engaged in the work and the perfection of the system employed in checking the accuracy and uniformity of the methods used.

Give the Railways a Chance to Work Out the Fare Problem

IN the opinion of F. J. Macleod, chairman Massachusetts Public Service Commission, as expressed last week before the special legislative commission, no increase in electric railway fares in Massachusetts has fulfilled expectations, and past experience does not show that fare increases are a panacea for existing evils. Accordingly he would, "for a limited period," have the State finance on an equipment-trust plan the purchase of needed additional property by companies with a certain standard of past earnings or dividends.

Such financial aid from the State coffers would be of transient value to some companies through the securing of money at cheaper rates than in the open market, but they would never be successful enterprises, capable of repaying borrowed State funds and attracting fresh private capital for further development, until their earning power was assured. "Ay, there's the rub," as Hamlet said. The fact must never be forgotten that, although the public is interested primarily in service, the investor thinks only in terms of earning power. Better management, improved methods, new equipment—these are as much the result as the cause of earning power.

An increase in fare will not of itself insure prosperity and credit, but we are firmly persuaded that the question of a fare scientifically determined to cover the cost of service is of paramount importance. Varied local problems may also have to be solved—of management, taxes, jitneys or what not—but the fare problem is bound to be there. Some commissions in the past have been too inclined to look upon other measures of relief as substitutes for rather than desirable additions to fare increases. They are even now thinking too much about the "difficulty" of prescribing fares on a cost basis.

The most practicable method which has yet been suggested of reducing the present interminable delay between the need of relief and its possession is to allow the railways, when the need occurs, to put the higher rates into effect, subject to commission revision after investigation, with the burden of proof on the complainants that the higher rates are unwarranted. Mr. Macleod is afraid that this would lead to equally objectionable delays as far as the public is concerned, with the higher rates in force; but when he says that presumably no railway would undertake to increase rates unless it had definite and more-than-temporary reasons for believing it would not be able to earn a fair return, he admits not only the lack of necessity but also the inequity of holding up all increases pending commission approval. The railways may not have known it once, but they do now, that public good-will is necessary, and this would militate against any unnecessary rate increase. Why not, therefore, free electric railways from the burden of proof and harmful delays in rates cases? If regulation has meant almost disaster for many lines, the sensible thing is to try a change in regulation.

As for the assertion that no fare increase in Massachusetts has fulfilled expectations—what man can even now predict with certainty the results of a fare increase? How much less could he do so in the past? That expectations, or more properly desires, have not been fully realized means nothing except that fare regulation is still at an unsettled stage. As Mr. Macleod previously stated before the New England Street Railway Club, considerable experimentation must be carried on before one can be sure of the methods that will bring the maximum revenue results in particular cases. The least that the commissions should do is to permit this experimentation for sufficient periods to overcome any temporary boycotting of traffic by unreasoning malcontents.

Has the Tram Girder Come Back to Stay?

THE return of the Public Service Railway to the tram girder rail for paved streets, as described by Martin Schreiber, chief engineer, in our issue for last week, appears to us a very sensible move. The tram head has always been recognized to possess many points of advantage over any form of grooved rail. It is self-cleaning, and this means that it takes less power to operate cars over a tram head than over a grooved head. Moreover, because there is no groove to hold dirt and become clogged with ice and snow in winter, there is less chance for derailment, less wear on the wheel flanges, less danger of flange breakage and less noise. As compared with a T-rail, the tram head has the advantage, or disadvantage, whichever it may be called, of presenting a running surface for street vehicles, and while it is not the function of a rail to supply a track for vehicles, it is often cheaper to do so than to have the vehicles wear ruts in the stone paving next to the rail.

The principal disadvantage which used to be urged against the tram head was that it was more difficult for street vehicles to cross the rail and especially to turn out if their wheels were running on the tram. But this was in the days when most street vehicles were fitted with steel-tired wheels of large diameter. The past ten years have seen a revolution in street vehicle design, motive power and tire construction. The standard tire, of course, now is the pneumatic tire of the passenger vehicle and the wide solid rubber tire of the commercial truck. To both of these, partly because of the elastic nature of the tire and partly because of the smaller diameter of the wheel, the tram girder head presents no practical obstruction to either a right-angle turn or even when the vehicle is running in the track and has to turn out from it. The Connecticut Public Utilities Commission was one of the first to recognize this changed condition when, some few years ago, it denied a petition to require the company some years ago to change from a T-rail to a grooved rail on a short section.

It was the trilby modification, introduced, as its name implies, about fifteen years ago, that led to the widespread use of the grooved rail. Previous to this improvement the lip was much shorter and the groove narrower. In the trilby design the lip was made flaring to carry street traffic and thus avoid the ruts in the paving which followed the use of the old grooved rail, and the groove itself was made with a wider angle so that the wheel flange could squeeze the dirt out of the sides better than it could with the old grooved rail.

To some it may appear unfortunate that there is a revolt against the use of the grooved rail only a short time after it has been adopted as a standard by the Engineering Association. Such changes, however, are inevitable. Standards necessarily lag behind practice, and it may be that this is a case where they have lagged behind so far that they are adopted at about the time when the standard is becoming obsolete. This does not mean, however, that there will be still no use for the grooved rail, or that more of them will not be rolled after the present ones wear out. Mr. Schreiber describes in his article some points of superiority possessed by the grooved sections on streets of very dense traffic. He also points out that the section of tram girder being used by the Public Service Railway embodies a number of the modern features, such as the crowned head and the ½ in. web, and that it is not simply the old tram girder revived.

What the Electric Lines Could Mean to Chicago Merchants

THE federal government recognizes no municipal regulations where these stand in the way of national necessity. The limitations and restrictions which city authorities have been prone to place around the hauling of freight through the city streets in electric cars do not, therefore, represent any barrier to a program of expansion for the electric railway service if it can be shown to the government that but for these local regulations the electric railways can be utilized to relieve in a remarkably high degree the steam railway congestion. Perhaps the conditions at Chicago offer the best example of what the situation ought not to be.

Here there are no less than six electric interurban railways radiating from the city limits into the surrounding rich agricultural and manufacturing communities, yet only one of these is able to run into or near the business center of the city, and this one is limited within the city to passenger service. All of these lines connect with either the surface or elevated lines—two great systems of trackage which have comparatively little use from midnight to 5 a. m.; yet, if they could be used for freight haulage, they would afford opportunity for the movement in six directions from the city of immense quantities of merchandise. However, the lack of appreciation of this fact or the thought that roads built primarily for passenger service should not carry freight, has withheld the immense value which would otherwise have accrued to the city. Meanwhile, also, the miles and miles of radiating interurban track have been subjected to a use which was only a fractional part of their capacity, and the companies owning them have been unable to serve the city to their fullest ability. For instance, the Chicago & Joliet Electric has a double-track line all the way from the outskirts of Chicago to Joliet, and during the winter months only three passenger cars are operated, this number being all that is required to maintain an hourly service. Here is an immense capacity lying unused because the cars cannot be operated into the city over the surface companies' tracks, and because it is practically impossible to get the shippers to haul their commodities from the wholesale districts to the present terminal of the line, a distance of some 8 miles.

This is only one instance. The Chicago, North Shore & Milwaukee, and the Aurora, Elgin & Chicago connect with the elevated structures, and their cars are, for the most part, designed to give the necessary clearances at the station platforms and on the curves, but the franchise specifies that no freight other than mail and such baggage as is carried by hand may be hauled through the streets. And of course the elevated structure is largely in the streets and very little on private right-of-way. To deliver freight to these two interurban lines the shippers must haul to Church Street, Evanston, on the north, and to Fifty-second Street on the west. Even in spite of these handicaps these roads are handling a considerable quantity of freight, but not a beginning on what they could haul were it possible to have reasonably centrally-located freight terminals.

The shippers are very much interested in the service the electric lines are able to give, but with the cost of operating a 5-ton truck more than $20 a day, and of a 3-ton truck more than $14 a day (these figures being those given to a group of electric-railway men last month by the traffic manager of Butler Brothers in Chicago), they cannot haul 8 to 12 miles to make delivery to the electric lines, as is now necessary. So there is now in Chicago, the second largest city in the country, with its immense outgoing tonnage into the surrounding country from the hosts of manufacturing and distributing companies, and with its enormous daily inbound tonnage of vegetables and dairy products and raw materials, and its congested steam railroad terminals, none of the advantages which the electric lines bring to other cities, for instance, to Indianapolis, through service at freight rates. In this connection it should be borne in mind that every car of freight hauled over an electric line is the equivalent of adding from three to five cars to the steam-road equipment, for the shipment will be consummated and the car released for another shipper within twenty-four hours on the electric, while it would take from three to five days, and longer, on the steam lines to complete the same cycle. This condition is not universal, most fortunately, but it is widespread.

The electric lines must make their service known now. They must break down these barriers to greater freight traffic now, while their service can be of greater importance than it ever will be again after this war is over. Their watchword should be that wherever there is an originating movement of freight between points which an electric line connects, that shipment should be hauled by the electric and thus release several car-days to the steam roads for the long-haul movements.

Catenary Overhead Construction

An Intimate Study of the Design of the Overhead System for the Montreal Tunnel and Terminal of the Canadian Northern Railroad

By W. C. LANCASTER
Electrical Engineer Mount Royal Tunnel & Terminal Company, Montreal, Quebec

WHATEVER adverse criticisms may be heaped upon alternating current electrifications, they must nevertheless be given credit for the impetus which began the development of our catenary trolley systems. Away back in the dark ages, about 1905, before the days of high-voltage direct current, it was found that direct suspension of the trolley wire was not adapted to these alternating-current railroads. They required greater insulation for their high potentials, necessitating the use of porcelain, for which direct suspension was not suitable. Mechanically, too, they required something different because the heavy pantograph collector, on account of its greater inertia at generally higher speeds, could not follow the ups and downs of the trolley wire like the ordinary trolley wheel. A perfectly level contact wire was essential.

The catenary type of overhead resulted. At first it was thought that the overhead system must be as rigid as possible; but it soon developed that a certain amount of flexibility was absolutely necessary. Even with the catenary type of construction, so-called "hard spots" occurred at the hangers; that is to say, the contact wire yielded to the upward pressure of the pantograph collector less readily where it was clamped by the hangers than elsewhere, and slight kinks were formed at which sooner or later crystallization and breakage occurred due to the hammering effect of the pantographs. In order to obtain greater flexibility, a steel contact wire was placed underneath the trolley wire and held to it by small clamps midway between the hangers. This gave more satisfactory results.

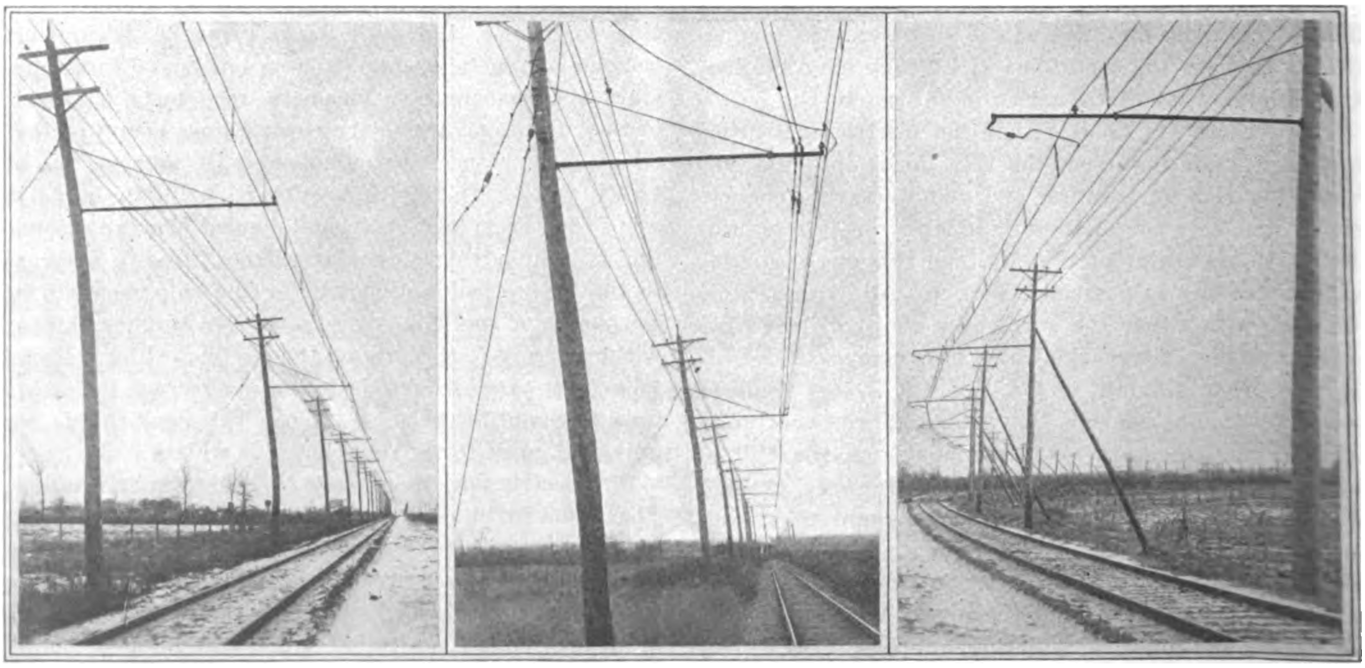
In the last few years, however, the tendency has been decidedly towards lightness of construction and maximum flexibility. Hangers are made with a loop so that they merely hang from the messenger, instead of being fastened rigidly to it, and rise with the passage of the pantograph under the contact wire.

CATENARY SUSPENSION POSSESSES CERTAIN VIRTUES

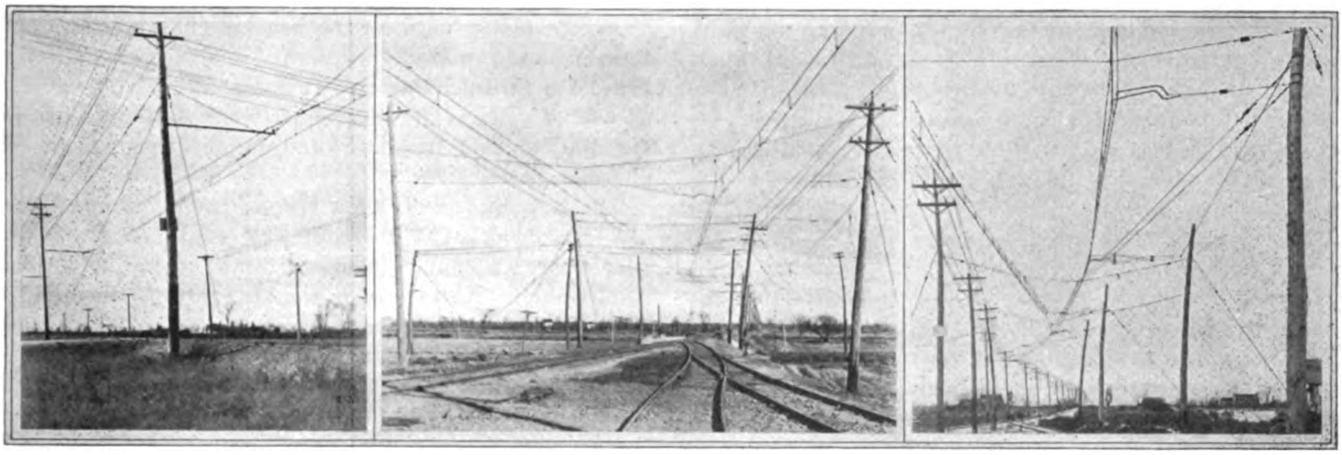
The advantages of the catenary type of contact wire suspension over the direct suspension are: (1) High-speed operation without danger of collector leaving the wire. (2) Freedom from hammer blows causing crystallization and breakage. (3) Longer spans and a consequent saving in poles. (4) Use of porcelain insulators.

Catenary construction has become fairly well standardized in the last ten years, but local conditions and the state of the metal market when the material is purchased often make it necessary to depart somewhat from standard designs. Such matters as types of poles, pole spacing, size and material for messenger and kind of trolley wire must all be thought out carefully with a full knowledge of the conditions under which the system is to be operated.

The 2400-volt, direct-current electrification of the Canadian Northern Railroad's terminal at Montreal has already been described in the ELECTRIC RAILWAY



CANADIAN NORTHERN OVERHEAD CONSTRUCTION—BRACKET-TYPE CONSTRUCTION—LEFT, STANDARD SINGLE-TRACK; MIDDLE, SECTION INSULATION; RIGHT, ON 2-DEG. CURVE



CANADIAN NORTHERN OVERHEAD CONSTRUCTION—CATENARY CONSTRUCTION AT MONTREAL TERMINAL—LEFT, CONTACT WIRE ANCHORAGE AND ONE END OF MESSENGER ANCHORAGE; MIDDLE, YARD CONSTRUCTION SHOWING DROPPER STRANDS AND PULL-OFF; RIGHT, CONSTRUCTION AT TURN-OUTS, CHANGING FROM SINGLE CONTACT WIRE, SINGLE TRACK, TO DOUBLE CONTACT WIRE, DOUBLE TRACK

JOURNAL for March 4, 1914, page 572, and Aug. 15, 1914, page 295. Special local conditions and extremely low temperatures are features which made the design of the catenary system for this electrification somewhat out of the ordinary. The electrified track is 10 miles long, and in this distance there is a passenger terminal station and coach yard in the city, a double-track tunnel 3⅓ miles long, double tracks in a cut with low clearances under highway bridges, a long stretch of single track, both tangent and curve, and a large freight yard with repair shops and storage tracks. The temperature in the coldest winter weather reaches 35 deg. below zero; while in the hottest summer weather it will go as high as 110 in the sun. In the early spring, severe sleet storms sometimes occur, though infrequently.

WHY WOOD POLES WERE USED IN THIS CASE

For the electrified tracks outside the tunnel the use of wood poles was decided upon, but not until a careful study had been made comparing them with steel poles and reinforced concrete poles. Steel bridges with 300-ft. spans were not to be considered as they were obviously uneconomical for single track, and the only double-track construction was under the highway bridges where the low clearances required short spans. Wood poles were not only cheaper than those of either steel or concrete, but it was thought they would furnish an additional factor of safety, due to their greater flexibility. The only disadvantage in the use of wood poles was their comparatively short life. To overcome this to a large extent the butts were creosoted by the open tank process.

The poles are of Eastern white cedar. The specifications for these poles and also for the creosote oil used as a preservative, were based upon those of the National Electric Light Association. The only steel poles used are those in the terminal yard in the city, for which place they were chosen on account of their more sightly appearance. These steel poles were described in the ELECTRIC RAILWAY JOURNAL for Sept. 29, 1917, page 585. The wood poles are set 7 ft. in the ground and every pole is back-guyed. They are of sufficient length to carry two cross-arms for feeders, signal circuit and a three-phase transmission line for supplying the shops in the Cartierville yard with electric power. On top of the poles there is a No. 000 copper ground wire which serves both as a protection against lightning for the circuits on the poles and also as a preventive against any trouble that might be caused by breakage of the rail bonds.

The poles throughout the single-track construction are spaced 150 ft. on tangents and 120 ft. on the 2-deg. curve. On the double-track portion, where the overhead clearance is limited, the spacing is reduced to 105 ft. on tangents. There are no curves.

DETAILS OF THE MESSENGER SPANS

The messenger for the electrification outside the tunnel consists of a ½-in. seven-strand Siemens Martin steel cable with an ultimate strength of 11,000 lb. and an elastic limit of 6600 lb. A hard-drawn copper or phosphor-bronze messenger was considered, in order to obtain greater conductivity. Steel, however, has a lower temperature coefficient than copper and therefore there is less variation in the length of a steel messenger with change in temperature than is the case with a copper messenger. Copper or bronze, too, must be of much larger section than steel in order to give the requisite strength, and is accordingly much heavier, so that the spans must be reduced and the number of poles largely increased. It was found that the saving in feeder copper did not justify this construction. The steel messenger was therefore adopted and two No. 0000 copper feeders installed, one the full length of the electrification outside the tunnel and the other for about 1 mile west of the substation.

The messenger is anchored every half mile. This is accomplished simply by running the end of one half-mile length past the end of the next for a distance of one span. It is then made fast to an anchor eye on the bracket through an insulator and turnbuckle, and the same point of the bracket guyed back to the next pole, which in turn is guyed against this strain. The two messengers, where they pass each other, are kept from 8 in. to 10 in. apart. By anchoring the trolley wire on the same bracket the anchorage becomes a section insulation, the air space between the messengers and trolley wires forming the insulation. If section insulation is not required a copper jumper is placed between the messengers and trolley wires.

For the double-track portion of the line cross-span construction is used, the cross span being a ⅜-in. seven-wire Siemens Martin steel strand. The messenger is fastened to this by means of a small malleable-iron clamp called a "messenger hanger." This cross span is made up with a turnbuckle, strain insulator and wedge grip in each end, and fastened to the poles by means of eyebolts.

Where more than two tracks are spanned, as in the yards, the construction is similar, but with the addition of a cross messenger of half-inch strand above the ⅜-in. strand. This cross messenger is made fast to the poles directly, without insulators or turnbuckles, and carries the weight of the spans below through "dropper strands" of ¼-in. steel strand. These fasten to eyes in the tops of the messenger hangers and to the cross messenger by means of Crosby clips. There is a strain insulator in each dropper strand.

Pull-offs are used on curves for holding the contact wire and messenger in the correct position over the track and on long tangents where needed for steadying the contact wire. The pull-offs are made of sherardized steel tubing bent so as to allow the passage of the pantograph. Each pull-off is fitted with a clamp ear at one end and an eye at the other. They are made as light as is consistent with strength. Adjustable links are sometimes required with pull-offs to keep the trolley wires the right distance apart at certain points, such as where the trolley wire for a turnout approaches the main trolley wire at an angle. Each link is composed of two malleable-iron brackets, with clamp ears, connected by means of a ½-in. pipe, the length of which between brackets can be adjusted and held by a set screw.

INSULATORS AND CONTACT WIRE

Strain insulators are of the Locke "goose-egg" type. Two sizes are used. The larger, used with ½-in. and ⅜-in. steel strand, withstands a wet flash-over test of 14,000 volts, and has a breaking strength of 22,000 lb. The smaller, used with ⅜-in. and ¼-in. steel strand, withstands the same voltage test, and has a breaking strength of 12,000 lb.

The insulator used on the bracket construction is of the ordinary glazed porcelain, double-petticoat, pin type, 4½ in. in diameter. It has a wet flash-over test of 20,000 volts. The messenger rests in the groove in the top of this insulator and is not tied except on curves.

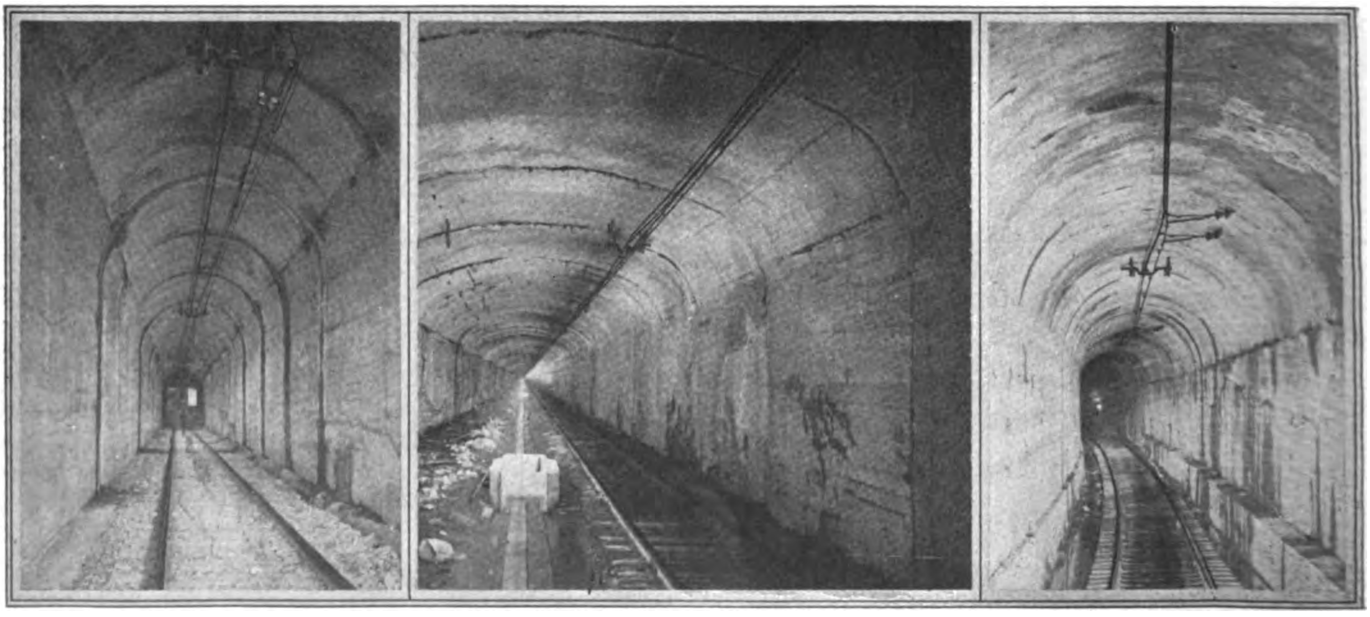
The contact wire is of a special bronze composition, size No. 0000, with a breaking strength of 65,000 lb. per square inch and an elastic limit of 39,000 lb. per square inch. Its section is the standard of the American Electric Railway Association for No. 0000 grooved trolley wire. It weighs approximately 2104 lb. per mile-ohm at 20 deg. C. The use of this wire instead of hard-drawn copper was thought advisable both because of its probably longer life when subjected to the wear caused by sliding pantographs, and also because it could be pulled up tighter than copper on account of its greater strength. This latter reason was considered of special importance because of the wide variation in temperature in Montreal, with the consequent great variation in the sag of ordinary copper trolley wire between winter and summer.

When stressed to 2000 lb. at 70 deg. Fahr., the tension in this bronze wire reaches 4350 lb. at 30 deg. Fahr., a value well below its elastic limit.

Compensating devices consisting of systems of pulleys and weights to maintain a constant tension in the trolley wire, such as are often employed in Europe, were considered, but the complication and extra cost were thought to be too great for what they were supposed to accomplish.

The trolley wire is hung straight over the center of the track. The natural side sway of the pantographs is sufficient to prevent wearing grooves in the contact strips, making a zig-zag contact wire unnecessary.

The height of the trolley wire above top of rail is ordinarily 23 ft., except along the double track construction and in the tunnel, where it is 16 ft. In this section two wires are used over each track. They hang side by side, supported from the same messenger, the hangers of one wire being staggered with those of the other. These double wires do not raise the hanger



CANADIAN NORTHERN OVERHEAD CONSTRUCTION—OVERHEAD IN MONTREAL TUNNEL—LEFT, SECTION INSULATION AND ANCHORAGE AT PORTAL (TWIN-ARCH SECTION); MIDDLE, IN SINGLE-ARCH SECTION; RIGHT, ON CURVE IN TWIN-ARCH SECTION loops as high as would a single wire when a pantograph passes along, which is an obvious advantage where the head room is limited under bridges. Sparking and consequent wear both of the contact shoe and trolley wire is reduced to a minimum, since the current which would cause a spark and burn at a rough spot on one trolley wire generally finds a smooth passage through the parallel wire. Sparkless operation is obtained. This second trolley wire takes the place of a No. 0000 feeder, and thus the copper is put where it will do the most good.

The use of a steel contact wire was considered, but exhaustive tests by the General Electric Company on the wearing qualities of hard-drawn copper wire seemed to prove that the extra expense and complication of the additional wire was not justified; especially as the bronze wire adopted would have even a longer life than the hard-drawn copper wire used in the tests. The use of a steel contact wire, too, is open to the objection that rust forms on it, and unless the traffic is sufficient to keep all the rust rubbed off, this is washed down by rain on the locomotives and coaches. Rust on the under surface of the wire may also cause excessive sparking and pantograph wear.

The hangers are all of the long-loop type, having a malleable-iron, single-bolt clamp ear, and a strap varying in length to suit its position in the span. All parts are sherardized. In spans of all lengths from 150 ft. to 90 ft. the hangers are spaced 15 ft. apart.

Lightning arresters of the magnetic blow-out type are installed at half-mile intervals. The arrester is placed near the top of the pole and the ground wire run down the pole to a ¾-in. iron pipe driven about 10 ft. into the ground. Before driving this pipe, a 2-in. pipe was driven down about 5 ft., then withdrawn and the hole filled with rock salt. The ¾-in. pipe was driven down through the salt. No connection was made between these grounds and the track rails.

In addition to these arresters on the poles, aluminum cell arresters are installed in the substation on the positive busbars and on each feeder. No trouble whatever has been experienced from lightning, although an unusually large number of severe thunder storms occurred during the past summer.

SAG, TENSION AND TEMPERATURE

Calculations to determine the strength required of the messenger and contact wires, and the sags and tensions at different temperatures, were made in the following way:

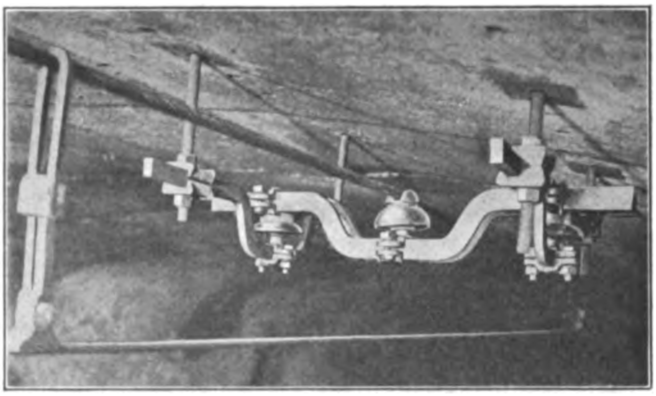
As the catenary is very flat, the error in the use of the equation of a parabola rather than the true catenary, is well within the limits of error made in the erection of the line.

$$T = \frac{wL^2}{8y} \quad \ldots\ldots\ldots (1)$$

$$s = L + \frac{8}{3}\,\frac{y^2}{L} \quad \ldots (2)$$

$$E = \frac{Ts}{MA} \quad \ldots\ldots\ldots (3)$$

T = tension in pounds
w = weight per foot in pounds
L = length of span in feet
y = sag in feet
s = length of wire in feet
E = elongation in feet, due to stress only
M = modulus of elasticity
A = area of cross-section in square inches



CANADIAN NORTHERN OVERHEAD CONSTRUCTION—MESSENGER SUPPORT IN MONTREAL TUNNEL

To determine the sags and corresponding tensions at certain temperatures under different conditions of loading, it is necessary first to assume as a working basis the sag desired at normal temperature, usually 70 deg. Fahr. As an example of how the calculations were carried out we will take the ½-in. steel messenger and figure the sags and stresses for different loads.

Normal temperature	70 deg. Fahr.
Sag at normal temperature	20 in.
Span length	150 ft.
Weight per foot, messenger, contact wire and hangers	1.25 lb.
Assumed ice load, per foot	2.32 lb.
Assumed wind load, per square foot	9 lb.
Area cross-section of messenger	0.15 sq. in.
Modulus of elasticity of messenger	26×10^6

From equation 1 in the preceding column, the tension under normal conditions is:

$$T = \frac{wL^2}{8y} = \frac{1.25 \times 150^2}{8 \times 1.67} = 2100 \text{ lb.}$$

The length of the messenger at normal temperature and under normal load is found from equation 2:

$$s = L + \frac{8}{3}\,\frac{y^2}{L} = 150 + \frac{8}{3}\,\frac{1.67^2}{150} = 150.05 \text{ ft.}$$

The elongation of the cable due to normal stress is next figured from equation 3:

$$E = \frac{Ts}{MA} = \frac{2100 \times 150.05}{10^6 \times 26 \times 0.15} = 0.081 \text{ ft.}$$

Subtracting this elongation from the length under normal conditions gives the unstressed length at normal temperature if the cable had no weight and there were no load on it. The unstressed length at any temperature is:

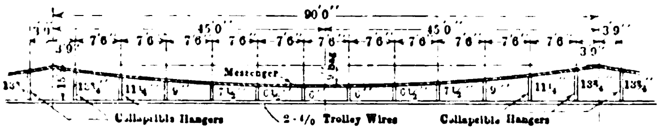
Unstressed length at normal temperature × (1 ± coefficient of expansion × degrees Fahr. above or below normal).

Unstressed
At 70° Fahr., length .... $150.05 - 0.081 = 149.970$ ft.
At — 40° Fahr., length .. $149.97\,(1 - 0.0000064 \times 110) = 149.864$ ft.
At 110° Fahr., length . $149.97\,(1 + 0.0000064 \times 40) = 150.008$ ft.
At 10° Fahr., length ... $149.97\,(1 - 0.0000064 \times 60) = 149.912$ ft.

Curves can now be drawn, see Fig. 3 on page 1028, with sags as abscissas and tensions as ordinates; a separate curve for each temperature, as follows:

$$\text{Curve for } -40 \text{ deg. Fahr.: } E = \frac{Ts}{MA} = \frac{149.864T}{26 \times 10^6 \times 0.15} = 0.0000384T$$

Assuming suitable values for T, we find the corresponding values of E, which, added to the unstressed length at — 40 deg. Fahr., give the values of s. Values of y are then found from equation 2. The curve is then plotted between the y values, as abscissas, and the assumed values of T as ordinates. Similarly curves can be drawn for other temperatures, as 10 deg. Fahr., 70 deg. Fahr. and 110 deg. Fahr. Note that in these curves the sag increases with increase in tension.



CANADIAN NORTHERN OVERHEAD CONSTRUCTION—FIG. 1—DETAILS OF TYPICAL CATENARY SPAN AT MONTREAL TERMINAL

Load curves, for any loading it may be desired to study, are now plotted on the same sheet. For example, a curve representing an ice load with a 60-mile wind, is drawn as follows:

The wind pressure on the span figures 2.56 lb. per foot. The resultant of this and the weight, with ice load, is:

$$\sqrt{(2.56)^2 + (3.57)^2} = 4.39 \text{ lb. per foot.}$$

$$\text{From equation 1, } y = \frac{wL^2}{8T} = \frac{4.39 \times 150^2}{8T} = \frac{12347}{T}$$

Assuming suitable values for T, we thus obtain corresponding values of y. This load curve may now be plotted. Note that the sag varies inversely with the tension. Where this curve intersects the curve for ice and 60-mile wind gives the values of tension and sag, satisfying both conditions of load and temperature. Thus from Fig. 3 the tension for the maximum condition of ice load combined with a wind of 60 m.p.h. at 40 deg. below zero, is 5700 lb., a value well below the elastic limit of our half-inch steel messenger. The value of the sag corresponding to this tension is 2.17 ft.

Similarly, other curves may be drawn for other conditions of loading, as "ice and no wind" or "wind and no ice," and the normal condition of "no wind and no ice." The points where these intersect the various "unstressed length" curves give the corresponding values of tension and sag.

In this way complete studies were made to determine the necessary strength of the messenger for the different lengths of span.

In order to string the messenger cable with the proper tension, a dynamometer was used. It was therefore necessary for the foreman of the line gang to know what the tension should be at different atmospheric temperatures. The right sag at any given temperature was also of importance as a check on the tension. This information was supplied in the form of the table reproduced herewith, the sags and tensions being given at 5-deg. intervals. Closer intervals were unnecessary, as the dynamometer could not be read with corresponding accuracy.

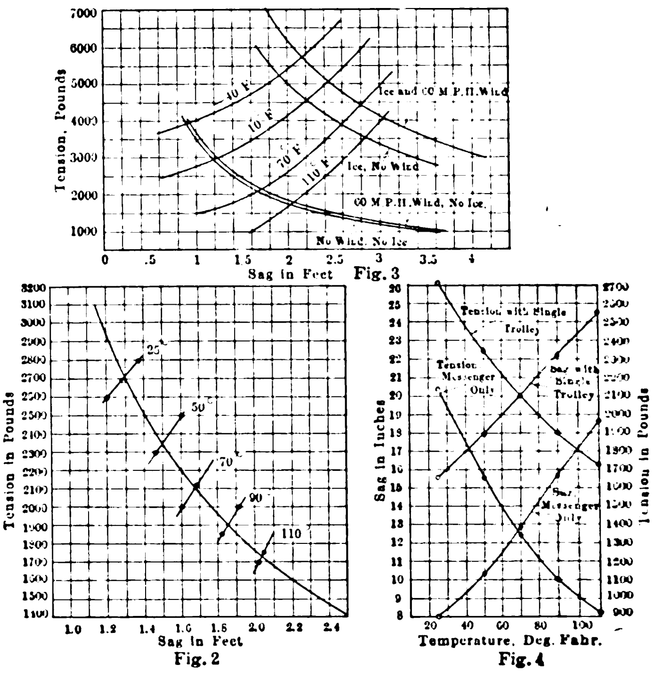
A similar table was calculated for each length of span and for each type of construction. A load curve was first drawn for the span and weight of construction under consideration. The "unstressed length" curves (Fig. 2) were drawn to intersect it at a number of different temperatures. Each of these points of intersection gives the value of the tension and sag at that temperature. These values were then plotted as ordinates against the temperatures as abscissas, Fig. 4. The table was compiled from these curves. It was necessary to draw two sets of curves, one for the messenger as first strung without load, and the other for the final position of the messenger with its load of contact wire and hangers.

PRACTICAL CONSIDERATION IN TUNNEL OVERHEAD CONSTRUCTION

In the tunnel the overhead clearance was so limited that the catenary had to be very flat. This meant pulling the messenger up very tight for spans of reasonable length. Steel would undoubtedly rust rapidly in the moisture-laden tunnel atmosphere. Soft copper was not strong enough. Hard-drawn copper gave the requisite strength, provided it would stay hard-drawn; but there was always the chance of a heavy current heating it sufficiently to destroy its hard-drawn properties.

A careful study was made of suitable messenger cables composed of hard-drawn copper, phosphor bronze, and aluminum with a steel center. These were compared on the basis of a 400,000 circ. mil copper cable, the sizes being enough larger to give the same conductivity. A strand of phosphor bronze was finally decided upon, composed of nineteen wires, and having an over-all diameter of 0.888 in. This cable has an ultimate breaking strength of 22,000 lb. and an elastic limit of 18,600 lb. It weighs approximately 1353 lb. per mile-ohm at 68 deg. Fahr.

This messenger is supported every 90 ft. from the roof of the tunnel by a combination of iron yokes held in the concrete by four 1-in. bolts. The cross yoke carries the messenger insulator and is supported on two insulators carried on the two end yokes, so that there are two insulators between the messenger and the ground. The insulators are of glazed porcelain and have a wet flashover test of 20,000 volts. All clamps and small parts of the messenger supports are of mal-



CANADIAN NORTHERN OVERHEAD CONSTRUCTION — CATENARY CHARACTERISTIC CURVES—FIG. 2—UNSTRESSED LENGTH CURVES; FIG. 3—TENSION-SAG CURVES; FIG. 4—SAG AND TENSION PLOTTED AGAINST TEMPERATURE

TEMPERATURE-SAG-TENSION DATA FOR 150 FT. SPAN STEEL MESSENGER.

Temperature Deg. Fahr.	Messenger Only		Messenger with Hangers and Single Trolley Wire	
	Sag	Tension	Sag	Tension
—20	5½ in.	3,150 lb.	12 in.	3,520 lb.
—10	5⅞ in.	2,910 lb.	12¾ in.	3,320 lb.
0	6⅜ in.	2,690 lb.	13½ in.	3,130 lb.
10	7 in.	2,460 lb.	14¼ in.	2,960 lb.
20	7¾ in.	2,250 lb.	15⅛ in.	2,800 lb.
25	8 in.	2,143 lb.	15⅝ in.	2,715 lb.
30	8⅜ in.	2,045 lb.	16 in.	2,640 lb.
35	8⅞ in.	1,945 lb.	16½ in.	2,560 lb.
40	9¼ in.	1,850 lb.	17 in.	2,485 lb.
45	9¾ in.	1,755 lb.	17½ in.	2,415 lb.
50	10⅜ in.	1,657 lb.	18 in.	2,350 lb.
55	10⅞ in.	1,565 lb.	18½ in.	2,280 lb.
60	11½ in.	1,485 lb.	19 in.	2,215 lb.
65	12⅛ in.	1,410 lb.	19½ in.	2,255 lb.
70	12⅞ in.	1,341 lb.	20 in.	2,100 lb.
75	13½ in.	1,270 lb.	20⅝ in.	2,045 lb.
80	14¼ in.	1,210 lb.	21⅛ in.	1,995 lb.
85	14⅞ in.	1,155 lb.	21⅝ in.	1,945 lb.
90	15⅝ in.	1,100 lb.	22¼ in.	1,898 lb.
95	16⅜ in.	1,050 lb.	22¾ in.	1,855 lb.
100	17⅛ in.	1,005 lb.	23⅜ in.	1,810 lb.
105	17⅞ in.	965 lb.	23⅞ in.	1,765 lb.
110	18⅝ in.	925 lb.	24⅜ in.	1,728 lb.

leable iron sherardized. The yokes are of 2 in. x ⅝-in. and 1½-in. x ⅞-in. mild steel, painted with an asphaltum compound as a protection against rust.

Two No. 0000 phosphor-bronze trolley wires hang side by side from the messenger. Hangers on each trolley wire are spaced 15 ft., or 7 ft. 6 in. between adjacent hangers. The hanger lengths are given in Fig. 1. The two hangers nearest the messenger support, namely those 11¼ in. and 13¾ in. in length, are made with two loops, one sliding inside the other, so that the top loop cannot rise over the messenger, where the clearance to the roof is very small. The remaining hangers are similar to those used outside the tunnel, except that the loop is wider in order to take the larger messenger. It was found that the two messenger cables and the four trolley wires over the two tracks in the tunnel would give ample conductivity, so that no feeders through the tunnel were required. Both the messenger and trolley wires are anchored every half mile. Two "bridles" of ½-in. steel strand are fastened to the messenger by means of six ⅞-in. Crosby clips, and the ends of these bridles fastened each way, through two cemented-type strain insulators in series, a turnbuckle and wedge grip, to roof plates held by a bolt of the messenger support. The trolley wire is anchored by lapping the ends for a distance of one span and then carrying each end up and slightly to one side of the center, making fast to a roof plate through two insulators, a turnbuckle and a wedge grip.

At the only curve in the tunnel, one of 2 deg., two pull-offs are placed in each span, over each track, one for each of the trolley wires. The pull offs are fastened to the tunnel arch through two strain insulators in series by means of an expansion bolt. Two pull-offs are placed 7 ft. 6 in. apart, and the nearer one about 22 ft. from the messenger support. This spacing keeps the two trolley wires sufficiently close together and at the same time the pull-offs are far enough apart to prevent hard spots.

The writer was ably assisted in the construction of the catenary system by C. G. Lovell, J. F. Faber and W. T. Leslie. The phospor-bronze trolley wire and tunnel messenger cable were obtained from the Standard Underground Cable Company of Canada; the insulators from the Locke Insulator Manufacturing Company, and the hangers, tunnel messenger supports and all the special line material from the Canadian General Electric Company.

Higher Fares Granted to New York Lines

Public Service Commission for Second District Authorizes Rate Increases to Six Cents for Five Petitioners—One Line Gets Seven-Cent Fare

FAVORABLE action has been taken upon six of the score and more applications for higher electric railway fares before the Public Service Commission for the Second District of New York. To the authorization of an increase from 5 to 6 cents for the Huntington Railroad, Amityville, L. I., which was noted in the ELECTRIC RAILWAY JOURNAL of Nov. 24, page 946, the commission has now added grants of authority for increases by the Hornell Traction Company, the Hudson River & Eastern Traction Company, the Ithaca Traction Corporation, the Orange County Traction Company and the Northport Traction Company. In all these cases the unit fare has been increased from 5 to 6 cents, with the exception of the Hudson River & Eastern Traction Company, to which is granted authority for a 7-cent fare.

The full opinion of the commission in the Huntington Railroad case, which covers 175 typewritten pages, is not yet available. Moreover, the complete details of the fare increases in the other cases cannot be secured as yet, although the authorization of most of them has been announced in the weekly tariff bulletin of the commission.

According to this bulletin the local one-way fare between points within the limits of a fare zone for the Hornell Traction Company was, on Dec. 4, increased from 5 cents to 6 cents. The fare for a book of twenty tickets, good between Hornell and Cook's Switch or between Canisteo and Crittenden, was increased from $1 to $1.20. A monthly commutation ticket book, good for one round trip between Canisteo and Hornell each working day during the month, will be sold on a basis of 20 cents per round trip.

Within the village of Ossining, the cash fare of the Hudson River & Eastern Traction Company was, on Dec. 1, increased from 5 to 7 cents. Strip tickets will be sold as follows: Four for 25 cents, sixteen for $1, and eighty for $5. Ten-coupon school ticket books, each coupon good for one ride, will be sold for 35 cents, and a twenty-coupon book of the same sort for 70 cents.

The local one-way fare of the Ithaca Traction Corporation, effective Dec. 1, was advanced to 6 cents between all points where a 5-cent fare had theretofore applied. The joint one-way fare in both directions between points on all divisions (except the East Ithaca division) and Remington (on the Central New York Southern) was increased from 5 to 6 cents.

In the case of the Orange County Traction Company, the local one-way fare was increased from 5 to 6 cents between points within the city of Newburgh, between Newburgh and Balmville, West Newburgh, Orange Lake Park, West Walden and Walden; and between Balmville and West Newburgh, Orange Lake Park, West Walden and Walden. These rates became effective on Nov. 29.

In its November issue of *Safety* the Union Traction Company of Indiana, Anderson, Ind., states that 528 of its employees subscribed to $37,500 of bonds of the second Liberty Loan.

State Aid for Physical Improvements

Chairman Macleod of Massachusetts Commission Suggests That in Rehabilitation Through State Credit Lies One of Best Hopes of Improving Financial Results of Electric Railways—Freight Service Should Be Developed—Fare Increases Are Not Panacea for All Evils

THE development of freight service and the advancement of rehabilitation funds to electric railways by the State were recommended by the Massachusetts Public Service Commission through an address by Chairman F. J. Macleod on Nov. 28 to the Legislative investigating commission on electric railways. Speaking on behalf of the full board, Mr. Macleod discussed various remedies proposed at hearings of the special commission, and concluded with the suggestion that for the period of the war at least the State's credit, under the supervision of proper authorities, might well be placed at the disposal of electric railways having clearly demonstrated needs.

COMMISSION IS NOT MANAGING THE RAILWAYS

Under the handicap of poor physical and financial conditions, Mr. Macleod said, the management of some of the Massachusetts electric railways has deteriorated. Recent improvements in types of cars, equipment and methods of operation which have not originated in Massachusetts have found their way into service there very slowly. The Public Service Commission has realized the difficulties with which the managers have been faced, and it has not attempted in any fare case to penalize a company because of unreasonable differences of opinion as to best methods of operation. But it has done and intends to do everything in its power to stimulate the roads to better management and to the adoption of every feasible improvement in methods which will tend to offset the need of increasing fares.

The Public Service Commission, however, is not managing the railways. "We do endeavor," Mr. Macleod stated, "to assure ourselves that the stocks and the bonds which the companies seek to issue are reasonably necessary for lawful purposes, that their books are accurately kept in accordance with the uniform classification of accounts, and that their physical properties are maintained and operated in a manner consistent with the public safety. We investigate accidents and complaints and hear petitions, and endeavor, as far as possible, to correct conditions found to be unjust and unreasonable, either to the companies or to the public which they serve. We require publicity of certain expenditures found by experience in the past to be specially subject to abuse. But no attempt is made or can be made to take the initiative from the owners of the roads and dictate the wages, salaries or fees which they shall pay, the concerns from whom or the terms upon which they shall buy, or the general methods of administration which they shall adopt.

"The utmost which the Public Service Commission has been able to do in this direction is to employ, on special occasions, high-grade experts for test investigations, as was done in the Bay State case and is now being done in the Boston Elevated case, in order that the people may have some opportunity to estimate the general efficiency of the utilities and the possibilities of improving their financial condition by means other than an increase in rates, and in order that some stimulus may be given to the adoption of the most improved methods of management and operation. We are fully persuaded that many of the evils of the past have been possible because public supervising bodies were insufficiently informed in regard to general conditions, and as far as our means and our ability permit we intend to provide ourselves and the entire public with an adequate fund of knowledge."

HIGHER FARES GRANTED MANY COMPANIES

Massachusetts is the home of the 6-cent fare. The Warren, Brookfield & Spencer Street Railway was the first electric railway in this country to adopt this unit (April 13, 1905). The Public Service Commission, since its establishment in 1913, has after careful investigation permitted fifteen companies, or nearly one-half of the operating roads in the State, to make general increases in fares. Applications of the Holyoke, Springfield, Northern Massachusetts and Bay State railways are now pending. No company has been refused an increase, and in most instances the lines have secured substantially what they asked for.

Even higher units than the 6-cent rate have been permitted. The Norwood, Canton & Sharon, the Ware & Brookfield and the Worcester & Warren companies now have a 7-cent unit, and the Middlesex & Boston has a 7-cent unit on certain lines and an 8-cent one on others. Two companies, the Boston & Worcester and the Concord, Maynard & Hudson, have been permitted to try a mileage system, based on a 2-cent rate.

At present, out of a total of 2198 miles of line in the State, excluding the Boston Elevated Railway, the unit of cash fare is 5 cents on 904 miles, 6 cents on 1110 miles, 7 cents on 85 miles and 8 cents on 32 miles. On 67 miles the 2-cent per mile rate prevails. In addition, fares have been increased in not a few cases by introducing additional zones. For better or for worse, it was said, Massachusetts has gone farther with higher electric railway fares than any other State.

POWER TO SUSPEND RATES SHOULD BE RETAINED

According to Mr. Macleod, the chief suggestion of the railways appears to be that the Public Service Commission shall be deprived of the power to suspend changes in rates, pending an investigation in which the burden of proof shall be upon the company, and that the companies shall have full power to make such changes as they seem fit and carry them into effect at once, subject only to future revision by the commission, acting with limited jurisdiction, after an investigation in which the burden of proof shall be upon the complainants and also after a possible review by the courts of findings of fact as well as of law.

One fundamental weakness of this plan, the speaker said, rests in the assumption that a sure cure for all the evils of the electric railway situation lies in the raising of fares. In his opinion, it is fair to say that no increase in electric railway rates in Massachusetts has fulfilled expectations. The companies which introduced the 6-cent fare ten years ago are financially no better off to-day than companies of similar characteristics which adhered to the 5-cent fare unit. In 1914 the Middlesex & Boston line was permitted to raise its fares. Yet it came before the commission again this year, with a financial condition not so favorable as in 1914, asking for the right to charge as high as 7 and 8 cents. In no respect is this company better off financially than the Bay State company, and in some respects its condition is worse. Increases in fares may help companies materially in some cases, but there is nothing in past experience which gives ground for the belief that all companies in the State can by this means be lifted into prosperity and good credit.

As to the power to suspend rates, the Public Service Commission holds that if this were removed, proceedings in rate cases would become more complex and protracted to the point of interminability. The suspension power is in use by the commissions of at least twenty-one States and by the Interstate Commerce Commission. Moreover, if the power of appeal to the courts on questions of fact were also included with the withdrawal of the suspension privilege, the commission would be reduced largely to a body for the taking of evidence.

To Mr. Macleod's mind, it seems an unwarranted assumption that a company must actually fail to earn a reasonable return before it can hope to be permitted to increase rates. The rule which the Massachusetts Public Service Commission has established is that a company must satisfy it that additional net income is needed in order that a fair return may be earned upon capital honestly and prudently invested. Presumably no company will undertake to increase rates unless it has definite reasons at least for believing that it probably cannot otherwise earn a fair return under the conditions likely to prevail in the immediate future, and that these conditions will have more than a brief duration. If these reasons are sufficient to lead a fair-minded man to such a belief, they will be sufficient to justify the commission in approving an increase.

The chief difficulty in many rate cases is not to recognize the financial needs of the carrier, but to determine whether the burden is being fairly apportioned among various localities and classes of riders. No good can come from the exercise of arbitrary action on rates by a company seeking to maintain public goodwill, without first doing all that can be done to make clear the justice of its undertaking. Any plan, therefore, involving the abandonment by the State of essential features of control now exercised over public utilities would not be in the public interest and would be likely to cause a reaction which in its ultimate results would be unfortunate for the companies themselves.

ABOLITION OF TAXES

Outside the Boston Elevated Railway, the Massachusetts electric railways pay the following taxes: Local property tax, assessed on real estate, $457,993 in 1916; corporate franchise tax, assessed upon the market value of capital stock, $392,057; excise, or commutation tax, based upon gross earnings, $498,376. The Public Service Commission recommends that the excise tax be abolished and that companies be required to maintain in good repair, but not to renew, the street surface between their rails and tracks, or, at their option, to reimburse the municipalities for the cost of such work. Moreover, that when this surface is renewed, or replaced with a different form of paving, the companies may fairly be required to bear one-third of the labor cost, the municipality paying the remainder and the entire cost of all materials.

The corporate franchise tax and the local property tax do not amount to 4 per cent of the gross receipts, and the commission does not consider them excessive at present. It suggests, however, the possibility of giving temporary relief during the period of the war by exempting intrastate companies which pay in any given year dividends of less than 5 per cent on their common stock.

JITNEY SHOULD BE REGULATED

Some electric railways in Massachusetts have suffered severely from jitney competition. While there may be a legitimate field for such carriers, they certainly ought not to be permitted to go into a locality already supplied with railway facilities and pick off the cream of the short haul traffic in favorable weather, without being subject to any of the duties, restrictions and regulations of the railways. If experience has proved anything, Mr. Macleod averred, it is that unfair and ruinous competition is bound, in the end, to react upon a community. Jitneys should be subjected to regulation, preferably along the lines of the New York law. The commission feels that electric railways might well be authorized to supplement their service by motor-bus operation.

COMMISSION DOES NOT FAVOR CONTROL OVER LABOR

P. F. Sullivan, president Bay State Street Railway, has suggested that all labor disputes should go to the Public Service Commission and that every electric railway employee, upon entering the service, should be required to sign an agreement that any dispute as to wages should automatically be referred to the commission. In the commission's judgment such a policy would be ruinous to the present system of public regulation and ought not to be considered. Chairman Macleod pointed out that the commission already has to face continually perplexing questions of law, public policy, finance, engineering, accounting and operation. Add labor disputes and the commission would be plunged into extended consideration of standards of living, cost of living, skill and hardship of employment, hours of labor, discipline and so on *ad infinitum*.

Not only would it administer the law, but it would be obliged to make law on its own account. No one has yet hit upon any clear or simple rule for the determination of fair wages. The Legislature would not undertake to lay down any such rule, and the commission would be forced to formulate its own guiding principles. In short, the addition of labor disputes to the work which the commission already has to cover would be demoralizing in the extreme. It could not be effectively handled, and it would tend to throw the commission more and more into politics and diminish confidence in the system of public regulation.

ELECTRIC LINES SHOULD HAVE POWER OF EMINENT DOMAIN

Probably because of steam railroad influence, electric railways in Massachusetts have been kept rigorously upon the highways. Some of the unprofitable long country lines could be made to pay if they were built for high-speed operation, so that interurban traffic might be attracted. The board believes that the electric lines should have additional power to acquire and operate upon private right-of-way. It is surprising that the companies have never seemed to attempt with any vigor to improve this situation.

TIME FOR REHABILITATION AND DEVELOPMENT

Broadly speaking, Mr. Macleod remarked that the electric railways of Massachusetts are in need of rehabilitation. Track, power, shops and rolling stock are not capable of furnishing good or economical service. One of the chief reasons for popular opposition to increases in fares lies in this fact. Moreover, it is costing the companies money every day in loss of traffic and increased operating expenses. Unless worn out or obsolete property is replaced the situation can only go from bad to worse. In rehabilitation, therefore, lies one of the best hopes of improving financial results. If modern equipment, good tracks and efficient power supplies can be secured, the opportunities for cutting costs and increasing traffic will be very substantial.

The present situation is also favorable to a larger application of electric freight service. It appears that the steam lines are desirous of reducing rather than increasing the volume of their less-than-carload business and that the electric lines have an excellent chance, if properly equipped, to add to their receipts by furnishing expedited service at remunerative rates for such freight.

LIMITATIONS OF SERVICE-AT-COST PLAN

The recent formation of an association of owners of Massachusetts electric railway securities is a hopeful sign, in Mr. Macleod's opinion, especially if it means that investors are in future to play a more direct part in the conduct of their companies' affairs. This should be of great service in improving present conditions. The service-at-cost plan of this association [ELECTRIC RAILWAY JOURNAL, Nov. 17, page 920] has certain marked advantages, but caution should be exercised in applying it generally to all the electric railways of the State. The differences in risk, condition, etc., are very material. The plan suggested for Massachusetts differs from similar plans adopted elsewhere (Cleveland, Dallas, Des Moines, Kansas City) in that it is not designed for a single railway system but is intended for a State-wide application.

The increasing of rates is still in the experimental stage. If the service-at-cost plan, which contemplates the creation of reserve funds for the protection of dividends out of new contributions of capital and the fixing of depreciation charges by the commission, is adopted, care must be taken to avoid the danger, existent under the present scale of prices and generally abnormal conditions, of fixing fares which would be unreasonable in themselves, resulting in a decrease of revenues, and which would be difficult of proper adjustment when conditions returned to normal.

When capital is so greatly needed for war purposes and the cost of it is so great, the use of new contributions of capital as reserve funds for the payment of dividends to the full amount specified is at least of doubtful wisdom as long as present abnormal conditions continue. Moreover, it is difficult, if not impossible, to prescribe gradations in fares which may be generally applied to a large number of companies operating under a wide diversity of local conditions. If every fare adjustment should be the subject of renewed controversy, the confidence of the public and of investors would be impaired, and the speedy modifications in conformity to fluctuating financial results which the plan contemplates would be difficult of accomplishment.

STATE AID SEEMS THE BEST WAY OUT

If the people were prepared for it, the Public Service Commission holds, public ownership might be a solution, but it would involve readjustments and problems which would be serious enough at any time, and more than communities ought to be asked to cope with under the stress of present war conditions. The suggestion of the commission goes much less far. It suggests that the State should, for a limited period, act as the banker, supplying needed property upon an installment equipment-trust plan of purchase and giving the companies the benefit of its better credit and of the lower rates of interest which it is able to command. The scheme is one, of course, which has its limitations. It must be surrounded by proper safeguards and provision made for wise and conservative administration. Details will require careful study, but for preliminary consideration the following is suggested:

1. Title to the property furnished should remain in the State until the final installment has been paid.
2. In case of default on any payment, the State should have the option of ending the contract and taking possession of the property.
3. It should be provided by statute that, in case of a foreclosure or receiver's sale of the property of the company to which it has title, any purchasing electric railway must assume any remaining liability under the contract with the State.
4. The plan should be confined to classes of property where the element of security is good, such as rolling stock and power apparatus.
5. The opportunity ought not to be extended to every company. There are probably certain electric railways where reorganization is inevitable, or sale at a loss to some other company. The necessary line might be drawn by fixing some standard of past earnings or payment of dividends.
6. The process of rehabilitation ought to be gradual, especially in view of present war-time conditions. Only those changes and improvements should be made which are required by considerations of public safety or which offer the greatest promise of bettering necessary service and the financial results therefrom. Priority should be given to expenditures which have some direct relation to providing transportation facilities of immediate help in the prosecution of the war, such as perhaps expenditures for the extension and improvement of freight service.
7. Supervision of the proposed extension of State credit should be placed in the hands of the Governor and Council, acting with the advice of the Public Service Commission.
8. Where the new property took the form of actual additions and improvements to as contrasted with replacements of existing property, the annual payments to the State on principal account could be regarded as an offset to depreciation requirements.

The carrying out of this suggestion, Mr. Macleod said, would in no way deprive the companies of the benefit of any other form of assistance, but it might open the way to secure physical improvements unattainable otherwise, and be of great advantage to the public as well as to the companies, perhaps in greater measure to the former. By offering such help the State would, in the commission's judgment, go as far as it reasonably could in relieving the situation, as long as the present system of private ownership prevails.

Commissioner Garfield Recommends Fuel Economy

Co-operation of Electric Railways Asked to Eliminate Wasteful Uses of Electricity—New York City Service Cannot Be Reduced—Massachusetts Commission Suspends Car-Heating Rules

FUEL saving through the conservation of power used by electric railways is sought in a communication which the United States Fuel Administration has transmitted to the fuel administrators of the various states. These are urged to secure the co-operation of the companies in eliminating all wasteful uses of electricity. The communication reads:

"The Conservation Department of the Fuel Administration is investigating every possible opportunity to save coal, which, of course, includes the saving of electricity. An investigation convinces us that electric railways offer a chance for large savings, particularly through reductions in schedules. We are not suggesting changes in schedules which will seriously inconvenience the public, but it is a well-known fact that the pressure of private interests has, in many instances, led the electric railways to provide cars and service which represent a wastage that should be prevented in time of scarcity.

"It is Dr. Garfield's desire that you start this line of investigation for your State in consultation with the State Public Utilities Commission, assuring it that any reduction which it believes to be reasonable will have a full backing of the federal government as represented by the Fuel Administration.

"In addition to this matter of schedules, our attention has been directed to a number of other opportunities for economy on the part of electric railways. One of these has to do with the heating of the cars. We urge that you ask the proper state authorities to co-operate in the reduction of unnecessary heating. It has been stated that the heating of cars represents nearly 30 per cent of the current used by these companies. May it not be possible to make a substantial saving in this item?

"Furthermore, we have found that in many cases the system of power stations could be revised with large savings of fuel, as is said to have been done in Great Britain. There are, along the lines of railways operating in thickly populated districts, company power stations with more or less obsolete or inefficient equipment which could, we judge, be discontinued or reserved as relay stations through arrangements for the railways to obtain their power from more efficient stations of other public utilities operating in the same localities and having large relay capacity.

"If the public utilities which produce power at the lowest cost could be used to furnish the regular current requirement of the railways in such districts, and the railway plants merely maintained as relays, the saving in electrical power and, therefore, in coal would be considerable.

"We would like to add that all of these companies should be urged to renewed vigilance in the matter of scientific economy in firing their power plants and the cutting off of every kind of leakage and wastage, especially in their transmission systems. We shall be glad to hear that you have taken up this matter vigorously and that you have found it possible to effect considerable savings in this department."

Attitude of New York City Commission

Car Service Will Not Be Reduced, Owing to Congestion—Heating Tests to Save Coal Now Being Made

WITH reference to the suggestions for fuel economy from the National Fuel Administration, noted above, it is said at the offices of the Public Service Commission for the First District of New York that there is no possibility of a reduction in service in New York City. The transportation in the metropolitan district is now and has been so congested for years past that the city and the companies are spending about $350,000,000 to relieve conditions. Conditions are so serious as to require additional facilities at the earliest moment rather than a reduction in the use of present facilities. The Interborough Rapid Transit Company has ordered nearly 500 new cars for use on the new Lexington and Seventh Avenue lines, for which the government is being urged to grant priority in the fabrication of the necessary steel.

As to the reduction in the use of electricity for the heating of cars, tests are now going on with the Brooklyn Rapid Transit System, under the direction of inspectors of the commission, to determine whether a saving can actually be had in electricity for this purpose. At a hearing on Dec. 4 the engineers of the commission reported that figures had been gathered for several elevated lines and for different types of cars on one surface line, but that sufficient data had not been secured for collation. It is desired to find out how long cars would stay heated in rush-hour operation, when sent out at a certain temperature from the car house, and what, if any, additional heat would have to be turned on during operation at different stages of outdoor temperature. Another hearing is scheduled for Dec. 12.

The indications are, it is said at the commission's offices, that the board will go very slowly in allowing any substantial reduction in heat, until more progress has been made in the elimination of non-essential business and a reduction of luxury trains on the railroads. The public, which is entirely dependent upon the surface and rapid transit lines of New York City, is believed to be entitled to a reasonable amount of heat.

In regard to the more efficient use of power plants, the commission has directed attention to the fact that following the coal shortage of the Interborough Rapid Transit Company last August, the board took up the matter of having all power plants of the city tied together. At a hearing a week ago Frank Hedley, vice-president and general manager of the company, submitted preliminary data covering the mechanical features of bringing together the power plants of the Interborough, Brooklyn Rapid Transit, New York Edison, Brooklyn Edison, Pennsylvania, Long Island and possibly the New York Central systems. These data will be studied by all the engineers concerned to find out what may be practicable features of the plan. The arrangement, however, is understood to be designed for emergency operation, and not with the view of a greater utilization of the most economical power plants.

Massachusetts Curtails Car-Heating

FOLLOWING a conference last week with various electric railway operating officials, the Massachusetts Public Service Commission has suspended car-heating regulations until April 15, 1918. Cars will be heated, unless otherwise ordered, as the judgment of the operating companies dictates.

On Oct. 13 the commission withdrew the usual heating rules to save coal, and the heating of cars was made optional with each company until Dec. 1. The weather continued mild until late in November, when car heating was resumed on a moderate scale in the colder hours of the day. Very little serious complaint appears to have arisen from the traveling public.

The continued suspension of the rules is in part at the request of James J. Storrow, Fuel Administrator of New England. The indications are, it is said, that this section will be short of the usual supply of bituminous coal by 7,000,000 tons on Jan. 1.

Publicity Among the Bostonese

How, Since the Earliest Days of Publicity Work, the Boston Elevated Railway Has Developed a Conservative System Suited to the Local Public

NINETEEN years ago the Boston (Mass.) Elevated Railway, as a pioneer among electric railways, took up publicity work. The company did not know exactly what results ought to be expected or how any were to be secured. The man selected to handle the work had not had any newspaper experience, and he knew as little as the company about what was wanted. Nevertheless, he broke into the work with the general understanding that he was to experiment in regard to securing better relations between the company and the public.

Since that time the company has developed an extensive publicity system designed to meet the peculiar needs of Boston. The public in that city, it is said, is conservative; it is serious-minded; it is critical of the form of statements as well as their subject matter. Consequently, the company has kept its publicity work from being tinged with what might in Boston be considered revolutionary or radical elements. For example, the "live-wire" style of writing—the "pep" that characterizes so much of present-day advertising and publicity work—has been used sparingly if at all in Boston.

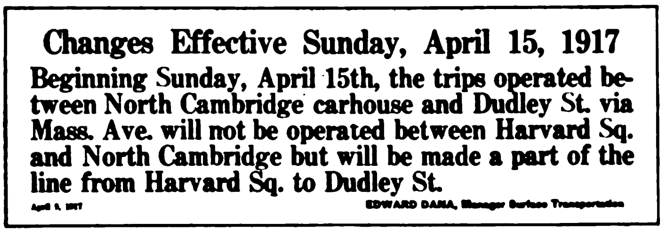
GIVING SERVICE TO THE NEWSPAPERS

During the many years in which J. Harvey White as publicity agent has been dealing with the Boston newspapers, his sole idea has been to *render service to them.* Newspapers want news; that is their stock in trade. Yet space means money to them; therefore Mr. White furnishes nothing that has not real news value. Nor does he try to use press agent methods. He just goes along, day after day, with reporters good, bad and indifferent, giving out what they know they want or he knows has a public interest. The papers get what they want, and they get it when they want it. Matthew C. Brush, president of the company, is strongly in favor of the fullest, frankest publicity.

In bringing the rather routine matters to the attention of the newspapers, Mr. White sends out "flimsies" containing the bare facts. The information is in such clear, compact news form that it steals no space, is easy to rewrite and can be used by the editors as they see fit. Even minor day-to-day material receives general publication.

When reporters call for information, Mr. White always sees them immediately and almost invariably gives them in full the stories they were sent out to get. If he cannot, he gives explicit reasons for not furnishing the information. Or, if the reporter is a new man, Mr. White calls up the city editor and explains the situation, thereby usually securing the reporter's release from the assignment.

Detailed technical stories, of course, Mr. White furnishes himself, written either in the usual newspaper style or in the form of a strictly official statement of facts. For the occasional out-of-the-ordinary news story, Mr. White formerly supplied copy to assist the newspapermen. Now, however, he as a rule simply calls up the city editors and gives them a tip, in order that the papers may handle the story in their own way. In the case of an extremely important story, Mr. White takes the matter up directly with the newspaper publishers. In other words, he aims at all times to give the papers what they ask for or would want if they knew about it; and the bigger the story he has, the higher the newspaper man to whom he renders his



Changes Effective Sunday, April 15, 1917

Beginning Sunday, April 15th, the trips operated between North Cambridge carhouse and Dudley St. via Mass. Ave. will not be operated between Harvard Sq. and North Cambridge but will be made a part of the line from Harvard Sq. to Dudley St.

April 9, 1917 EDWARD DANA, Manager Surface Transportation

BOSTON PUBLICITY—FIG. 1—SAMPLE OF CAR CARDS USED TO ANNOUNCE OPERATING CHANGES

service. As a result, the company has no trouble in getting its news matter used extensively and satisfactorily in nearly every case.

Mr. White is authorized to talk to the newspapers at his discretion, but on important matters of policy, statements are either made or approved by the president. Any responsible official may receive authority to make a statement to the newspapers, but ordinarily the president is the only one who exercises such power. His statements may or may not go through the publicity department. If an accident occurs, the superintendent in charge may tell the reporters if he sees fit. When a newspaper desires a story about some particular piece of work, the reporter may be turned over to the official in charge. These exceptions, however, only emphasize the general rule that material for the press must pass through the publicity office of the company.

Mr. White does not maintain any elaborate filing system covering the company's activities. It is felt that this would require extensive equipment and a large staff, and would simply involve a duplication of material already in departmental files. The cost would be out of all proportion to the worth. Nor would it be advisable to try to run a filing system in a small way, for the material would be inconclusive and quickly become obsolete. The best way to secure data for general use in regard to track work, car equipment, subway construction and the like, in Mr. White's opinion, is to call up the head of the department in charge. In this way he secures authoritative, up-to-the-minute information almost in the twinkling of an eye.

Why be petty? That is Mr. White's view of a hypercritical examination of newspapers to discover misstatements. When he sees an incorrect statement, he occasionally telephones the editor in order to point out the mistake in a friendly way, but only in the most important cases does he ask for a correction. He does not believe in being a nuisance around editorial offices.

LITTLE PAID ADVERTISING NOW

The company carries on a moderate advertising of time-tables in suburban papers, to which it pays a flat amount quarterly, something more than the cost of composition. These papers are all weekly publications.

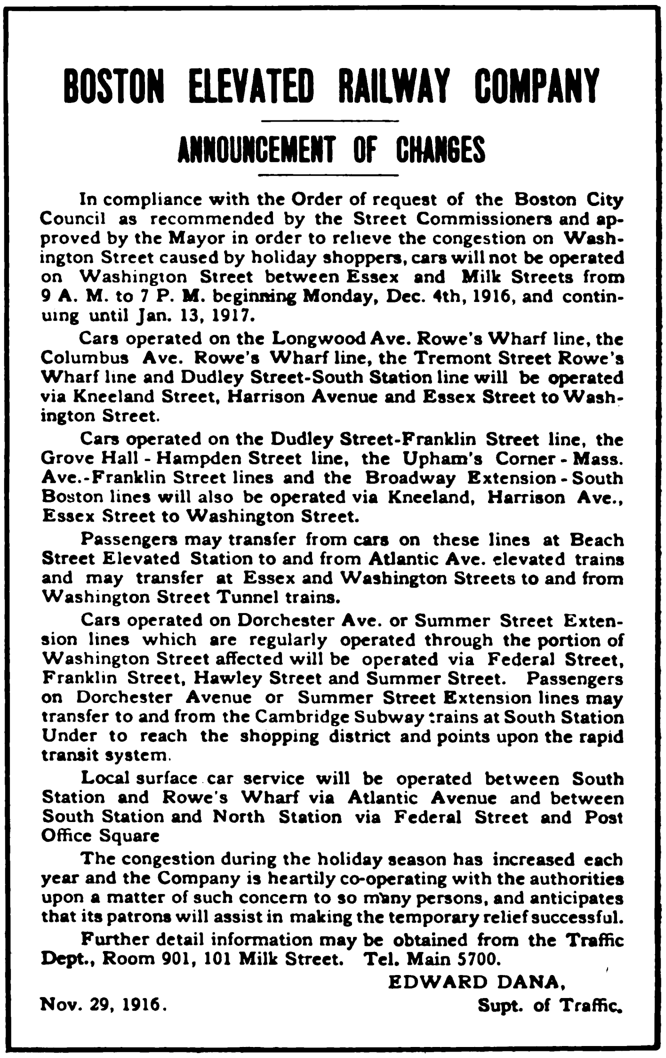
Formerly the company also purchased large amounts of advertising space for getting business, announcing traffic-handling methods and stating its policies. For the last three or four years, however, no sums have been paid out for such purposes. Two reasons have existed for this; first, that the company in the exercise of the most rigid economy possible has been avoiding all expenses not absolutely necessary to the operation of the road, and, second, that the Massachusetts Public Service Commission has given companies to understand that the expenditure of money must be justified on public grounds.

The commission requires a quarterly statement from reporting companies, showing all contracts or agreements made with reference to advertising, publicity and legal or other work in any way connected with legislation or attempting to influence or inform public opinion. The commissioners are disposed to question advertising on the basis that the company funds might be used otherwise so as to count for more to the public. If they could be shown that the expenditure of a certain sum for advertising would be of greater benefit than its use in car operation, they would sanction such expenditure. The only case where the Boston Elevated Railway has raised the issue, however, was in February, 1915, when the commission informally stated that a certain expenditure for advertising in a safety campaign would be deemed in the public interest.

CO-OPERATING WITH THE COMMISSION

The work of establishing better relations with the Public Service Commission, and similarly with boards of aldermen and local civic organizations, is not handled by the publicity department. The company tries to keep in touch with these through operating officials.

For example, when a case is being heard by the commission, H. B. Potter, assistant to the president, attends and speaks for the company in most matters ex-



BOSTON ELEVATED RAILWAY COMPANY

ANNOUNCEMENT OF CHANGES

In compliance with the Order of request of the Boston City Council as recommended by the Street Commissioners and approved by the Mayor in order to relieve the congestion on Washington Street caused by holiday shoppers, cars will not be operated on Washington Street between Essex and Milk Streets from 9 A. M. to 7 P. M. beginning Monday, Dec. 4th, 1916, and continuing until Jan. 13, 1917.

Cars operated on the Longwood Ave. Rowe's Wharf line, the Columbus Ave. Rowe's Wharf line, the Tremont Street Rowe's Wharf line and Dudley Street-South Station line will be operated via Kneeland Street, Harrison Avenue and Essex Street to Washington Street.

Cars operated on the Dudley Street-Franklin Street line, the Grove Hall - Hampden Street line, the Upham's Corner - Mass. Ave.-Franklin Street lines and the Broadway Extension - South Boston lines will also be operated via Kneeland, Harrison Ave., Essex Street to Washington Street.

Passengers may transfer from cars on these lines at Beach Street Elevated Station to and from Atlantic Ave. elevated trains and may transfer at Essex and Washington Streets to and from Washington Street Tunnel trains.

Cars operated on Dorchester Ave. or Summer Street Extension lines which are regularly operated through the portion of Washington Street affected will be operated via Federal Street, Franklin Street, Hawley Street and Summer Street. Passengers on Dorchester Avenue or Summer Street Extension lines may transfer to and from the Cambridge Subway trains at South Station Under to reach the shopping district and points upon the rapid transit system.

Local surface car service will be operated between South Station and Rowe's Wharf via Atlantic Avenue and between South Station and North Station via Federal Street and Post Office Square

The congestion during the holiday season has increased each year and the Company is heartily co-operating with the authorities upon a matter of such concern to so many persons, and anticipates that its patrons will assist in making the temporary relief successful.

Further detail information may be obtained from the Traffic Dept., Room 901, 101 Milk Street. Tel. Main 5700.

EDWARD DANA,
Nov. 29, 1916. Supt. of Traffic.

BOSTON PUBLICITY—FIG. 2—SPECIMEN HANDBILL TO INFORM RIDERS ABOUT REROUTINGS cept those of a purely legal nature. For these an attorney appears. Edward Dana, manager surface transportation, goes alone or with Mr. Potter to hearings which deal with transportation subjects. It has been found to be a most satisfactory arrangement to send practical operating men rather than lawyers to discuss operating conditions before the commission.

Mr. Potter has personal charge of all commission matters. Perfect harmony and good-will is the aim in dealing with it. The company actively co-operates with the inspectors of the commission, and everything in its offices is open to them. Hearings before boards of aldermen are handled by Mr. Potter or under his direction. Company officials are members of the various chambers of commerce and co-operate in all their work.

GETTING FARE PUBLICITY

An excellent testimonial that the publicity of the company is frank and persistent, but not aggressive to the point of belligerency, may be found in connection with its plea in 1915 and 1916 for financial relief. The company needed more revenues, but it did not pick a fight with the public on this point. It simply presented its case in detail to the Governor and other public authorities, and gave a carefully prepared summary to the newspapers. When this was done, it sat back and waited for the public to act fairly in the matter.

The Boston newspapers almost unanimously came out promptly in favor of granting aid to the company, and there was no direct newspaper opposition expressed. As the industry knows, some relief has since been granted, but more is needed. The public authorities are continuing their investigation, however, and the company is co-operating to the fullest possible extent in furnishing, with persistent courtesy and promptness, all information desired. Yet it is making no "campaign" for higher fares. The public is sensible; it knows that the company needs help. Consequently, it is believed that better results in the long run will be secured if the company does not give the impression of fighting for its case but allows the public to volunteer its own solution. Such a procedure begets confidence on the part of the public, while undue urging of the company's case, or the appearance of an undue desire for haste, would be more than likely to beget suspicion.

USING POSTERS AND CAR CARDS

Besides reaching the public through the newspapers, as before described, the company uses other publicity media for certain purposes. When cars are rerouted or some other operating change is made, placards (9⅜ in. x 28 in.) are placed a week in advance in the cars on the line or lines affected. These cards, one of which is reproduced in Fig. 1, are suspended in racks near the center of the cars. The company also places handbills in boxes on the cars or gives them to the conductors for distribution. These, as shown by Fig. 2, give full information regarding the proposed change. A "flimsy" containing the bare facts, of course, is given to the newspapers. The company never uses car cards in the regular advertising spaces or posters on windows.

The company, however, uses large posters in its elevated and subway stations on large signboards, the largest of three sizes being 5 ft. x 7 ft. On these boards are placed announcements inducing traffic, such as those covering summer park attractions, football games in the Harvard Stadium, the Automobile Show and other features that continue for more than one day or can be covered in a seasonal poster. Each poster is expected to be kept in place for a week or more. The company is careful in using the posters not to compete with the newspapers and the local advertising agencies. Occasionally the boards are used for general topics, such as early Christmas shopping or, of interest lately, Army and Navy enlistment. As a rule, however, the signboards are for traffic purposes only and are handled by the traffic department. Mr. White sometimes co-operates in writing copy for the posters but has nothing to do with printing or displaying them.

PUBLIC HAS RIGHT TO KNOW

In the opinion of Mr. White, electric railways no longer are enterprises conducted by private individuals for unlimited profit. They have become instruments whereby the public supplies itself with a needed service without thought of high profit for private investors, but with due recognition of the necessity of a fair return on the property in service. The public through its public service commissions directs the operation of the railways, and it is fundamentally the responsible party back of the electric railway industry. Hence, Mr. White says, the companies have a very clear duty to keep the public informed as to what is being done and the reasons therefor. The public is entitled to full information; it is the duty of the publicity agent to present this in a form suited to local conditions. The result of carrying out this policy on the Boston Elevated Railway has been the gaining of the good will of the press to such an extent that while there is occasional criticism of the service, there is no hostility to the company or the men who manage it.

Women Conductors on New York Lines

First Group to Take Regular Runs About Dec. 10, Following a Short Period of Training

THE New York (N. Y.) Railways will place women in service as conductors on the surface lines about Dec. 10. It is intended not to displace men now in service but merely to fill the vacancies caused by the war. The women will first be employed on the low-level, center-entrance cars on which fare boxes are installed, the conductor's duties being principally to make change. They will in all probability be placed later on the other cars on which the fares are collected.

The women are now receiving instruction consisting of about two days in school and about four or five days on the cars under the supervision of an instructor. Those who qualify will then be placed in charge of cars and will work the same number of hours as the men. Nine applicants were in the first group to receive instruction, and thirty-three were enrolled in classes the following day. The girls are making their first trial runs as this paper goes to press. It has not been decided whether they will take late runs, as that will probably depend on labor conditions.

A uniform is being worked out with special features to make it most suitable for the needs of the service.

Employees of the interurban railways and utility properties of the Illinois Traction System, Peoria, Ill., to the number of 115, are now in the service of the government's military forces.

American Association News

War Board Issues Important Bulletins—President McCarter of Public Service Explains How Shortage of Men, Materials and Money Imposes Unprecedented Problems on the Public Utility

McCarter on "Needs of the Hour"

Nearly 1500 members of the electric railway, electric and gas company sections of Public Service attended a meeting in Newark, N. J., on Nov. 27, at which Thomas N. McCarter, president of each of the separate companies, spoke on the problems which confront the industry at this time. Before and after the address the Essex Division Trainmen's Band played several selections.

Mr. McCarter's talk was an intimate explanation of the difficulties connected with the conduct of Public Service affairs in particular and of public utility affairs in general. He paid a tribute to the 723 Public Service men already in war service and said that those who remained behind must carry the load of those who have gone to the front. When he addressed the combined company section one and one-half years ago on the occasion of the opening of the new terminal he had felt that the most difficult problems of the company were in the past, but the war has entirely changed the situation.

The three elements of public utility operation in which serious shortage now exists are men, materials and money. These are all so interrelated that shortage in one causes shortage in all. The lesson for all public utility employees is that they must "hew to the line of the closest economy." Under the present conditions it may be necessary to defer desirable improvements and even to let non-essentials of maintenance stand for a while. For example, the war must be won even if a car goes unpainted for a few months now and then. Above all, every employee must take upon himself the responsibility for doing each week more than a full week's work, if necessary.

Referring to the difficulty of securing capital for desired public utility improvements, Mr. McCarter analyzed conditions in the money market with reference to these properties, pointing out that there is now no incentive to investment in public utilities. The stock of first-class corporations has tumbled in value due to the lack of public confidence. In explanation of this condition it is often stated that the corporations are suffering for the sins of earlier days. The fact is, however, that we are not now concerned with what happened fifteen years ago, when the conditions may or may not have been as alleged; what we want to know is what is going to happen fifteen years hence. There are many ways in which the conditions of the public utility corporations can be ameliorated, and it is possible that the government may come to their relief. The users of electricity, gas and transportation can also help by spreading out their demands over longer periods, thus reducing the "peaks." Employees of the corporations can explain, as opportunity offers, the facts regarding the furnishing of service by their employers. Such facts, for example, as those given to his audience by Mr. McCarter regarding the burden imposed locally by the excessive prices of coal can be passed on to a wider audience.

In conclusion, the speaker stated his conviction that the problems before the industry, however difficult, will be solved, but it will take continued and vigorous co-operation to insure their solution.

War Board Issues Bulletins

For the American Electric Railway Association War Board, Director C. Loomis Allen is sending out Bulletins No. 1 on coal conservation and No. 2 on public improvements.

The first is accompanied by a reprint of General Letter No. 18 of the United States Fuel Administration addressed to state fuel administrators, which appears on page 1033 of this issue of the ELECTRIC RAILWAY JOURNAL. The War Board bulletin contains eight suggestions as to possible ways in which electric railways can save fuel. They are in substance as below:

1. Eliminate unnecessary service.
2. Increase the use of skip-stops.
3. Reduce car heating, and
4. Waiting room heating.
5. Secure co-operation of industries in flattening load peaks by distribution of opening and closing hours.
6. Keep company movements off the load peaks.
7. Enlist the co-operation of motormen in efficient car operation. (Suggested pledge is appended.)
8. Operate power plants for best over-all economy in power production.

Bulletin No. 2 is based upon a letter from Hon. Newton D. Baker, secretary of war and chairman Council of National Defense, relative to the elimination of all unnecessary public improvements during the period of the war. Mr. Allen urges that the matter be brought by the electric railways before the public authorities of their respective communities.

Included with the bulletins is a letter on the subject of coal reports, calling attention to the data sheet issued last August. It was described on page 317 of the Aug. 25 issue of this paper. A duplicate of the data sheet (No. 173) accompanies the letter.

Section No. 9 Is Busy Again

At the first meeting of the season of the Cumberland County Power & Light Company section the following officers were elected for the ensuing year: President, C. W. Bent; vice-president, Charles Gilman; treasurer, W. W. Blake; secretary, Percy C. Pratt; trustee, F. F. McNeill. Cyrus S. Ching, superintendent of instruction Boston Elevated Railway, was the principal speaker of the evening. He talked on the relation of electric railway employees to the public. Five new members were added to the section.

The second meeting was held on Nov. 5 and was addressed by Lieut.-Col. F. W. Stopford, 303rd Field Artillery, Camp Devens, Mass., on the subject "Making Soldiers at Ayer."

Milwaukee Section's New Officers

Continuing the series of short articles begun recently giving biographical notes to depict the careers of the company section officers, the following is presented regarding Section No. 1.

F. A. Luber, who was elected president of the Milwaukee Electric Railway & Light Company section on Nov. 8, was secretary of the section during the last year. At the present time his service with the company is in the capacity of chief draftsman. He entered the employ of the company as architect in June, 1910, and previous to that time was associated with a prominent Milwaukee architect. Mr. Luber has been a member of the American Electric Railway Association since 1911.

F. A. LUBER
President,
Milwaukee E. R. & L. Co. Section

LOUIS BEIHOFF
Secretary,
Milwaukee E. R. & L. Co. Section

Louis Beihoff, secretary of the section, is bill clerk in the purchasing and stores department. He has been connected with the company for eleven years, beginning as messenger in the accounting department. Mr. Beihoff has also been interested for several years in the work of the association and has been most active in connection with the entertainments and other social work of the section.

Civil Engineers Open New Headquarters at New York

On Dec. 7 a general convocation of the American Institute of Mining Engineers, American Society of Mechanical Engineers, American Institute of Electrical Engineers and United Engineering Society was held at New York for the purpose of welcoming the American Society of Civil Engineers into the fraternity of the "founder societies" formerly comprising the United Engineering Society, and into occupancy of the enlarged Engineering Societies' Building at 29 West Thirty-ninth Street. A three-story addition has been completed upon the roof of the original building, giving the A. S. C. E. two fine floors for offices, reading room and directors' room, and accommodations for its library, now a part of the United Engineering Society's library. The American Electric Railway Association formerly had offices in this building.

COMMUNICATION

The Value of a Company Section

The Metropolitan West Side Elevated
Railway Company,
Chicago, Ill., Nov. 22, 1917.

To the Editors:

Referring to your inquiry as to the results obtained from our company section, I take pleasure in stating as follows:

Our experience leads us to the conclusion that this organization is invaluable to the railway. It has done a tremendous amount of good for our men and our company. The important points in connection with the company section work as they appear to me are these:

1. Men attending the meetings from various parts of any system become acquainted personally during the social part of the meeting. These men exchange ideas; they become acquainted with conditions prevailing in different parts of the system. After they become acquainted personally any business done between them, either by telephone or correspondence, is handled more efficiently and to better advantage than before.

2. Members of the supervisory force have an opportunity to meet the heads of departments and officials of the company on an equal footing. As a rule the men desire to know their officials and to be able to meet them and talk with them outside of the daily routine. It is also a big advantage for the officials to get this personal contact with those reporting to them as it produces a better understanding and heartier co-operation.

3. The subjects for papers and discussions are selected so that the company section becomes a school of instruction. Each department gets acquainted with the work of all other departments. This broadens the experience and knowledge of all those attending the meeting, and makes each man more valuable to his employer on account of his increased knowledge and usefulness.

4. The meetings give the officials of the company a splendid opportunity to reach the entire supervisory force at one time in personal appeal in regard to any important subject or detail concerned in the efficiency of operation. As an example of what I have in mind our October meeting may be mentioned. This meeting was devoted to getting the supervisory force ready for the operation of coasting clocks. It would have been impossible to have presented this subject effectively without a meeting of this kind.

5. The individual who attends the meetings benefits by the broadening of his views and knowledge. Taking part in the discussions enables him to develop the ability to get upon his feet in a gathering and talk. The question box presents an opportunity for him to secure correct information upon points which are not clear to him.

6. The entertainment which is always mixed in with the more serious work gives the men an opportunity to get clean, wholesome recreation under good surroundings.

7. The company section is a very important factor in securing and maintaining the "morale" of the organization.

Britton I. Budd, President.

EQUIPMENT and MAINTENANCE

HAVE YOU A GOOD WAY
OF DOING A JOB?
—Pass It Along

These Articles Have Been Selected to Provoke Thought and Stimulate Discussion. All of the Technical Departments Are Represented

Photographing a Tunnel Interior

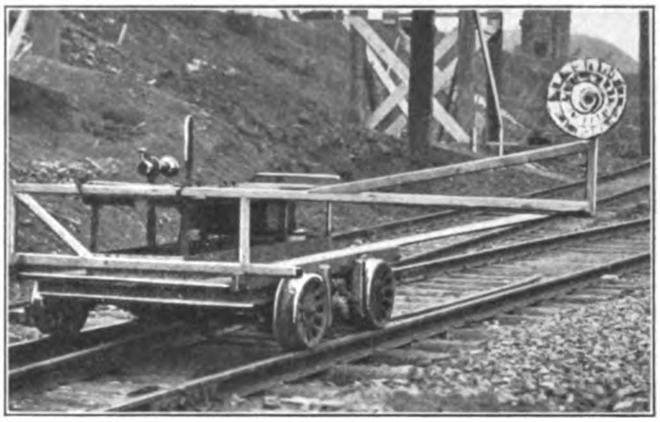
An Effective Method Used in the Mount Royal Tunnel in Canada

BY J. C. K. STUART
Assistant Engineer Mount Royal Tunnel & Terminal Company, Montreal, Canada

Photography underground is at its best a disheartening job, but with practice and experience results can be obtained, even in tunnel photography, with very simple artificial lighting apparatus, that are almost as good as those obtained by daylight. This consists of a portable lamp with reflector, which is moved along to illumine successively all parts of the interior which is to be photographed.

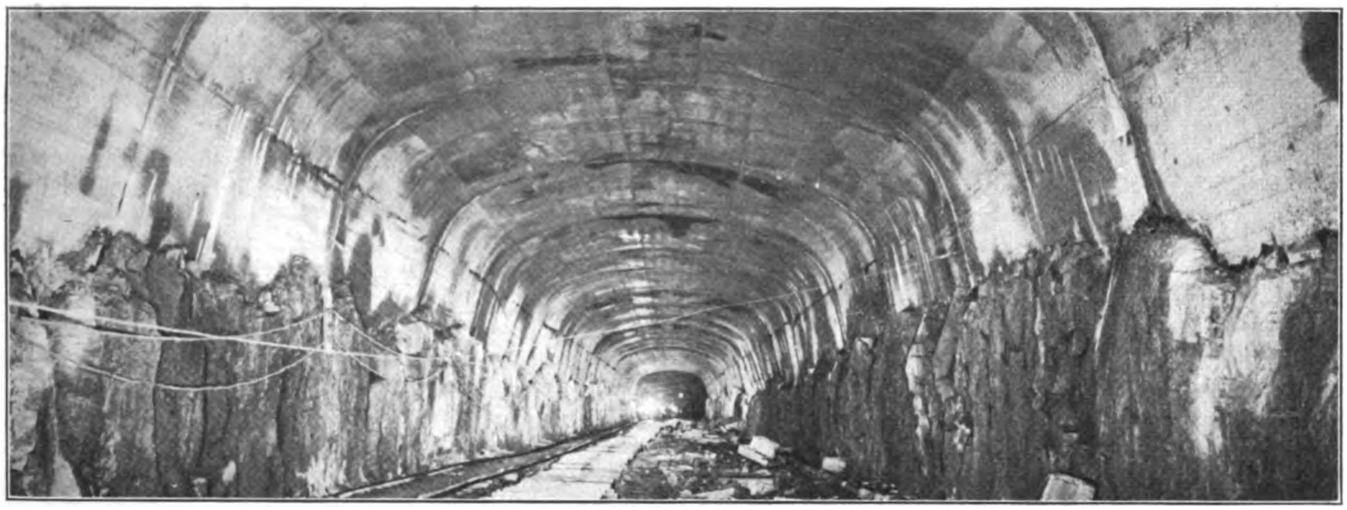
The photographs used in Mr. Lancaster's article elsewhere in this issue show what can be accomplished by this plan, and a brief description of the apparatus and methods used to obtain these photographs is given in the following paragraphs:

The camera needs no description—almost any type will serve—but an anastigmat lens of the cemented type will give negatives that are more brilliant than a lens of the air-space type under tunnel conditions. There is no need for a large aperture. Most of the photographs used by Mr. Lancaster were taken with the lens stopped to full. The plates must be backed or double coated. The lighting apparatus consists of a 1000-watt, 110-volt, tungsten, concentrated filament lamp mounted in a mirror reflector, designed in such a way that the light from it is very evenly diffused, with no concentrated ray, but only one small dark spot in the center of the circle of illumination. The reflector and lamp are shown in one of the photographs.



HAND-CAR WITH PROJECTION LAMP

To obtain a long perspective of a tunnel the lamp must, of course, be carried down the tunnel ahead of the camera and pointing away from it, thus illuminating every part of the tunnel successively, starting directly in front of the camera and ending, say, 1000 ft. from it, or whatever distance is required in the photograph. The lamp may be carried in the hand and current fed to it by a wire of the required length attached to the tunnel lighting system, but for long perspective views it is better to mount the lamp on a small push car connected to an electric locomotive about 250 ft. away by means of a light rope and a wire for furnishing the current to the lamp. The man attending the

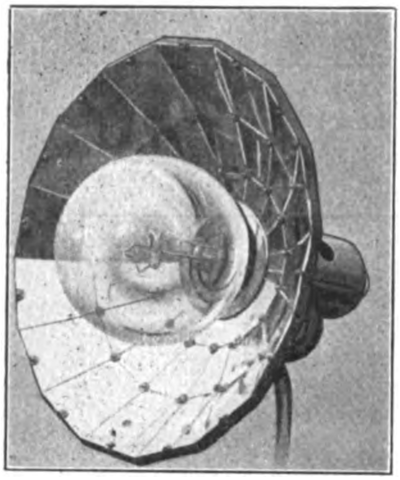


MT. ROYAL TUNNEL INTERIOR PHOTOGRAPHED BY MR. STUART'S METHOD

lamp must keep his body between the lamp and the camera, or else the light from the ventilating holes in the socket will strike the lens.

If any hitch occurs during the taking of the photograph, such as the catching of the wire in the track, necessitating a stop, the lamp man puts out his lamp until all is clear, lighting it again as soon as he starts to move on.

A few experiments will give the right speed of the lamp for the correct exposure of the plate for different sizes of tunnel, but as the distance from the camera to the lamp increases the speed at which the lamp travels must increase.



REFLECTOR AND LAMP FOR TUNNEL PHOTOGRAPHY

To obtain proper exposure of the tunnel floor the camera must be set up as high as possible, but not so high as to dwarf the height of the tunnel in the photograph.

Sectionalization of Overhead for Three-Wire Operation

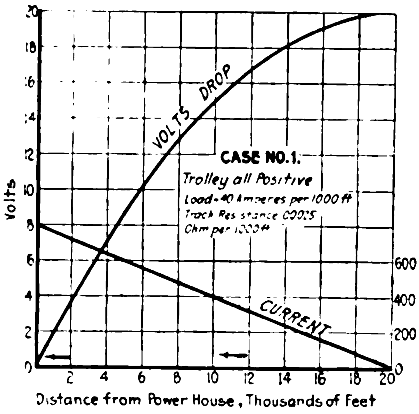
The Author Explains the Fundamental Principles Involved in Several Arrangements of Trolley Sections

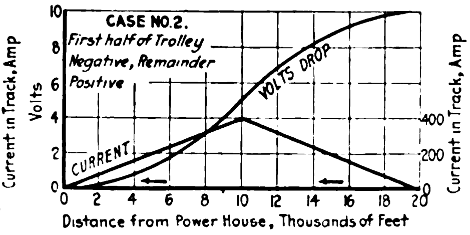
BY E. R. SHEPARD
Associate Electrical Engineer United States Bureau of Standards, Washington, D. C.

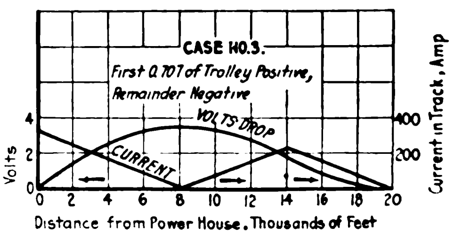
There is a growing interest in the three-wire principle of power distribution for electric railway work as a means of reducing track gradients and energy loss in the return circuit. In the several installations where this principle has been employed, the primary object in adopting it has been the mitigation of electrolysis.

Electrolysis conditions, however, are so strongly affected by the trolley sectionalization that it is extremely important for the engineer wishing to experiment with or adopt this method of power distribution fully to understand the several effects produced by each arrangement of the trolley sections.

The accompanying curves show the track current and the voltage drop in the track for five different arrangements of the trolley sections as compared with conditions prevailing under normal or two-wire operation. The curves are based on the following assumptions: Twenty thousand feet of double track, the resistance of which is taken as 0.0025 ohm per 1000 ft. (100 lb. rails, well bonded); a load of 40 amp. per 1000 ft. of track, assumed to be uniformly applied. This is equivalent to a headway of between three and four min. each way.







DIAGRAMS OF CURRENT AND POTENTIAL WITH DIFFERENT TROLLEY ARRANGEMENTS

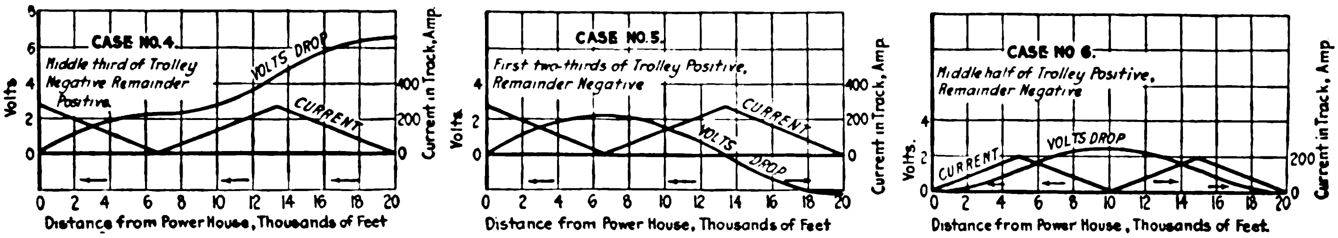
Case 1—Trolley all positive. Case 2—One-half of trolley positive, one-half negative. Case 3—Seven-tenths of trolley positive, three-tenths negative

Case 1 is that of normal operation with the trolley all positive. It is seen that the current on the track increases uniformly from zero at the end of the track to 800 amp. at the power house. This corresponds to a maximum gradient at the power house of 2 volts per 1000 ft. The voltage curve showing the drop in voltage from any point on the track to the power house is obtained by integrating the *IR* drop over the entire length of the track, its equation being that of a parabola. The total drop is seen to be 20 volts.

In Case 2 the first half of the trolley is supplied with current from a negative generator, and the outer half from a positive generator, a 1200-volt trolley breaker being required between the two sections. Under this arrangement the outer half of the track is uniformly collecting current, while from the first half the current is being uniformly withdrawn through the cars and returned to the power house over the negative feeder. The cars on one-half of the track are, therefore, in series with those on the other half, and no current is returned to the power house over the track or neutral conductor. In the practical application of this arrangement, as the cars move back and forth across the section breaker, there will be an unbalanced portion of the load at times which must return to the station or be supplied from the station over the track. The maximum track current, track gradient and overall potential are here only one-half as great as in Case 1.

Where the traffic is frequent, as on city streets, the unbalancing is not serious and the average currents and potentials, which really determine electrolysis conditions, are not essentially different from those shown in the curves.

In Case 3, the first 0.707 of the trolley is positive and the remainder negative. This is the condition for a zero over-all potential. As shown by the arrows, there is an outward flow of current over a portion of the track and both extremities are at a lower potential than the intermediate region. The effect of this is to produce two positive areas in the underground piping systems and to require drainage of telephone and power cables at two points instead of one. Such a condition



DIAGRAMS OF CURRENT AND POTENTIAL FOR SEVERAL THREE-WIRE DISTRIBUTION PLANS

Case 4—Middle third of trolley negative, remainder positive. Case 5—One-third of trolley negative, two-thirds positive. Case 6—Middle half of trolley positive, ends negative

might be taken care of satisfactorily, were it not for the fact that the shifting loads which occur in practice cause the potential of the outer end of the track to fluctuate through rather wide limits. By shifting the trolley section breaker from the 0.707 position to the two-thirds position, as shown in Case 5, the potential of the outer end of the track falls to more than two volts below that at the power house. A slight shift of the breaker in the opposite direction would raise its potential correspondingly. It follows, therefore, that if pipes or cables are drained to the outer end of the track, as well as at the power house, under conditions similar to those shown in Cases 3 or 5, a shifting of the load will result in a fluctuation of the potential between these two points and an unnecessary transfer of current over the drained structures.

This objection is overcome in Case 4 where the middle third of the trolley is negative and the remainder positive. It will be seen that here the gradient is continuous from the outer end of the track toward the power house, although at one point it drops to zero. The maximum track current and over-all potential are reduced to one third of the corresponding values of Case 1. Unless considerably more than one-third of the load be reversed there is no danger of getting two low-potential points on the track as occur in Cases 3 and 5.

Another arrangement of trolley sections is shown in Case 6, where the middle half of the trolley is positive and the two end sections negative. The track currents and gradients are here limited to low values, but the same objection is encountered as in Cases 3 and 5.

In locations where the outer end of the track extends into an undeveloped territory, with no underground structures present, this objection is not pertinent, and the arrangements shown in Cases 3, 4 and 6 may be employed with no bad consequences. The actual arrangement of the trolley sections in any particular instance where a two-wire system is being converted for three-wire operation will, of course, depend very largely upon the existing arrangement of the feeders. It will usually be desirable to employ these with as few changes and additions as possible, and they may easily prove to be the determining factor in the sectionalization of any system.

In the Omaha installation, which was described by E. H. Hagensick in the ELECTRIC RAILWAY JOURNAL for Nov. 10, the remote feeding sections were designed for negative polarity, principally because the layout of the feeders did not conveniently permit of any other arrangement. The electrical characteristics of this system are very similar to those shown in Case 3, and for that reason it was found desirable to resort to drainage of the telephone cables at some points. Some of the reversed sections, however, were in undeveloped territory, where no cables or gas pipes existed, and very few water pipes, and in these locations no drainage has been thought necessary.

In Springfield, Mass., where the system is being modified for three-wire operation, a middle zone was selected for negative polarity, and it is believed that the conditions will closely approximate Case 4. This arrangement was, however, necessary from an entirely different consideration. Some of the outlying sections were supplied by feeders which acted also as tie lines to substations some miles distant on the interurban lines, and it was therefore necessary to maintain these at the normal or positive polarity. A zone immediately adjacent to the power station is also to be supplied from positive generators, leaving a middle zone for reversed polarity.

Where tracks closely parallel each other, as on adjacent streets, they should be of the same polarity. With one positive and the other negative, the currents would flow in opposite directions in the two tracks and give rise to high gradients through the earth between the extremities of the two feeding sections. If, however, the parallel tracks are sufficiently close together to permit of cross-bonding between them, this arrangement would be ideal, as the cross-bonds would equalize the potential between the tracks and prevent the flow of leakage current.

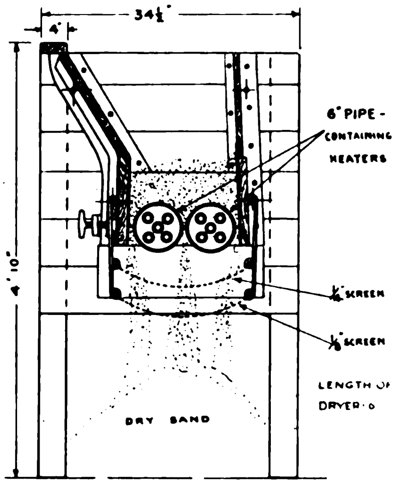
Where the three-wire principle is to be employed as a means of electrolysis mitigation, and no other consideration would seem to justify its adoption at this time, too great care cannot be given to the matter of the sectionalization of the trolley.

Electrically Heated Sand Dryer Used in Vancouver, B. C.

Low Rate for Electric Energy Makes It Practical to Use Electric Sand Dryer in Place of Coal Stove

Drying sand electrically has been found by the British Columbia Electric Railway to be more economical than the use of a coal-heated dryer. The electrical dryer which has taken the place of the coal stove is shown in the two illustrations. It consists essentially of a wooden hopper, the lower half of which is lined with sheet iron backed by asbestos. In the bottom of the hopper are two 6-in. iron pipes, each containing five heater units connected in series. Each section unit consists of a piece of ¾-in. iron pipe wrapped with four layers of 1/64-in. asbestos tape, over which are wound 540 turns of No. 16 gage soft iron wire. The wire is wound eight turns to the inch.

The heating units are supported by means of marble blocks which fit into the ends of the 6-in. pipes. Besides the holes in which the heating units rest the marble blocks have small vent holes to allow any moisture in the pipes to escape. One unit in each set is coupled at the back end of the box so that it can be used for heating water for washing purposes. Under the hopper are two wire mesh screens about 4 in. apart and suspended by means of hooks so that when necessary to clean them they can be dropped from one side and the screening collected on the sheet below.

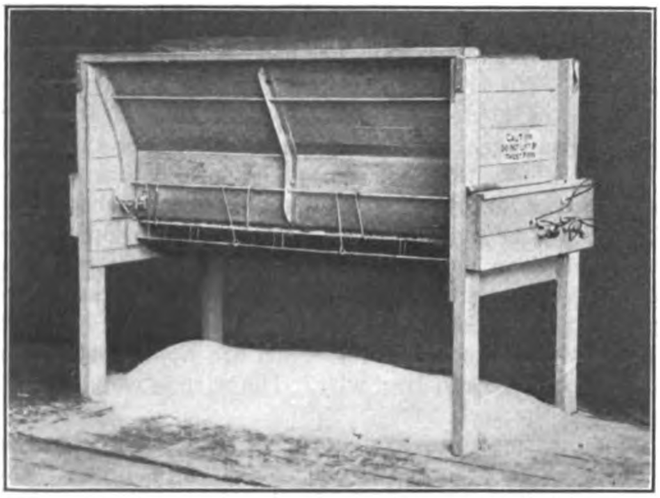


CROSS-SECTION OF ELECTRICAL SAND DRYER

The wet sand is thrown into the hopper at the top and as it drys it finds its way by gravity through the ½-in. openings around the heaters. It flows in a steady stream through the screen to the floor beneath, and after the hopper has been filled no attention is necessary except occasionally to stir the sand with a stick. The steam from the wet sand passes upward, warming the sand in preparation for drying. In order to prevent the wet sand from packing in the hopper the side walls are spread so that the bottom is about 2 in. wider than the top. In addition some adjustment of the sloping side walls is provided by adjusting screws on the front side of the hopper.

The hopper holds about ⅔ cu. yd. of sand and will dry two and one-half charges in nine hours. The current consumption is 16 amp. at 550 volts or 8.8 kw. The cost of power is 1 cent per kilowatt-hour so that the rate for drying the sand electrically is 47½ cents per cubic yard. The sand stove previously used held 0.46 cu. yd. and required 275 lb. of soft coal to dry one charge. At $6.50 per ton the cost of drying sand by this method was $1.90 per cubic yard. In addition to the necessity for tending the fire there was a further labor cost of screening the sand after it has been dried. In the electric dryer this is taken care of automatically.

An advantage of the electric dryer is that the temperature can be easily regulated and kept at the proper point, whereas with the coal dryer it was difficult to regulate the fire and often the sand was burnt. The cost of the electric dryer complete and installed in place was less than two-thirds that of the coal stove.



ELECTRICAL SAND DRYER USED IN VANCOUVER, B. C.

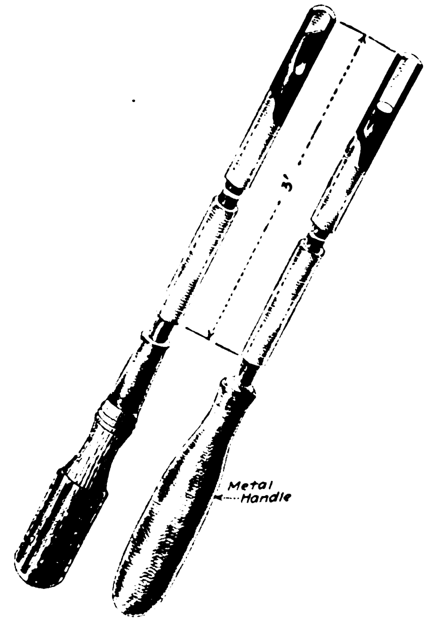
Screwdriver and Hammer for Use in Out-of-the-Way Places

Handy Tool Which Can Be Made of Material Available in Any Shop

BY F. L. HINMAN

Master Mechanic New York State Railways, Syracuse, N. Y.

We have been using in our shops a simple but handy tool devised by D. H. Purdy of the electrical department of this company which has proved very satisfactory in driving nails and screws at points difficult to reach with the ordinary tools. It consists of a piece of ¼-in. gas pipe about 3 ft. long forming a barrel in which slides either the shank of an extra long 5/16-in. screwdriver, or a flat ended rod provided with a metal handle at one end.



SCREWDRIVER AND HAMMER FOR USE IN OUT-OF-WAY PLACES

In using this tool the screw or nail is dropped head down into the barrel, by which it is guided while being driven home with the driver or hammer respectively.

The tool has been found particularly useful in overhead work, such as putting up electric cable, etc., but there are many jobs on which it can eliminate the battering of fingers and tiring of back muscles.

The Railroad War Board states that the anthracite roads hauled during the first eight months of 1917 7,668,382 tons more anthracite coal than during the corresponding period for 1916. This is an increase of 17.18 per cent. During August, the tonnage hauled was 1,583,609 more than in August, 1916, or 28.35 pen cent. The July increase was 24.38 per cent and the June increase 25.24 per cent. These figures show that any reports to the effect that there has been a severe curtailment in the production and distribution of anthracite coal are based upon rumor rather than fact.

Cost Data on Special Work Renewals—VIII

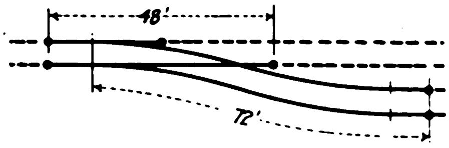
By M. BERNARD

**Assistant Engineer Way & Structures Department,
Brooklyn (N. Y.) Rapid Transit System**

This is the eighth plate of the series of Cost Data on Special Work Renewals. The previous plates were published in the issues for July 21, Aug. 18, Sept. 8, Sept. 29, Oct. 27, Nov. 10, and Nov. 24

Fig. 28—Side Turnout

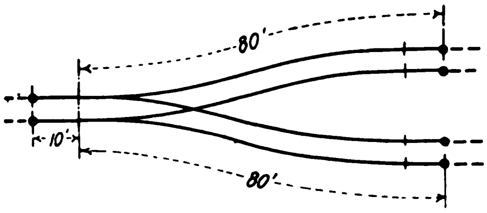
Length—120 ft. single track
Construction removed—9-in. girder rail*—8-in. granite on sand.
New construction—9-in. girder rail*—8-in. granite on concrete.



	Light Traffic	Average Traffic	Heavy Traffic
Labor	$190.00	$230.00	$280.00
Handling	80.00	85.00	90.00
Miscellaneous	30.00	35.00	45.00
Total (except materials)	$300.00	$350.00	$415.00
Cost per single track foot	2.50	2.91	3.46

Fig. 29—Equilateral Turnout

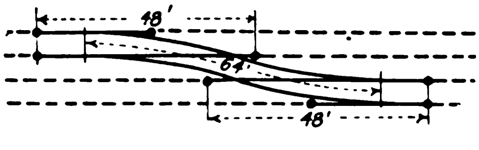
Length—170 ft. single track
Construction removed—9-in. girder rail*—8-in. granite on sand.
New construction—9-in. girder rail*—8-in. granite on concrete.



	Light Traffic	Average Traffic	Heavy Traffic
Labor	$290.00	$350.00	$420.00
Handling	95.00	100.00	110.00
Miscellaneous	45.00	50.00	60.00
Total (except materials)	$430.00	$500.00	$590.00
Cost per single track foot	2.53	2.94	3.47

Fig. 30—Right Hand Cross-over

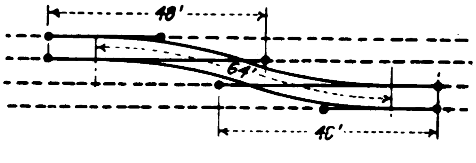
Length—160 ft. single track
Construction removed—9-in. girder rail*—8-in. granite on sand.
New construction—9-in. girder rail*—8-in. granite on concrete.



	Light Traffic	Average Traffic	Heavy Traffic
Labor	$270.00	$330.00	$400.00
Handling	90.00	95.00	105.00
Miscellaneous	40.00	45.00	55.00
Total (except materials)	$400.00	$470.00	$560.00
Cost per single track foot	2.50	2.94	3.50

Fig. 31—Right Hand Cross-over

Length—160 ft. single track.
Construction removed—9-in. girder rail*—8-in. granite on sand.
New construction—7-in. girder rail*—5-in. granite on concrete.



	Light Traffic	Average Traffic	Heavy Traffic
Labor	$315.00	$365.00	$425.00
Handling	110.00	120.00	130.00
Miscellaneous	50.00	55.00	65.00
Total (except materials)	$475.00	$540.00	$620.00
Cost per single track foot	2.97	3.31	3.87

*Hard-center construction. *Explanation:* By "light traffic" is meant either the divergence of cars during progress of work or a traffic of not more than 150 cars per day of twenty-four hours. "Average traffic" denotes the passage of about 325 cars per day of twenty-four hours, and "heavy traffic" that of 750 or more.

By "labor" is meant the labor cost of tearing out the old paving and special work and installing the new at the location where the work is done. "Handling" signifies the cost of loading the necessary materials at the various storage yards as well as the unloading of same at the place of renewal. It also includes the cost of transportation and the cost of removal of old or left-over material. Since the transportation is done by a subsidiary company, which adds profit and overhead expense to the net cost, this item may differ considerably from that obtained on other railways. Under "miscellaneous" are included the expense of city inspectors, expense incurred when portable crossovers are used for divergence of cars during renewal, watchmen's wages, and incidental engineering expense. The total of these three items—labor, handling and miscellaneous—therefore includes everything except the cost of materials.

On account of the unsettled labor conditions prevailing since the beginning of the war, the costs given are based on pre-war wages, the average track labor on which these costs are based is 20 cents per hour, including the foreman's wages.

Individual Passenger Travel Record Assists Tax Collection

The form of record produced by the Bonham traffic recorder which records the stations at which each passenger boards and leaves a car, the miles traveled and cash fare paid, has taken on a new advantage since the passage of the new revenue law. The record which this device prints and which is turned in by each conductor at the end of his run not only provides all the information necessary in checking the tax collections which must be made at the time of collecting cash fares but provides it in a form which could be very easily checked by the government officials. The war tax on tickets purchased at local offices is of course taken care of by the agent, but the manner of collecting this tax payable on cash fares has caused some concern on various interurban properties.

WAR TAX RECORD, CASH FARES, NOV. 6 1017

TRAIN	CONDUCTOR	3 .36-.43		4 .44-.56		5 .57-.68		6 .69-.81		7 .82-.93		8 .94-1.06		TOTAL	
53	H S Jones	11111	.15	11	.08	1	.05	111	18					.46	
58	"	111	.09	111	.12	11	.10	1111	24	11	14			.69	
63	"	111111	.18	11	.08	111	.15	111	18	111	21			.80	
68	"	11	.06	111	12	1111	.20	11	12	1	.07			.57	
73	"	1	.03	11	.08	11	10	1	06	11.1	29			.54	
78	"	111	09	111	.12	1	.05	111	18	11	.14			.58	3.62
21	L T Ross	1111	.12	11	08	11	.10	1111	20	1	.07			.57	
26	"	11	.06	111	.12	1	.05	111	18	11	.14			.55	
31	"	~~11111~~	.15	11	.08	11	.10	11	.12	1	.07			.52	
36	"	111	09	111	.12	1	.05	111	18					.44	
41	"	1111	.12	11	.08	1111	.20	1	.06	11	.14			.60	2.68
TOTAL															6.30

FORM USED IN TAKING TAX DATA FROM TRIP RECORD, T. H., I. AND E.

The Terre Haute, Indianapolis & Eastern Traction Company has found that the tax due the government can easily be totalized from the trip record of each conductor, as printed by the Bonham recorder, with the help of the printed form reproduced herewith. A clerk in the auditing department enters the train number and name of conductor as these appear on the recorder records. He then goes down the list of cash fares paid and places a mark in the proper column on the form for each fare over 35 cents. He then simply multiplies the number of these marks in each column by the tax amounts due on each ticket as shown at the top of the column and puts down the total. These amounts for the different rates of tax are then carried across and totaled at the right. The average trip report can be checked in a minute and a half.

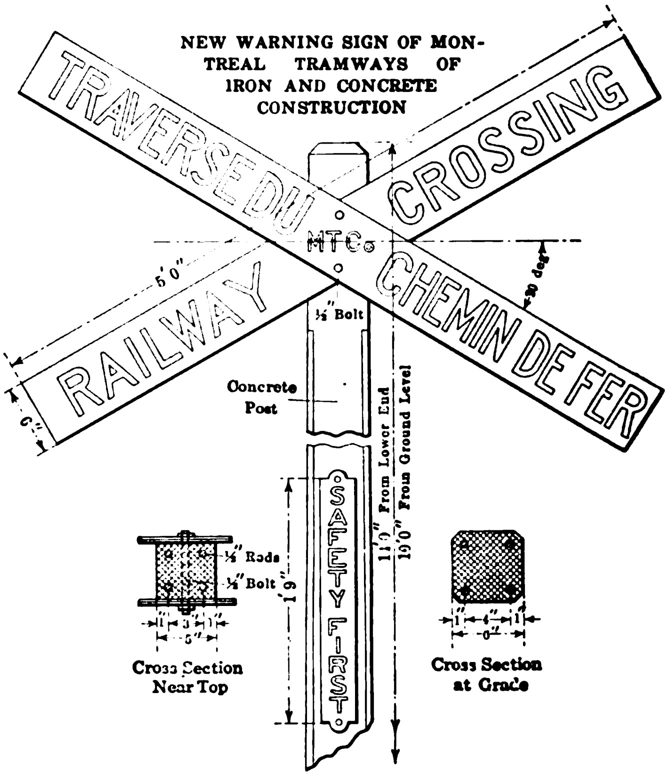
In a similar manner, the clerk goes through the turn-in record for each run made by that conductor for the day, finally totaling the tax amounts due from that conductor for his day's business. This figure, added to the total cash collected by him for fares, should tally with his total cash turn-in.

These records from the recorders and the summary sheets on which the cash returns are figured, are inclosed in an envelope and filed by days and by conductors. In this form it is a very simple matter to go back at any time and recheck the figures on any run or for any conductor. In case the government officials investigate the turn-ins of the electric railways, it would therefore seem that this system of recording the passenger traffic data and summarizing it would be of great assistance to the company in substantiating any questioned returns.

A reproduction of a typical Bonham record was published on page 272 of the Aug. 18, 1917, ELECTRIC RAILWAY JOURNAL.

A Substantial Highway Crossing Warning Sign

With a view to obtaining a warning sign which should be permanent, require little attention for maintenance and present an attractive appearance, the Montreal Tramways has adopted the construction shown in the accompanying drawing. The signboards or blades are of cast iron, enameled, the letters being in white on a black background. The blades are 5 ft. long, 6 in. wide with letters 4 in. high. The blades are set at an angle of 30 deg. from the horizontal. The wording of the warning is in French as well as in English, because a large proportion of the local population is more familiar with the former language than the latter.


NEW WARNING SIGN OF MONTREAL TRAMWAYS OF IRON AND CONCRETE CONSTRUCTION

The posts are of reinforced concrete, one part cement, two parts sand and four parts ½-in. broken stone. The concrete is waterproofed with hydrated lime mixed dry with the cement, and the posts are painted with waterglass. They are finished with bands of white and black alternately, painted at an inclination of 45 deg. and 4 in. wide measured perpendicularly to the direction of the bands. Attached to the post at eye level is a cast-iron safety-first plate lettered like the blades, but with letters 1½ in. high.

The posts are 14 ft. in length, 4 ft. being buried in the ground. They are reinforced with ½-in. rods, and the blades and safety-first plates are bolted through the posts. The cost figures are not yet available, but the design was not made with the lowest possible first cost in mind but rather with a view to ultimate economy.

News of Electric Railways

Traffic and Transportation
Financial and Corporate Personal Mention Construction News

Action on St. Louis Grant Postponed

Public Utilities Committee of Aldermen Puts Over Consideration of United Railways Settlement Grant

The public utilities committee of the Board of Aldermen of St. Louis, Mo., on Nov. 26 decided to postpone consideration of the proposed settlement ordinance for the United Railways for a week. The committee declared that a delay might result in new and valuable information being brought out by the opponents of the settlement. If valid objections, based on facts, were offered the committee declared its willingness to draft a substitute bill embodying such suggestions. In discussing the $60,000,000 valuation clauses of the proposed bill, the committee indicated that material changes might be made with respect to the conditions which have been proposed to govern the appraisal.

AMENDMENTS PROPOSED

C. E. Smith, consulting engineer of the public utilities department, told the committee on Nov. 26 that if the $60,000,000 value was not acceptable as the purchase price by which the city could buy the property, a clause could be drafted providing that, if the city desired to buy it at the end of any five-year period during the life of the franchise, a valuation of the property might be made at that time in a manner specified in the ordinance.

It is stated that Mayor Kiel and City Counselor Daues have decided to offer radical amendments to the settlement bill. Instead of a board of control on which the company will name one member and the city one an amendment prepared by Mr. Daues will substitute the Public Service Board as the body that shall order extensions of lines and improvements of service. In addition to this the amended bill will set forth in detail the minimum amount of increased service to be furnished in the future. Another amendment to be drafted by Counselor Daues will require the immediate payment of the accrued mill tax amounting to more than $2,000,000, with a proviso that if it is paid in installments within five years the company shall pay 6 per cent interest on deferred payments. The present bill gives the company ten years in which to pay the accrued mill tax and provides that no interest shall be charged during the first five years on deferred payments.

Counselor Daues said that the amendments he was drafting were suggested in conference with an alderman on the utilities committee. Mayor Kiel frequently expressed the hope that any franchise settlement bill would be subjected to a public vote under the referendum provision of the new city charter, so that nothing might be enacted that did not meet with the approval of the taxpayers and voters of the city.

Dallas Improvements Approved

The improvements outlined by R. Meriwether, general manager, to be carried out by the Dallas (Tex.) Railway under the new service-at-cost franchise were approved by the City Commission at a special session on Nov. 28. It is proposed eventually to carry out work under the program to a total of $1,000,000. For the immediate future the expenditure of $400,000 is contemplated. Three new lines will be established and two that are now in operation will be discontinued. The plans for the program of betterments were reviewed at some length in the ELECTRIC RAILWAY JOURNAL of Nov. 17, page 914.

Immediately following the approval of the plan as submitted, the company notified the Lorain Steel Company, from which it had contracted for the purchase of 1400 tons of rail with special work, to proceed with delivery. This steel was contracted for at $57.60 a ton, all for delivery within three months. Mr. Meriwether explained that the steel company had stated that it was necessary to make immediate delivery of the entire order or delay the shipment for some time. Mr. Meriwether in a communication to the City Commission outlined the improvements that will be made at once.

Short Strike on Maine Road

Precipitate Action of Men Repudiated by Union's International Officer

The Lewiston, Augusta & Waterville Street Railway, Portland, Me., which has been using the Rooke register for cash fare collections on the local lines for about eight months, posted a notice on Sunday afternoon, Dec. 2, requiring the use of this register on certain interurban lines where hand collection of the 5-cent fares in each zone had heretofore been the practice.

Certain men on the Lewiston division resented the extension of the use of the register to the lines upon which they worked, and without even the formality of a vote of the union local, induced the men on that division not to operate cars on Dec. 3.

VICE-PRESIDENT FORD ADDRESSES MEN

On the evening of Dec. 4 the strikers held a meeting, at which A. H. Ford, vice-president and general manager, addressed the men. He made it plain that the men had violated their written contract, had caused a serious loss to the merchants and working people of the community, to say nothing of the loss to the company, and that their action was generally condemned. Mr. Ford appealed to the men to resume work, stating that if they did so at once they would be taken back without prejudice and that any matters in dispute between them and the company could then be handled as provided for in the contract.

After going into executive session the union replied that the men would return to work on the condition that the Rooke register be eliminated from the entire system, including the local lines where it had been in use for a long time; that the company immediately discharge nine loyal men whose only offense was that they were delinquent in their union dues; that no record be made against any of the strikers for their actions that day, and that the men receive a full day's pay for the time they were out on strike.

Mr. Ford said that he could not agree to these conditions.

On the morning of Dec. 4 the men on the Augusta division, who were affiliated with another local of the Amalgamated Association, struck in sympathy with the Lewiston men, without the formality of a strike vote or the sanction of the national body and contrary to their contract with the company. In the meantime service in and around Lewiston was maintained at about 25 per cent normal.

INTERNATIONAL OFFICER DISCLAIMS RESPONSIBILITY

On the afternoon of Dec. 4, P. J. O'Brien, international vice-president of the Amalgamated Association, arrived in Lewiston and asked for a conference with the company officials. At that conference he disclaimed for the Amalgamated Association all responsibility for the strike, saying that it was not authorized or supported by the association. He confirmed the company's stand in maintaining that the matter of fare collection was wholly one of management and that it was the duty of the men to proceed to the best of their ability along the lines mapped out by the compnay. He asked that the men be permitted to return to work on the morning of Dec. 5 without conditions of any sort. His offer was accepted and full operation was resumed on that date.

Seattle Extension to Proceed

Municipal Railway to Be Continued from Thirteenth Avenue West to Market Street and Leary Avenue

Upon a showing made by Hugh M. Caldwell, corporation counsel of the city of Seattle, Wash., that at least $53,000 had been subscribed for a railway utility bond issue of $40,000 to provide for the extension of Division A of the Seattle Municipal Railway into Ballard, Judge Calvin S. Hall recently denied the petition of T. N. Haller, a taxpayer, for an order enjoining the city from transferring $35,000 from the general fund to the street railway fund, as a loan. The denial of the injunction is an official recognition of the solvency of the street railway fund, and allows the completion of the railway from Thirteenth Avenue West to the intersection of Market Street and Leary Avenue. This work was begun some weeks ago by funds of the streets and sewers department.

Following the over-subscription of the railway bond issue, the city utilities committee, anticipating revenues sufficient to meet interest and provide for the early retirement of the bonds, has introduced a bill in the City Council whereby the line, instead of terminating at Market and Leary Streets as heretofore planned, will be built at once to West Sixty-seventh Street and Twenty-third Avenue Northwest, to intersect with the Loyal Heights line, to which it is proposed to transfer. The amount of the issue will be changed from $40,000 to $125,000.

An exchange of transfers is already in effect with the Seattle & Rainier Valley Railway, so that when the Ballard extension is completed patrons of the city railway will be able to ride for 5 cents from the southeastern corner of the city to the city limits in the northwest.

The Board of Public Works has rejected the offer of Harry Whitney Treat to sell the Loyal Heights Railway in Ballard to the city for $70,000, payable in utility bonds. The board has also rejected the offer of Meacham & Babcock to build the new line for $117,000.

War Delays New York Lines

Lexington and Seventh Avenue Rapid Transit Lines to Open in March

The operation of trains in the Lexington Avenue and Seventh Avenue subways in New York will not begin before March 1 at the earliest. Announcement to this effect was made on Dec. 4 by Oscar S. Straus, chairman of the Public Service Commission, in a letter replying to a suggestion from President Dowling of the Board of Aldermen that partial operation of trains in these subways be begun at once to relieve congestion on existing lines.

Mr. Straus said the delays were due to "war conditions," and that they came in spite of every effort made by the commission to hurry the work. In his letter he said the track work on the Seventh Avenue line through William and Wall Streets to the Battery was finished, that materials for the stations on both lines were being brought from Pittsburgh by motor truck, and that an extension of the service on the Seventh Avenue line, now operating from Times Square to the Pennsylvania station, may be expected south to the Battery "possibly by January."

The necessity for all of the signal and control devices that make for safety on the new lines is dwelt upon by Mr. Straus, who said that the difficulty of installing these systems was one reason for delay.

Mr. Straus said that the Brooklyn Rapid Transit Company would probably be operating trains on the Broadway line as far north as Times Square and as far south as Whitehall Street in the near future. This line is now running north to Fourteenth Street from Canal Street.

At a hearing on Dec. 6 Frank Hedley, vice-president and general manager Interborough Rapid Transit Company, said that the government had taken some cables made for the company and the situation was uncertain; that government needs had required the reletting of a wheel contract at a 60 per cent advance in cost, and that the company could not get enough skilled men because of government work.

More Money for Buffalo Appraisal

The City Council of Buffalo, N. Y., has granted the request of the city law department for an additional $20,000 for the appraisal of the physical property of the International Railway. This information is being obtained by the municipal authorities to defend the proceedings brought by the railway for a review of its special franchise assessment in Buffalo for the year 1916 and will be available for the application before the Public Service Commission of the Second District to obtain a reduction in fare in the 5-cent zone of Buffalo. Of the $60,000 authorized by the Council more than $40,000 has already been expended.

J. C. Brackenridge, New York, N. Y., formerly with the Brooklyn (N. Y.) Rapid Transit Company, is investigating the physical properties of the company. His report indicates that the appraisal has been practically completed. The work has progressed to this extent: track, 90 per cent; paving, 90 per cent; electrical distribution system, 85 per cent; rolling stock, 25 per cent; power plant and equipment, 90 per cent; furniture and fixtures, 100 per cent; buildings, 30 per cent; tools, stores, real estate, none.

Freight Terminal for Akron

The Northern Ohio Traction & Light Company, Akron, Ohio, is concluding negotiations for a 3-acre strip of ground in Akron, adjacent to another 3-acre strip which it already owns, to be used ultimately for a freight terminal. No work is contemplated at present on account of the very high costs of material and labor, but as soon as is possible this ground will be utilized so that the freight facilities of the company may be expanded to meet the demand. The plan calls for the erection of four buildings and trackage. The movement of cars through the yard will in general be into a single track along one side, and looping back over any of the three tracks between either of the two pairs of buildings. These buildings will be constructed one or two at a time as the growth of the business requires.

A building for the use of the line department as a storeroom and garage will also be constructed eventually on a piece of ground adjacent to the freight yard. A side track off the main entrance track to the yard and a steam road connection close by, will afford facilities for receiving supplies in carload lots directly at the storeroom.

Fire Destroys Carhouse and Office

Small Colorado Property Loses Nearly All Its Effects—Desires Equipment Catalogs

A fire which started at 11.20 a.m. on Nov. 23 from an unknown cause completely destroyed the carhouse, substation, office, etc., of the Greeley & Denver Railroad, Greeley, Col. The carhouse was a building 60 ft. x 100 ft. In addition to providing storage for six cars it contained the superintendent's office, rotary converter and other substation machinery, and the storeroom and blacksmith shop. There were three cars in the carhouse when the fire occurred. None of them was saved. The substation equipment, together with all other materials, was also a total loss. The building and its equipment were partially covered by insurance. The Western Power Company came to the assistance of the railway promptly. That company loaned the railway a motor and a 550-volt generator and furnished men to set up the equipment. This made it possible for the railway to restore service at 1.25 p.m. on Nov. 24. F. Norcross, manager of the Home Gas & Electric Company, Greeley, also rendered assistance by furnishing men and material to the company. The machinery which the railway obtained for use in the emergency was in service in Boulder at the time of the fire. It was taken down, loaded on motor trucks and brought to Greeley, 70 miles, where it was promptly set up, foundations having been prepared for the apparatus while it was on the way. The address lists, catalogs and all other office records of the company were burned. The railway would like to receive catalogs, etc., from firms with which it has been doing business and have the line on their mailing lists.

Hearing on Brooklyn Car Purchase Order

The Public Service Commission for the First District of New York began on Nov. 30 a rehearing on the application of the Brooklyn Rapid Transit Company in behalf of its subsidiary street surface railways on the order of the commission, issued last winter, requiring the companies to purchase 250 new cars for the supplying of decent service on Brooklyn lines. The company, at the present time, is prosecuting appeals from the commission's order in the Supreme Court of the United States and in the courts of New York State, but at the same time announced at the rehearing that it had made all efforts to procure the cars in the event that decisions in the courts were adverse to it. As a reason for requesting a rehearing, the company stated that it did not desire at this time to purchase the cars and requested the commission to refrain from enforcing its order until such time as prices, now declared by it to be nearly 100 per cent in excess of normal for materials and labor, are restored to normal. Counsel for the commission at the first session of the rehearing stated that conditions on the company's lines were just as serious from a standpoint of congestion and overcrowding as when the order was issued a year ago. The commission announced that it would continue the taking of testimony on Dec. 7.

Twin City Union Men Out

Repudiate the Conditions of Arbitration Agreement and Are Replaced by Others

A serious situation has developed in the Twin Cities over the matter of the use of union buttons by the men employed by the Twin City Rapid Transit Company when operating their cars. As noted in the ELECTRIC RAILWAY JOURNAL for Dec. 1, page 1006, the present difficulty grew directly out of the recent strike of the men in Minneapolis and St. Paul. The arbitration board which settled the original differences between the men and the company recommended that the insignia of organization be dropped. Both sides had agreed to abide by the recommendations of the board and the committee had reason to feel that the principal difficulty had been settled by compromise. The company posted notices in accordance with the order of the commission. The non-union, or so-called protective association, men removed their buttons, but the union men refused to do so. They were therefore not permitted to take out the cars because they had not done as their representatives had agreed with the committee that they would do.

ATTEMPT TO INDUCE SYMPATHETIC STRIKE

The union car men sought at once to enlist the sympathy of other organized labor. As a result of their efforts more than 12,000 labor union men met in convention in St. Paul on Dec. 5 to consider the matter, but voted an armistice until Dec. 11, thus deferring action on the general strike, pending possible settlement of the question by State officials or federal intervention. In this action conservative opinion triumphed. The steam road unions opposed the sympathetic strike as against their agreement with their employers. Many industries were severely hampered when the union men stopped work to attend the convention.

On the same day the Governor removed C. W. Ames from the Minnesota Public Service Commission, to which the committee that settled the strike had reported. He then appointed H. W. Libby, Winona, to the commission. It is understood that Mr. Libby favors upholding the commission in respect to its order requiring the removal of the button.

SERIOUS DISORDER IN ST. PAUL

The most serious disorder so far reported occurred on Dec. 2 when more than 2000 persons engaged in rioting, following a mass meeting in Rice Park, St. Paul. The crowd cut trolley ropes, removed fenders and stoned the cars. About forty non-union men were reported injured. Twelve arrests were made after about 1400 members of the home guard had been mobilized in the absence of city and county protection. As a result of this demonstration service was suspended until morning, and the interurban cars from Minneapolis were turned back at the St. Paul city limits. The company promised to maintain service if protection was afforded. The saloons in both cities were closed on Dec. 6. Eleven home guard companies were mobilized at the Capitol. E. S. Davidson, recently appointed sheriff by the Governor, ordered his deputies to shoot to kill.

The Governor has so far refused federal aid toward settling the difficulty. On Dec. 6 service was reported 99.2 per cent normal in Minneapolis and 93 per cent normal in St. Paul as against 95.8 per cent and 78.9 per cent on Dec. 5. A hearing on the mandamus suit brought by the city to enforce adequate service on the lines of the company was postponed from Dec. 5 until Dec. 7.

Hearing on Strike Arrests

The preliminary hearing of charges against Joseph W. Horton, Harry E. Tattman and James R. Taylor, former trainmen for the Springfield (Ill.) Consolidated Railway, charged with violations of the new federal act with reference to explosives, was set for Dec. 1 before United States Commissioner Harvey T. Culp. The men are at liberty under $3,000 bonds. The men were arrested by United States deputy marshals on warrants issued by the district attorney's office.

In a statement issued by A. D. Mackie, general manager of the company, following the arrests, he said:

"We anticipate that subsequent developments will show that the responsibility for the many outrages during the strike does not rest with coal miners, but with a small clique of former electric railway men aided and abetted by a few jitney owners whose profits have been dependent upon a continuance of turbulent conditions, and a few of the more radical socialists among the coal miners and union sympathizers."

Wage Increase Rejected

The Cleveland (Ohio) Railway has offered its trainmen a 5-cent an hour increase in wage, bringing the maximum up to 40 cents an hour. The present scale, which was settled on in 1916, is 32 cents for the first year of service and 35 cents the second and succeeding years. The new scale will raise these figures to 37 and 40 cents, respectively.

The contract which the company now holds with its men does not expire until May 1, 1918. The company has offered this increase with a stipulation that a new contract will be made extending to May 1, 1919, but with the new scale dating from Nov. 1, 1917. This would give the men 5 cents an hour additional wage during the remaining six months of the present contract, if accepted. The men rejected the offer nearly two to one by a vote taken on Dec. 5.

Pittsburgh Transit Report in January

Edwin K. Morse, appointed transit commissioner of Pittsburgh, Pa., in November, 1916, stated before the finance committee of the City Council on Dec. 4 that he had his report on the local transportation situation nearly completed and that it would undoubtedly be ready for distribution about Jan. 15. He is reported to have said:

"I can say in advance that I will report in favor of municipal ownership of rapid transit lines. Whether you want it is for you to say. Rapid transit in co-operation with the Pittsburgh Railways can be put on a paying basis. Whether there will be such co-operation I cannot say.

"The time has come when this question must be met. Nothing would do more for the progress of the city and tend to stop industries passing us by for Western cities than the solution of this problem. If you wish me to make up a budget so that you can have an idea of what will be needed, I will do so. It will be necessary to have a transit bureau, the same as you have other bureaus to look after other municipal activities. I have dealt with every phase of the transit question in language as clear as I know how to use and in a manner as conclusive as I am capable of using. I do not think there will be any doubt as to what are my opinions."

Increase in Wages in Milford.—The Milford & Uxbridge Street Railway, Milford, Mass., has announced an increase of 2 cents an hour in the wages of its motormen and conductors, bringing the maximum pay of its men to 34 cents an hour.

Buses Replace Short Railway.—The Railroad Commission of California granted permission on Nov. 2: to the Burlingame (Cal.) Railway, operating 2 miles of line, to discontinue the operation of its storage-battery car and to substitute a service of two buses.

City Plan Expert to Pass on Dallas Improvements.—The city of Dallas, Tex., has voted to employ George E. Kessler, the city plan expert of St. Louis, Mo., to work with N. M. Baker, supervisor of public utilities, in laying out extensions and improvements of the local railway system in Dallas.

Bus Hearing Goes Over.—The hearing before the Board of Estimate of New York set for Nov. 27 to consider the authorizing of advertising for a public hearing on the bid of the Fifth Avenue Coach Company for rights to operate buses on streets other than those now occupied by it was put over until Dec. 26.

Police Dismissals Growing Out of Strike Sustained.—The civil service board of Seattle, Wash., has sustained the action of the police department making permanent the discharge of E. W. Benjamin and the twelve other police officers dismissed from the department last July for insubordination during the electric railway strike.

Accident at Toledo Plant.—A short-circuit of the oil switches, combined with other unknown factors, damaged the Water Street plant of the Toledo Railways & Light Company, Toledo, Ohio, on the evening of Nov. 27. The city cars were at a standstill for more than an hour, and no cars moved on the Toledo & Western road until 1 o'clock the following morning.

Street Railway Department for Cincinnati.—City Solicitor Groom of Cincinnati, Ohio, has prepared an ordinance for introduction in the City Council creating the department of street railways, as provided by the new city charter. A director of street railroads is to be appointed and it is said that C. W. Culkins, street railway commissioner, will be appointed to the position. The director will be responsible only to the Mayor and the Rapid Transit Commission.

Seattle H. C. L. Figures.—The department of economics of the University of Washington at Seattle will shortly publish a complete study of the cost of living made by the arbitration board working on the strikes of the electric railway employees in Seattle and Tacoma, whose findings were made public recently. The survey will classify the facts and conditions which led to the award of the arbitration board, according to Carleton H. Parker, director of the school of business administration of the university.

Tax Values Raised in Illinois.—In need of additional funds, the State Board of Equalization of Illinois increased the assessed value of land, personal property, and corporations 3 per cent. On this a tax rate of 80 cents for corporations will probably be fixed. In Chicago alone this means an aggregate increase in assessed value for the electric railways of $6,213,113 more than last year, the total assessed value being $64,496,586. This was made on a 70 per cent basis, so that the full value would be $93,000,000.

Must Report Daily to Benefit by Wage Increase.—The Trenton & Mercer County Traction Corporation, Trenton, N. J., has issued an order that conductors and motormen must report for work daily if they want to benefit by the 2-cents-an-hour raise granted recently. The men will have to have a clear record if they want to earn the raise. Thirty-two men recently failed to report for work in two days and the company was greatly handicapped in maintaining its regular schedule.

Investigation Committees Appointed in Portland.—Committees have been appointed by the various civic clubs of the city to gather information relative to the requirements of the Portland Railway, Light & Power Company, Portland, Ore., so that the company can continue to abide by the decision of the arbitration committee as to hours and wages of the company's employees. Committees will interview the company, the employees, the Public Service Commission and the Board of Arbitration. C. L. Rauch is chairman of the general committee.

Officials at Trenton Plead Not Guilty.—Rankin Johnson, president of the Trenton & Mercer County Traction Corporation, Trenton, N. J., and other officers of the company on Dec. 4 entered pleas of not guilty before Judge Marshall in the Mercer court to indictments charging them with illegal maintenance of wires and poles on fifteen streets of the city. Counsel for the defendants will apply to the Supreme Court for writs of certiorari through which efforts will be made to have the indictments quashed. The court permitted the officials to enter bail to the amount of $500 in their own recognizance.

Wage Increase in Scranton.—The union has made public through the daily press the offer made by the Scranton (Pa.) Railway to its employees and accepted by the men, whereby all trainmen, shopmen, carhousemen and trackmen will receive an increase of 3 cents an hour. Should the company secure additional relief by a change of fare from 5 to 6 cents the company will make a further increase of 1 cent an hour two months after the 6-cent fare becomes effective. The men have appealed to the public to withdraw all opposition to the increase in fares in order that the employees may benefit by the raise.

Personnel of Dallas Lines.—Richard Meriwether, general manager of the Dallas (Tex.) Railway, has announced the following appointments of operating officials of the lines: George R. Plummer, superintendent of transportation of all lines both east and west of the Trinity River, succeeding B. W. Gerhardt, who will remain with the Stone & Webster organization; C. A. Swanson, division superintendent of the lines east of the Trinity River, and J. T. Morton, division superintendent of the lines west of the Trinity. The lines west of the Trinity in Oak Cliff are owned by Stone & Webster, but are leased to the Dallas Railway.

Hope to Save Road.—A permanent organization has been formed to buy the New York & Pennsylvania Railroad, Hornell, N. Y. The Shinglehouse Board of Trade and the Canisteo Chamber of Commerce are interested in the purchase of the line, which was about to be abandoned. W. G. Hartman, Shinglehouse, N. Y., is chairman of the organization committee, and Guy M. Beasor, secretary of the Canisteo Chamber of Commerce and manager of the property, is secretary. It is planned to finance the road with an issue of not more than $150,000 of stock and a bond issue of between $250,000 and $300,000. A proposal to electrify the road is said to be under consideration.

Ordinances Drag in Chicago.—Walter L. Fisher, special counsel for the committee on local transportation of the Chicago City Council, as noted in the ELECTRIC RAILWAY JOURNAL for Nov. 10, page 874, was directed to draw up two traction ordinances. One of these was to embody the recommendations contained in the Traction and Subway Commission report, and the other these recommendations only in so far as they could be carried out without enabling legislation. Several weeks have elapsed since then, and on Nov. 28 Mr. Fisher told the committee he believed it would be a waste of time and money to carry out its instructions. Some of the committee members rebuked Mr. Fisher for the delay and despite his frank warning they voted 10 to 6 to renew their instructions to him.

Increase in Wages in Lexington.—Announcement of a 6-cent fare on all the Lexington city lines of the Kentucky Traction & Terminal Company is followed by a statement that the company will advance the wages of the motormen and conductors on both the city and country lines 1½ cents an hour. At the same time S. H. Dailey, general manager of the Kentucky Traction & Terminal Company, announced that the men would receive a further raise on July 1, 1918. Some time ago the company put into effect a co-operative plan by which it set aside 18½ per cent of its gross earnings, out of which the claim department charges were to be met and motormen and conductors' salaries paid. Out of this fund an increase of 1½ cents an hour was granted. The reduction in net earnings due to rising costs and the prospect of increased taxes made the increase in fares imperative.

Financial and Corporate

Annual Report

Boston Elevated Railway

The income statement of the Boston (Mass.) Elevated Railway for the six months ended Dec. 31, 1916, follows:

Revenue from transportation	$9,506,557
Revenue from other railway operations	291,322
Railway operating revenues	$9,797,879
Railway operating expenses:	
Maintenance of way and structures	$997,276
Maintenance of equipment	742,862
Power	684,892
Conducting transportation	3,230,221
Traffic	12,479
General and miscellaneous	962,995
Total operating expenses	$6,630,725
Net revenue—railway operations	$3,167,154
Taxes assignable to railway operations	534,575
Operating income	$2,632,579
Non-operating income	43,763
Gross income	$2,676,342
Deductions from gross income:	
*Rent for leased roads	$1,296,822
†Miscellaneous rents	402,797
Interest on funded debt	531,719
Interest on unfounded debt	33,094
Amortization of discount on funded debt	2,230
Miscellaneous debits	2,419
Total deductions	$2,269,081
Net income	$407,261
Dividend No. 37, paid Aug. 15, 1916, 1½ per cent	$358,191
Dividend No. 38, paid Nov. 15, 1916, 1½ per cent	358,191
Deficit	$309,121

*Includes rent of Tremont Street subway. †Rents of all other subways and tunnels.

By a recent act of the Legislature the ending of the fiscal year of electric railways was changed from June 30 to Dec. 31, thereby necessitating a change in the date of annual reports of the Boston Elevated Railway. Its present report, therefore, covers only the last six months of 1916.

The volume of business for these six months is shown by the fact that the revenue passengers carried totaled 189,415,158. This number was an increase over the business of the previous year (six months) of 10,100,867, or about 5.63 per cent.

The deficit of $309,121 for the six months' period ended Dec. 31, 1916, was occasioned by the fact that the company during that period, in accordance with its established custom, paid dividends at the full rate of 6 per cent per annum with the intention of paying only such lesser amount of dividends during the balance of the fiscal year as the earnings for the full year might justify. Amounts of 1.5 per cent and one-half of 1 per cent were declared in February and May, 1917, so that the total for the year ended June 30, 1917, was 5 per cent. The recent passing of the October quarterly dividend payment was noted in the ELECTRIC RAILWAY JOURNAL of Nov. 3, the August declaration having been 1.5 per cent.

The revenue car-miles in the last six months of 1916 totaled 29,835,503, and the revenue car-hours 2,748,691. The total charges against income for taxes, rent of leased roads, rent of subways and tunnels, interest on funded debt, interest on unfunded debt and miscellaneous items for the six months amounted to $2,803,656, an increase of $59,330 over the corresponding part of the previous year.

In regard to the pending Legislative investigation into the company's financial needs, the report says:

"Based on the incontrovertible facts presented at or developed by the proceedings before these various commissions we feel that we are justified in expecting substantial relief from the next Legislature, and the directors and officers intend to continue their untiring efforts to secure for the company the restoration of that financial condition which common justice and public interest demand."

Abandonment Proceedings in Ohio, Kentucky and Arizona

The Public Utilities Commission of Ohio issued an order on Nov. 27 granting the application of the Springfield & Xenia Southern Railway, Springfield, for permission to abandon that portion of its track between Roslyn, Montgomery County, and Spring Valley, Green County. The company asserts that this section of the road had been operated at a loss for many years; that the financial standing of the entire system was endangered by it, and that there was no hope of improvement in the future.

One of the points made by the Court of Appeals in rendering a decision against the abandonment of the Cincinnati-Bethel branch of the Interurban Railway & Terminal line, Cincinnati, Ohio, is that the power for such action is with the company itself and that the receivers have no right to abandon a franchise. The Public Utilities Commission some time ago declared it had no authority to hear an application for abandonment of this section of road and the Supreme Court approved its stand, but since that time the Gilmore law has gone into effect and it is said action for abandonment in this case may again be brought before it. Until such a step is taken the company must continue to operate the road. An agreement has been made to sell the track and rolling stock to the Clermont Construction Company and take in payment $240,000 of first mortgage bonds and $433,000 of common stock of the Cincinnati, Georgetown & Portsmouth Railroad, which operates a parallel line.

At the instance of the Paducah (Ky.) Traction Company the City Commission is considering an amendment to the franchise under which the company operates so as to permit it to suspend service on the so-called Fisherville line. This line, which terminates on South Ninth Street, parallels three other lines into that portion of the city which could be relied on for service. Last year it cost $5,763 to operate the Fisherville line. The revenue was $4,127.

The Phoenix (Ariz.) Railway has announced through the press that it will abandon its Grand Avenue line. Owing to the prohibitive costs of material and lack of funds, the company will abandon the line until conditions return to normal. In its announcement the company states that it cannot keep up with the building of tracks, improving of service, paving of streets and competition of auto buses at the present 5-cent fare.

Another Line Sold for Junk

The Bristol County Street Railway, Taunton, Mass., operated since 1902 between Attleboro and Taunton, with a spur line to Pawtucket, R. I., has been sold to Swift, McNutt & Company, building wreckers of Boston, for $110,000. This is said to be $32,000 more than the outstanding debts. It is stated that as soon as the sale is confirmed by the courts the operation of the line will be discontinued.

Barre and Montpelier Traction & Power Company, Barre, Vt.—Efforts are being made to effect a readjustment of the finances of the Barre & Montpelier Traction & Power Company without the need for the appointment of a receiver or the bringing of foreclosure proceedings. As noted in the ELECTRIC RAILWAY JOURNAL of Nov. 17, page 921, the company did not pay the $100,000 of bonds which matured on Nov. 1. A meeting of the bondholders was held recently in Boston, Mass., at which it is said the owners of a large part of the bonds agreed to an extension of the bonds for twenty years and to a plan for deferring or foregoing interest for the present. An effort will now be made to have the remaining bondholders subscribe to this plan.

Buffalo, Lockport & Rochester Railway, Rochester, N. Y.—It is announced that Allen & Peck, Inc., who took over the management of the Buffalo, Lockport & Rochester Railway in October, 1915, having completed their work, have withdrawn from the company as its operators. William O. Morgan, who has been vice-president of the company, has succeeded C. Loomis Allen as president. A. S. Muirhead has been elected vice-president to succeed Mr. Morgan. W. W. Foster, secretary and treasurer, has succeeded M. C. Sauerwein as general manager.

Cleveland, Southwestern & Columbus Railway, Cleveland, Ohio.—The Cleveland, Southwestern & Columbus Railway, recently authorized to issue $201,836 of bonds, has filed supplemental application for permission to issue $248,590 in first mortgage bonds to secure funds for improvements. The bonds are to sell at not less than 85.

Columbus Railway, Power & Light Company, Columbus, Ohio.—The Ohio Public Utilities Commission has authorized the Columbus Railway, Power & Light Company to issue $1,000,000 of bonds and $276,000 of preferred stock. The proceeds of the sale of bonds will be used to take up an issue of $1,000,000 of one-year notes, part of which have been sold, and the remainder of the funds will be devoted to defraying the cost of the new Walnut power plant, which is now ready for operation.

Dallas (Tex.) Railway.—The Dallas Railway has filed an amendment to its charter increasing its capital stock from $100,000 to $2,600,000, all paid in, and represented by property belonging to the Dallas Consolidated Electric Street Railway, Metropolitan Street Railway, Dallas Equipment Company, Rapid Transit Railway and the Interurban Terminal Association of Dallas. The company has amended its charter so that the board of directors shall consist of fifteen instead of nine members. In pursuance of the change the following have been elected as the six additional directors: S. W. King, R. D. Suddarth, Orville Thorpe, M. B. Shannon, W. S. Mosher and C. E. Calder, all of Dallas. Authority to raise $2,600,000 has been granted by the City Commission to the Dallas Railway. The company has been authorized to issue 21,000 shares of common stock and 5000 shares of 7 per cent preferred stock. The resolution adopted by the City Commission provided that the money borrowed must be used for labor or for property actually acquired. Representatives of the Strickland-Hobson interests say that 6 per cent notes will be issued, this plan being adopted as more suited to present financial conditions than issues of stocks and bonds.

Detroit (Mich.) United Railway.—The Detroit (Mich.) United Railway has announced that the $50,000 of first mortgage 5 per cent gold bonds of the Detroit Railway, payable on Dec. 1, will be redeemed if the holders present the bonds with the coupons at the Peoples State Bank, Detroit, Mich.

Interborough Rapid Transit Company, New York, N. Y.—The remarkable feature of the October report of the Interborough Rapid Transit Company, given in the "Table of Electric Railway Monthly Earnings," is that, although passenger revenue for the corresponding month of last year was $506,508 more than in October, 1915, due to the diversion of traffic from the surface lines during the strike, the passenger revenue for October of this year came within $43,223 of equalling last year's abnormal record. For the month of October during the eight-year period from 1908 to 1915, inclusive, passenger revenue has shown an average increase of 4.11 per cent. For the two-year period of 1916-1917, this average increase jumped to 8.02 per cent, a gain of nearly 100 per cent. The average increase of 4.11 per cent includes the heavy traffic of the Hudson-Fulton celebration of October, 1909, which gave an increase of 11.59 per cent.

International Railway, Buffalo, N. Y.—The New York Public Service Commission for the Second District has granted the petition of the International Railway for authority to issue $450,000 of its refunding and improvement mortgage bonds. The bonds may be issued and sold at not less than 85 per cent of their face value and their proceeds may be used to meet the cost of proposed additions to and betterments of the company's system.

Lackawanna & Wyoming Valley Rapid Transit Company, Scranton, Pa.—Brooks & Company, Scranton, Pa., announce that the sinking fund and redemption plan of Aug. 20 between the company and the holders of the 5 per cent fifty-year collateral trust gold bonds of the Lackawanna & Wyoming Valley Rapid Transit Company, has become operative by the deposit with the Guaranty Trust Company, New York, as depositary of more than $855,000 of the $888,000 of outstanding 5 per cent bonds of the Lackawanna company, and that in accordance with the agreement the proposed indenture between the Scranton & Wilkes-Barre Traction Company and the Guaranty Trust Company as trustee has been duly executed. The first sinking fund operation will occur in May, 1918.

Mahoning & Shenango Railway & Light Company, Youngstown, Ohio.—The Mahoning & Shenango Railway & Light Company has recorded two mortgages, first and second, in Lawrence and Mercer Counties, for $20,000,000 each, to the Guaranty Trust Company, New York. The company has also executed a mortgage for $2,500,000 to the United States Mortgage & Trust Company.

Mansfield Railway, Light & Power Company, Mansfield, Ohio.—The consent of the Ohio Public Utilities Commission has been asked by W. H. Davey, Lewis Brucker, R. E. Burger, J. E. Louiseau and H. E. Butcher, incorporators of the Richland Public Service Company, to consolidate the holdings of the Mansfield Railway Light & Power Company, the Mansfield Public Utility & Service Company, the Mansfield Electric Light & Power Company and the Mansfield Gas Light Company as the Richland Public Service Company.

New York (N. Y.) Railways.—At the annual meeting of New York Railways on Dec. 3 the retiring directors were re-elected. A. D. Juilliard was also elected to the board in place of Seward Prosser, resigned.

Northern Ohio Traction & Light Company, Akron, Ohio.—The Northern Ohio Traction & Light Company has asked permission of the Ohio Utilities Commission to issue $1,000,000 of five-year 6 per cent notes, to sell at best terms available, the proceeds to be used to reimburse the company for expenses already incurred. A hearing has been set for Dec. 10.

Norwood, Canton & Sharon Street Railway, Sharon, Mass.—The property of the Norwood, Canton & Sharon Street Railway recently sold for junk, has reverted to its owners, the intended purchaser having forfeited his deposit rather than become involved in certain litigation regarding the company.

Ocean Shore Railroad, San Francisco, Cal.—A. B. Sheperd has been elected a director of the Ocean Shore Railroad to succeed Henry E. Bothin.

Parkersburg & Ohio Valley Electric Railway, Parkersburg, W. Va.—In view of the fact that the Parkersburg & Ohio Valley Electric Railway, extending from Sistersville to Friendly, 5 miles, has been doing an unprofitable business, Charles E. Williams, receiver of the company, in a petition to the United States District Court at Parkersburg recommends that the line be dismantled and its effects sold at public auction.

Piedmont Railway & Electric Company, Burlington, N. C.—The Piedmont Railway & Electric Company is reported to have increased its capital to $1,000,000. It is said to be the purpose of the company to change its name to the Piedmont Power & Light Company.

Southwestern Traction Company, Temple, Tex.—The property of the Southwestern Traction Company, which owns and operates an interurban railway between Temple and Belton, and the city lines in Temple, will be sold at public auction at Belton on Dec. 18, under an order issued out of the Federal District Court at Waco on Nov. 17. The sale is made under foreclosure to satisfy a mortgage held by the bondholders represented by the Susquehanna Trust & Safe Deposit Company of Pennsylvania. The sale will be conducted by W. G. Haag, Temple, as special master.

United Light & Railways Company, Grand Rapids, Mich.—Bonbright & Company, Inc., New York, N. Y., are offering the new $1,500,000 issue of United Light & Railways Company 6 per cent bond-secured gold notes, Series A, recently authorized by the company. The notes are dated Nov. 1, 1917, and are due May 1, 1920. They are being sold at 96⅝ and interest, yielding 7½ per cent.

Virginia Railway & Power Company, Richmond, Va.—A special meeting of the stockholders of the Virginia Railway & Power Company has been called for Dec. 29 at Richmond, Va., for the purpose of ratifying the action of the directors, who at a recent meeting authorized the expenditure of $1,000,000 for additional transmission lines.

Electric Railway Monthly Earnings

Period	Operating Revenue	Operating Expenses	Operating Income	Fixed Charges	Net Income
BANGOR RAILWAY & ELECTRIC COMPANY, BANGOR, ME					
1m., Oct., '17	$79,191	*$44,793	$34,398	$19,499	$14,899
1 " " '16	77,173	*40,480	36,693	18,131	18,562
12 " " '17	873,287	*501,008	372,279	226,181	146,098
12 " " '16	815,966	*445,574	370,392	213,083	157,309
CHATTANOOGA RAILWAY & LIGHT COMPANY, CHATTANOOGA, TENN.					
1m., Oct., '17	$89,429	*$116,560	†$27,131	$30,310	†$57,441
1 " " '16	109,024	*82,197	26,827	29,925	†3,098
12 " " '17	1,327,492	*1,057,549	269,943	357,432	†87,489
12 " " '16	1,225,482	*786,082	439,400	355,838	83,562
CITIES SERVICE COMPANY, NEW YORK, N. Y.					
1m., Oct., '17	$1,659,665	$29,646	$1,630,019	$226	$1,629,793
1 " " '16	1,122,910	20,041	1,102,869	393	1,102,476
12 " " '17	18,706,604	337,251	18,369,353	2,984	18,366,369
12 " " '16	8,233,952	232,384	8,001,568	340,069	7,661,499
CUMBERLAND COUNTY POWER & LIGHT COMPANY, PORTLAND, ME.					
1m., Oct., '17	$267,632	*$174,451	$93,181	$70,003	$23,178
1 " " '16	251,683	*155,117	96,566	69,144	27,422
12 " " '17	3,065,173	*2,020,705	1,044,468	815,675	228,793
12 " " '16	2,828,567	*1,726,598	1,101,969	805,943	296,026
EAST ST. LOUIS & SUBURBAN SYSTEM, EAST ST. LOUIS, ILL.					
1m., Oct., '17	$307,827	*$223,571	$84,256	$66,020	$18,236
1 " " '16	271,636	*160,412	111,224	63,665	47,559
12 " " '17	3,579,998	*2,366,903	1,213,095	775,714	437,381
12 " " '16	2,911,182	*1,736,727	1,174,455	753,533	420,922
GRAND RAPIDS (MICH.) RAILWAY					
1m., Oct., '17	$103,246	*$72,767	$30,479	$18,378	$12,101
1 " " '16	103,659	*70,579	33,080	15,995	17,085
12 " " '17	1,308,025	*875,092	432,933	214,712	218,221
12 " " '16	1,286,511	*838,788	447,723	178,555	269,168
HUDSON & MANHATTAN RAILROAD, NEW YORK, N. Y.					
1m., Oct., '17	$549,351	*$264,198	$285,153	$217,823	$67,330
1 " " '16	513,465	*230,840	282,625	215,691	66,934
4 " " '17	2,033,931	*990,719	1,043,212	870,941	172,271
4 " " '16	1,884,103	*860,077	1,024,026	859,430	164,596
INTERBOROUGH RAPID TRANSIT COMPANY, NEW YORK, N. Y.					
1m., Oct., '17	$3,563,592	*$1,916,581	$1,647,011	$1,079,033	‡§$724,570
1 " " '16	3,546,933	*1,580,353	1,966,580	989,098	‡§1,032,194
4 " " '17	12,473,400	*7,118,611	5,354,789	4,282,788	‡§2,080,762
4 " " '16	11,937,021	*5,862,699	6,074,322	3,969,087	‡§2,327,542
LEWISTON, AUGUSTA & WATERVILLE STREET RAILWAY, LEWISTON, ME.					
1m., Oct., '17	$78,606	*$60,625	$17,981	$15,512	$2,469
1 " " '16	72,302	*49,895	22,407	15,166	7,241
12 " " '17	889,877	*662,903	226,974	186,216	40,758
12 " " '16	793,677	*536,681	256,996	189,025	67,971
NASHVILLE RAILWAY & LIGHT COMPANY, NASHVILLE, TENN.					
1m., Oct., '17	$211,324	*$137,377	$73,947	$40,919	$33,028
1 " " '16	205,999	*127,095	78,904	41,474	37,430
12 " " '17	2,439,835	*1,563,605	876,230	493,747	382,483
12 " " '16	2,355,769	*1,442,952	912,817	510,379	402,438
NEW YORK & STAMFORD RAILWAY, PORT CHESTER, N. Y.					
1m., Sept., '17	$35,105	*$26,924	$8,181	$7,982	‡$289
1 " " '16	31,411	*22,855	8,556	7,987	‡626
9 " " '17	317,507	*264,472	53,035	71,854	†‡18,336
9 " " '16	285,408	*224,897	60,511	71,862	†‡10,947
NEW YORK, WESTCHESTER & BOSTON RAILWAY, NEW YORK, N. Y.					
1m., Sept., '17	$46,747	*$46,643	$104	‖$6,176	†‡$5,352
1 " " '16	50,689	*45,996	4,693	‖5,804	†‡321
9 " " '17	417,909	*415,359	2,550	‖68,039	†‡56,975
9 " " '17	402,950	*439,942	†36,992	‖73,475	†‡66,647
NORTHERN TEXAS ELECTRIC COMPANY, FT. WORTH, TEX.					
1m., Sept., '17	$252,877	*$130,137	$122,740	$29,126	$93,614
1 " " '16	161,044	*94,256	66,788	29,416	37,372
12 " " '17	2,270,221	*1,307,559	962,662	349,647	613,015
12 " " '16	1,862,691	*1,139,551	723,140	343,587	379,553
PHILADELPHIA (PA.) RAPID TRANSIT COMPANY					
1m., Oct. '17	$2,602,140	$1,514,809	$1,087,331	$810,889	$276,442
1 " " '16	2,417,096	1,330,594	1,086,502	814,450	272,052
4 " " '17	9,895,799	5,738,589	4,157,210	3,245,825	911,385
4 " " '16	9,007,921	4,986,327	4,021,594	3,259,138	762,456
REPUBLIC RAILWAY & LIGHT COMPANY, YOUNGSTOWN, OHIO					
1m., Oct., '17	$452,968	*$316,266	$136,702	$85,515	‡$55,617
1 " " '16	338,613	*188,922	149,691	69,070	‡81,773
12 " " '17	4,650,883	*3,072,278	1,578,605	972,052	‡657,206
12 " " '16	3,879,282	*2,242,753	1,636,529	802,957	‡849,722

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*Includes taxes. †Deficit. ‡Includes non-operating income. §Includes accruals, under rapid transit contracts, with city, payable from future earnings. ‖Excludes interest on bonds, charged income and paid by the New York, New Haven & Hartford Railroad under guarantee, also interest on notes held by the New York, New Haven & Hartford Railroad, not credited to income of that company.

Traffic and Transportation

Results with Six-Cent Fares

Vice-President Stearns of Bay State Railway Also Explains Basis of Proposed Interurban Fare Zones

R. B. Stearns, vice-president of the Bay State Street Railway, was a witness before the Massachusetts Public Service Commission on Nov. 19 at a hearing upon the proposed establishment by the company of a standard zone system of fares on its interurban lines. A résumé of the company's opening was published in the ELECTRIC RAILWAY JOURNAL for Nov. 24, page 942. The lines affected are those extending from one large community to another, except in so far as certain lines for through traffic are susceptible of the distance basis or the mileage charge. At present 6-cent fares are being charged for zones of irregular length, varying on the lines south of Boston from 1.67 to 7.02 miles and on the northern lines from 1.26 miles to 7.93 miles.

To avoid these discriminations the lines were cut up into practically equal 1-mile zones, giving about 373 units on the northern and southern lines. The longest zone, or so-called "mile," is about 1.3 miles and the shortest about 0.75 mile, the exact limits of these zones being determined by the locations of the natural traffic centers. On the zones thus established the company proposes a minimum fare of 6 cents and a rate per zone as described below.

The company has a number of lines, especially summer traffic routes, near the shore, where it was almost hopeless to establish a rate of fare that would pay expenses and yield a reasonable return, and where the patrons probably would not purchase the service at a charge of more than 3 cents per mile. "We feel," said Mr. Stearns, "from previous cases, that generally speaking the centers or large cities on this system are greatly benefited by the feeders, and that the rate of fare in these cities should be such as to stand a portion of the losses in these feeders if losses exist." A rate of 3 cents per mile was accordingly fixed on the non-productive lines, such as the Nantasket Beach line, the line from Bridgewater to New Bedford, a very sparsely settled territory, the Ipswich-Essex line and the Billerica-Wilmington line.

The 2-cent minimum rate per mile is regarded in steam railroad and in interurban service as the lowest rate below which it is impossible to render service without operating losses. Practically the largest part of the Bay State lines is therefore scheduled at the 2-cent rate; but where the 2 and 3-cents per mile lines have a relation the rate is blended in a 2½-cent-per-mile rate.

The variable rate per mile is predicated on two factors, the density of traffic or population and the gross revenue per mile of track. Some of the lines earned as low as $1,800 per mile of single track per year; one earned as high as $18,000. The average of the entire so-called interurban system was $4,800 per mile per annum, gross earnings. The average for the entire Bay State system is about $11,000. On the interurban lines the company failed by about $600,000 a year to take in enough money to pay the expenses without considering interest, taxes or depreciation; in other words, there is an operating loss of 4.98 per cent on the investment of about $12,000,000 (interurban lines) on the commission's basis. The cost of the interurban service was estimated from an average of the entire system. The average investment per mile of track on the entire system, on the commission's basis brought down to date by subsequent additions to the property, is $28,700.

RESULTS OF SIX-CENT FARE OPERATION

The company finds that the revenue on the system as a whole is being increased about $600,000 per year by the change from 5 cents to 6 cents, including both interurban districts and city centers. About $400,000 of the above is secured from the 6-cent fare in the urban centers. Nevertheless it is estimated that the 1917 total earnings in urban centers on the present 6-cent fare basis in places where 5 cents was the original rate, will be only $8,320,000 or $254,000 less than the total cost of the service, including reasonable return and depreciation. The reasonable return is the 6 per cent fixed by the commission on the investment aggregating about $40,024,000, of which $27,000,000 is apportioned to these large centers. The depreciation is also that determined by the commission in its original order only, amounting to 5.08 per cent on the low investment values determined by the board. Since the 1916 decision some $900,000 has been invested in the property.

Taking the system as a whole, exclusive of the small proportion of its mileage located in other States, the gross revenue for 1917 is estimated at $10,245,375, the estimated cost to render the service being $11,863,526, including a 6 per cent return on the investment. Actually it appears that only 1.97 per cent will be earned on the investment. The new fare system in the interurban territory, it is thought, will increase revenue about $530,000, depending on traffic losses, leaving the company, even after the adoption of the zone system, with about $1,100,000 less revenue than it absolutely requires under the commission's basis. If isolated lines still show large deficiencies, there will be no recourse but the removal of those lines.

It is expected that intensive economies now being practised on the system will save the company from $250,000 to $300,000 per year. Studies indicate that about fifty one-man cars can be used and that the annual resulting saving in operating expense would be about $30,000, the investment being about $300,000 for such equipment.

Referring to the fact that the company has lost money on short riders under the present 6-cent schedule, Mr. Stearns said that while he naturally would like to get that back, what is really being sought is to produce a system which yields a slightly increased net, eliminates discrimination, is flexible and provides the same minimum fare on the interurban lines as in the large centers to which the interurban lines are adjacent.

Freight Increase Hearing in Indiana

Interurban Electric Railways Submit Their Case to the Public Service Commission—Present Tariffs Hit and Miss

Representatives of the electric railways of Indiana appeared before the Public Service Commission on Nov. 30 and presented their applications for an increase of freight rates. The case of the interurban lines was presented by Charles L. Henry, president of the Indianapolis & Cincinnati Traction Company.

H. B. McNeely of the traffic department of the Indianapolis Chamber of Commerce; H. E. Fairweather of the Fort Wayne traffic bureau, and city attorneys of such towns as Crawfordsville, Delphi and Lafayette, appeared to represent the shippers in their territories.

No protests against the proposed increased rates were heard from any shippers during the hearing. Mr. Henry informed E. I. Lewis, the chairman of the commission, that the situation as to freight conditions with all of the interurban railways was so nearly alike that when he had heard one he had heard all. The origin of interurban business was outlined by Mr. Henry in his preliminary statement. He declared that it was not the original intention of the electric roads to engage in the freight business.

The question of whether the proposed increases in interurban rates would accentuate glaring inequalities and alleged discriminations in rates at certain points in the State was brought up, and representatives of the shippers said they were insisting that in any revision of rates the question of uniformity should guide the commission in approving schedules.

Mr. Henry stated that the proportion of the freight business to the other business of the interurban railways was just about the reverse of the steam lines. Seventy-five per cent of the business of the steam lines was freight. It was safe to say that the business of interurban companies in freight would run a little less than 10 or 15 per cent. Mr. Henry declared that the car expense of interurban freight was very much in excess of that of the steam lines on account of the short hauls, limited number of train cars and nature of freight. He said that the freight car cost a car-mile for car help alone was 5 cents a mile more than the passenger costs a car mile. The traction companies' freight was virtually express business and the traction companies were entitled to a higher freight rate on account of the higher character of business, compared to steam-line freight.

HODGE-PODGE FREIGHT TARIFFS OF ELECTRICS SPELL RUIN

Mr. Henry's position was made somewhat clearer as to his steam line comparisons when F. D. Norviel, general passenger and freight agent for the Union Traction Company of Indiana, read a statement of how the present interurban freight rates were adopted in most cases to compete with parallel steam lines rather than having originated in any scientific manner. Mr. Norviel said that it had been assumed that the traction companies could handle freight as cheaply as steam lines. This was a mistake that proved very costly to the traction lines. His prepared statement pointed out how the steam-line freight tariffs were an admitted hodge-podge and that in following them as models the electric railways had been led into even gross lack of uniformity.

Mr. Norviel stated that he had been chairman for four years of a committee of electric railways in a number of Middle Western states, and that he and his committee had been trying to work out what was believed to be a fair class rate for the electric railways. For a time the electric railways waited on the steam lines, which were conducting much of the same sort of an investigation, but when the looked-for improvements were not forthcoming it was decided to pursue an independent course. Mr. Norviel testified to the effect that the submitted tariffs were "purely speculative," and that they "would make on the average interurban road in Indiana an increase of 15 or 20 per cent above the present tariffs." He said that the present rates were made in 1908 and put into effect in 1913.

TRAFFIC BUREAU REPRESENTATIVE STATES HIS CASE

Mr. Fairweather pointed out that the proposed increases had not been granted for interstate traffic, and that if they became effective gross inequalities would exist in rates near state-line points. He mentioned Fort Wayne and points east as an example. He said: "What I am appearing for is uniformity. We have no special fight against the interurbans and no protest except as the rates are not uniform." He introduced a number of exhibits intended to show irregularities in the rates.

Mr. McNeely said that he did not appear as a protestant, but to learn what was going on and to obtain the right to question the witnesses and to file a brief in the case if necessary. His attitude was concurred in by John B. Murphy, Crawfordsville; E. B. Davidson, Lafayette; E. E. Pruit, Delphi, and others appearing for shippers.

Mr. Henry called the attention of the commissioner to the necessity of building up the transportation companies of the United States. He declared that he had a petition signed by forty business men of Shelbyville on behalf of the company's petition for increased freight and passenger rates.

Walter Schroyer, auditor of the Union Traction Company of Indiana, testified that the freight business showed a deficit each year since 1911. This statement was substantiated by John H. Crall of Indianapolis, general passenger and freight agent for the Terre Haute, Indianapolis & Eastern Traction Company; Leroy T. Hixson, auditor of the Terre Haute, Indianapolis & Eastern Traction Company, and others. Exhibits were offered showing how rates about 20 per cent higher would affect the roads advantageously and relieve the situation.

THE COMMISSION'S ATTITUDE TOLERANT

Chairman Lewis called repeatedly for more definite analyses of the generalities submitted and cautioned the representatives of the electric railways that details and explanations of how they had arrived at certain statements would be necessary to a correct inquiry into the facts upon which depended the granting of the petition. Considerable testimony of a technical nature was presented. Shipper and carrier alike were assured by Chairman Lewis that when orders were finally issued uniformity of tariffs would be a feature. Any relief will come to the companies individually. Mr. Lewis may call for individual information from the companies.

The original petition was filed by the Terre Haute, Indianapolis & Eastern Traction Company last September. Since that time many other interurban railways have followed suit. Roads represented at the hearing were the Terre Haute, Indianapolis & Eastern Traction Company, the Ohio Electric Railway, the Fort Wayne & Northern Indiana Traction Company, the Fort Wayne & Decatur Traction Company, the Southern Michigan Railway, the Chicago, South Bend & Northern Indiana Traction Company, the Union Traction Company and the Indianapolis & Cincinnati Traction Company. About forty persons attended the hearing.

Fare Change Working Well

Mileage Rate System in Use Since October Satisfactory on Boston & Worcester Street Railway

C. D. Emmons, second vice-president and general manager of the Boston & Worcester Street Railway, testified in the Bay State fare-zone hearing at Boston before the Public Service Commission of Massachusetts, on Nov. 19, that the copper or mileage zone system was working out well on the interurban line in his charge. This system of fares has been in use on the road since Oct. 1. Mr. Emmons said that the company, confronted with the necessity for raising additional revenue, considered two methods, first, the possibility of changing the old 6-cent zone fare to a higher rate, and, second, disregarding the former zone system and substituting a mileage basis. The mileage basis represented an actual equalization of fares, and enabled the company to retain the old 6-cent fare minimum, so that the fare of the short rider was not disturbed. The change wiped out inequalities in many places, notably between Newton and Wellesley. On the old basis some patrons would ride a mile and on crossing the zone limit would have to pay a total fare of 12 cents. Those riders now get a minimum of 6 cents. In some places the minimum fare was changed from 12 to 8 cents; in others from 12 to 10 cents. On the whole, however, the company received an increased revenue.

The first month of the new system's application, October, did not show the full results expected later, for the reason that many old tickets held by patrons were taken up by the conductors. There was an actual gain in revenue that month of about 5.5 per cent, and in November the revenue showed an increase of about 10 per cent compared with the old system of rates. The latter is about what the management expected to secure from the mileage system.

NEW SYSTEM WORKS WELL

From the operating standpoint the system was working out very well. Previously the conductors had to go through the cars between Chestnut Hill and Lake Junction (between the terminals of the Boston and Worcester local systems) nine times and ring up the fare nine times for every person in the car. This was annoying to both conductor and passengers. The fare under the old plan used to be 50 cents, and by the mileage system it has been raised to 62 cents. One collection is made and a receipt given to the passenger by which he makes one payment all the way through, about 30 miles, and delivers his check at the end of the ride. The conductor does not ring in any fares, the fare check being the method of accounting to the company. Mr. Emmons said that the public has taken kindly to the mileage system. Under the old plan the passenger might travel 3 miles for 6 cents on one part of the road and 10 miles, or thereabouts, for 6 cents on another part. By the equalization of the mileage system the public felt that it was getting justice on all the lines. The company sells mileage tickets at the rate of 100 miles for $1.70. Monthly tickets in the Overbrook section of Wellesley are not used to any great extent. The public preferred to use the mileage book as this enabled riders to travel anywhere on the system.

Five-Cent Fares in Detroit

Detroit United Railway Abrogates Ticket Agreement With City—Politics Prevented Help to the Company

The Detroit (Mich.) United Railway on Dec. 1 abrogated the seven-for-a-quarter ticket agreement into which it entered with the city on Aug. 7, 1913. The company on the following day, Dec. 2, began charging straight 5-cent fares on all city lines with the exception of the Sherman, Fourteenth, Crosstown and Harper lines, being obliged to continue eight-for-a-quarter and six-for-a-quarter fares on these lines under the old Pingree franchise, which still has seven years to run.

THE CITY HITS BACK

By way of reprisal against the company for the fare raise the Common Council of the city at a session on the night of Dec. 4 adopted a resolution directing the company to pay approximately $10,000 a day rental for the use of streets on which franchises have expired; rescinded permission to the company to operate skip stops on practically all of the city lines; recalled the resolution under which the company had rerouted many lines down town; placed at the disposal of the Municipal Railway Commission a fund of $35,000 to employ Barclay Parsons & Klapp, New York, engineers, to make an investigation to determine whether the fare increase was justified, and instructed the Corporation Counsel to ascertain whether the company has any right to operate freight and interurban cars within the city of Detroit.

The warfare will undoubtedly reach the courts in several proceedings within a short time. Already four cases in which the right of the Common Council to grant the company permission to operate under the skip-stop system are pending in the Recorder's Court.

PRESIDENT BROOKS STATES THE COMPANY'S CASE

In announcing to the Municipal Railway Commission, the Mayor and the Common Council that the Detroit United Railway had determined to break the agreement with the city, Frank W. Brooks, president of the company, said in part:

"The conditions making this course necessary are regretted as much by ourselves as anybody else. The present rates of fare in Detroit are not yielding income sufficient to meet ordinary operating expenses. The men in the service must be paid for their labor; taxes must be paid; we must pay for necessary materials, and we are not now getting enough money to do these things, to say nothing about providing for interest and dividends. Our operations for the month of October were on the basis of an annual deficit of more than $2,000,000. Even the rates of fare in effect prior to Aug. 7, 1913, are insufficient to yield, under present conditions, a return upon the capital invested, and it is certain these conditions cannot be improved immediately."

Mr. Brooks then said that the company would continue in effect the universal transfer system as well as the eight-for-a quarter tickets good between 5 and 6.30 a. m. and 4.45 and 5.45 p. m. on the so-called 5-cent lines. On the so-called 3-cent lines (Sherman, Fourteenth, Crosstown and Harper) the rates of fare are eight tickets for 25 cents between 5.15 a. m. and 7.30 p. m. and six tickets for 25 cents good at all hours. The straight 5-cent fare applies to all other lines, except for the two periods of the day when workingmen's tickets are accepted.

INVESTIGATION OF COMPANY WELCOMED

The company in announcing the increase in fares invited the city authorities to make a thorough investigation of its books, declaring that such an inquiry would prove the contention that a 5-cent fare was necessary to keep the company alive. In ordering the investigation, however, the Council decided to investigate only the earnings and expenses of the so-called 5-cent lines where franchises have expired and not to take into account the earnings or expenses of the 3-cent lines. Company officials characterize this segregation plan as absurd. The 3-cent lines have been operating at a deficit averaging $40,000 a month and have been sustained by the earnings on the balance of the system. The company is willing to afford all facilities for an investigation of the city lines as an entirety, but is apparently opposed to the limited investigation which is proposed.

Company officials declare that the change in rate of fare came about because the city authorities failed to co-operate with the company toward war-time economies. The company hoped by the installation of skip-stop service and through rerouting of cars to effect economies which would make it unnecessary at this time to increase fares. According to a statement issued by the company, political factions in the Council played football with the electric railway question. The company's statement on this point says:

POLITICS PLAYS ITS PART

"We had unmistakable information that at no time did either of the political factions intend that any relief should be provided to meet the war-time conditions. On the other hand each faction planned to outdo the other to hold up the matter indefinitely for whatever advantage might come to them politically. Each wanted the slogan 'We Kept Car Fares Down' for use at the next election. Because of this situation the company acted without further delay, as has been stated, and within its legal rights, to the end that there might be sufficient revenue to render proper service to the car riders. In all sincerity we advise the public to weigh in the balance the course of the present Common Council."

The company will probably obey the Council's order regarding skip stops and rerouting, and also put cars back on the old routes. Reverting to the old arrangement will mean lengthening running time and also mean that many trail cars will be taken off and double-truck cars will be replaced by cars of the single-truck type.

The Council under a decision rendered five years ago by the United States Supreme Court in the Fort Street rental case has a right to order the company off of streets where franchises have expired. Such an order would affect approximately twenty lines. It is unlikely, however, that the Council will take this drastic step because a cessation of service would cripple plants which are making munitions of war for the government. On the other hand, the company could cancel transfer rights and the workingmen's tickets, both of which are voluntary concessions by the company.

Preparing for Cleveland Fare Advance

Increase in Fare on Dec. 15 Looked Upon as Inevitable—Review of Fare Changes Under Tayler Grant

Officials of the Cleveland (Ohio) Railway have announced that the interest fund on Dec. 1 was $257,923. They are making arrangements to increase the fare on Dec. 15 to 4 cents cash and three tickets for 10 cents. Council has been asked to allow the company to advance the fare two steps at the same time. The only difference between the next two is the charge of 1 cent for transfers. Officials say that the receipts will be no larger than they have been if only the charge for transfers is rebated, as the next higher rate under the ordinance would require. The matter has been referred to the street railway committee.

There have been three changes in the rate on the Cleveland Railway since the Tayler franchise went into effect on March 1, 1910. The interest fund, which serves as the fare barometer, was started with an appropriation of $500,000 and a rule was adopted that when this fund reached $700,000, the fare should be reduced, and when it fell below $300,000, it should be increased.

At that time the fare was fixed at 3 cents merely as a starting point and a charge of 1 cent was made for transfers, with no rebate. This rate continued to May 31, 1911, when the fund amounted to $700,000. The fare was then reduced to the next lowest rate by eliminating the charge for transfers. It remained at this point until Sept. 1, 1914, when the interest fund had fallen below the required $300,000. The rate went back to the first schedule of 3 cents and a charge of 1 cent for transfers, without rebate, where it has remained until the present time. The interest fund had fallen to approximately $200,000 by Oct. 1, 1911, and then had gradually grown to about $500,000, when prices of materials and labor began to advance as a result of the war. The trend was then the other way and the fund has gradually dwindled.

Trenton Fare Case Argued

Frank S. Katzenbach, Jr., representing the Trenton & Mercer County Traction Corporation, Trenton, N. J., on Nov. 27 argued before the Court of Errors the appeal of the corporation from the decision of the Supreme Court in upholding the order of the State Public Utility Commission, which refused permission to the company to abolish its six-for-a-quarter tickets. Counsel for the utility board and the city of Trenton failed to appear, but they may submit briefs in twenty days. The court has been closed for the term. The company in its notice of appeal sets forth fifteen contentions why the decision against it was not in accordance with law and why the company should be allowed to charge a straight fare of 5 cents per passenger for all more than five years of age.

Mr. Katzenbach maintained in his argument that the change in fare would not actually amount to an increase. He also contended that in its valuation of the company's property the commission did not allow for a fair return on the outstanding stock. Mr. Katzenbach further maintained that the inhabitants of Trenton had no authority to pass the ordinance of Oct. 22, 1909, providing for the sale of strip tickets, and that as the company did not enter into any agreement with the city it cannot be bound by the ordinance.

Hearing on Hartford Fares

Connecticut Commission Opens Case of Hartford Against the Six-Cent Fare of the Connecticut Company—Another Hearing on Dec. 10

The Public Utilities Commission of Connecticut held a hearing on Dec. 3 on the petition of the Board of Aldermen of Hartford protesting against the 6-cent fare adopted recently by the Connecticut Company in that city. The city was represented by Corporation Counsel Francis W. Cole. The Connecticut Company was represented by J. K. Punderford, vice-president and general manager; Edward M. Day, Hartford, and J. F. Berry and George D. Watrous, New Haven.

CITY'S SIDE PRESENTED

Mr. Cole insisted that the Hartford lines should be considered separately from the rest of the system. He said that if the local lines in Hartford paid a good return on their investment and the suburban lines did not the city should not be called upon to make up the losses on the other lines. Mr. Cole said that he had not been successful in his effort to obtain from the Connecticut Company details of the receipts and expenses for the lines in Hartford. To this Mr. Berry replied that the company did not wish to have accountants for several cities go over the books separately, but that if the commission wished to appoint accountants for the purpose the company would be glad to give them access to all the data in its possession. Mr. Cole suggested in the interests of economy that one-man cars be operated. He declared that such vehicles would be more successful in competing with the jitney than are the present cars and that such cars would save platform expense and be much more economical than the cars now in use.

COMPANY OUTLINES ITS CASE

Mr. Berry stated the situation from the company's standpoint. He said that the difficulties which the electric railways were facing were due to the inflexible 5-cent fare and to the constantly increasing costs of operation. These costs had reached a point where the service had to be curtailed or the rate of fare increased. The company proposed to show the general conditions surrounding electric railways at present by submitting testimony of witnesses who had made a study of the situation and were familiar with the action taken by companies and commissions elsewhere.

FUTURE APPEARANCES NOTED

In this connection Mr. Berry noted the future appearance for the company of Dr. Thomas Conway, Jr., professor of finance, University of Pennsylvania, M. C. Brush, president of the Boston Elevated Railway, and others. He said the system must be treated as a unit and not by divisions. If the various lines of the company were segregated and each was treated as a unit the result would be that the non-paying lines would have to be abandoned or the rate charged would have to be so high that it would prohibit riding. He said that one of the trustees for the company under the federal dissolution decree would testify in regard to the manner in which the company had been managed for the last three or four years. A valuation had been made of the property of the company which would be checked and approved by Prof. George F. Swain of the Boston Transit Commission and the Massachusetts Institute of Technology. A representative of Stone & Webster would testify from his general inspection of the property as to its physical condition.

Testimony from Dr. Conway was presented in the afternoon. The hearing was then adjourned until Dec. 10.

Increase in Fare in Lexington

The Kentucky Traction & Terminal Company, Lexington, Ky., has announced an increase in fares from 5 cents to 6 cents. The company, in a statement said that the advance had been made necessary by the increased cost of materials and other expenses. The board, at a recent meeting, gave the matter lengthy consideration and determined that the action was necessary. The company will sell tickets at the rate of six for 35 cents. Half-fare tickets will be sold for 3 cents. The statement of the company said:

"The company feels sure the people of Lexington will realize the situation which confronts it, and that it will understand that it is a matter of absolute necessity for the company to increase its fare."

On July 1 the company discontinued the sale of six metal tickets for a quarter. This change was noted in the ELECTRIC RAILWAY JOURNAL of July 14, page 80.

Copper-Zone System for Connecticut Line.—The Hartford & Springfield Street Railway, Warehouse Point, Conn., has announced that on Jan. 1 it will establish the 2-cent copper-zone system with a minimum fare of 6 cents.

Metal Half-Fare Tickets in Denver.—The Denver (Col.) Tramway is now using metal half-fare tickets instead of the paper tickets. The tickets are a little smaller than a dime and are dropped in the fare box with the regular fares.

Women Operators for Pittsburgh.—The Pittsburgh (Pa.) Railways on Nov. 30 advertised in the afternoon papers for women conductors to operate trippers and trailers. Women desiring employment were invited to make application by letter. It was stated that about 200 would be needed.

Trenton Retains Peter Witt.—Peter Witt, Cleveland, Ohio, has been retained by the city of Trenton, N. J., to inquire into the electric railway situation there and to report to the city his recommendations for such changes and improvements as will work to the best interests of the city as a whole.

Application for Fare Increase on Interurban Line.—The Alton, Granite & St. Louis Traction Company, Alton, Ill., has asked the Interstate Commerce Commission for permission to increase the round-trip fare on its line from Alton to St. Louis from 90 cents to $1. No plea was made by the company affecting the one-way rate of fare.

Coal Shortage in Detroit.—The Detroit (Mich.) United Railway has announced that, owing to the coal shortage, its cars will not be heated as much as they have been during other seasons. While the company has some coal on hand, the amount is but a fraction of the usual supply, and it will be necessary to conserve the supply as long as possible.

Union Objects to High School Pupils on Cars at Trenton.—The union of trainmen has objected to the plan which the Trenton & Mercer County Traction Corporation, Trenton, N. J., had under consideration of using male pupils from the Trenton High School to operate cars during the rush hours. Dr. William A. Wetzel, principal of the school, had approved the idea.

Pay-as-You-Pass Cars in Buffalo.—Forty-five of the new center-exit Peter Witt type of cars have been placed in operation on the Niagara and Grant Street lines of the International Railway, Buffalo, N. Y. It is expected that the other fifty-five cars will be received from the Kuhlmann Company, Cleveland, at the rate of ten a week. They will be placed in operation on the Main Street line.

Round Trip 70-Cent Fare Not Taxable.—A ruling has been made by the United States Treasury Department that round-trip tickets costing 70 cents or less are not taxable under subdivision C, section 500 of the act of Oct. 3, 1917. This ruling was contained in a letter to the Central Electric Railway Accountants' Association signed by G. E. Fletcher, deputy commissioner, Washington, D. C.

Detroit Being Told About One-Man Cars.—The Detroit (Mich.) United Railway intends to present to its patrons through *Electric Railway Service*, its official publication, information and data concerning the new one-man cars which are now in successful operation on electric railway properties throughout the country. The articles will be illustrated with exterior and interior views of the new type of car.

Another Indiana Interurban Requests Increase in Fare.—The Chicago, South Bend & Northern Indiana Traction Company petitioned the Public Service Commission of Indiana on Nov. 26 for authority to put into effect a 2½-cent fare instead of a 2-cent fare. This is the second electric railway in Indiana to petition for this rate of fare on its interurban lines. The company operates between Goshen and Michigan City, through Elkhart, South Bend and other towns.

Increase in Fare on Vermont Road.—The Bellows Falls & Saxton's River Railroad, Bellows Falls, Vt., has increased its local fares in Bellows Falls from 5 cents to 6 cents. On the line to Saxton's River there have been three 5-cent zones. One cent has been added to each of these, making the fare 18 cents instead of 15 cents. On the line to Barber Park there have been two 5-cent zones. One cent has been added to each of these, making the fare 12 cents instead of 10 cents.

Arranging for Texas Fair Traffic.—Officials of the Texas State Fair at Dallas, Tex., and of the Dallas Railway are considering improvements at Fair Park for handling the immense traffic during the fair. N. M. Baker, supervisor of public utilities of Dallas, has suggested that loading tracks be built in an inclosed place with turnstiles at the entry gates, and fares be collected at the gates before people enter to board cars. This suggestion is approved by Richard Meriwether, general manager of the Dallas Railway, and other traction officials.

Auto Buses Differentiated from "For Hire" Cars.—According to a ruling of the Supreme Court in the case of the State of Washington against the Ferry Line Auto Bus Company, operating in West Seattle, a suburb of Seattle, auto buses, operating along regularly established routes, must carry "auto stage" and not "for hire" licenses. The Supreme Court's ruling affirmed the ruling of the Justice Court in Seattle, where a driver of the company was arrested and fined $150 for driving an unlicensed car. The auto bus line connects with the Port Commission ferry.

Traffic Inquiry Proposed in Washington.—The Public Utilities Commission of the District of Columbia has under consideration an emergency investigation of electric railway conditions in Washington growing out of the unusual demands which are being made on the Washington Railway & Electric Company and the Capital Traction Company as a result of the unprecedented increase in the number of transients in Washington and the accession to the population of semi-permanent residents. The commission has been in communication with John A. Beeler, New York, with respect to his conducting the inquiry.

Through Routes and Joint Rates Denied.—The Public Service Commission for the Second District of New York has denied the application of Edwin W. Fiske, Mayor of Mount Vernon, asking that the commission take steps to establish through routes and joint rates by the Westchester Electric Railroad and the Yonkers Railroad between Mount Vernon and Yonkers. In denying the application the commission advances the opinion that from the evidence presented and from its knowledge of the financial conditions of the electric railways involved there would be no justification for making this arrangement.

Speeding Up Portland Service.—Operating officials of the Portland Railway, Light & Power Company, Portland, Ore., are exhausting every means to devise ways for reducing the number and length of delays at heavy loading and unloading points over the system. The policy has been adopted in pursuance of suggestions made in the recent decision of the Public Service Commission in the 6-cent fare case. One of the first points of attack is to reduce, if possible, the delays incident to excessive congestion during the rush hours in the evening "peak-load" period. The company has appealed to the public to co-operate in the efforts to improve service.

Front-Entrance Cars for Columbus.—The Columbus (Ga.) Railroad proposes to place the Birney type of front-entrance car in operation on its belt line as soon as the cars are received. This is expected to be about Jan. 1. To accustom people to the front-entrance prepayment type of car the company rebuilt some of its present semi-convertible cars as front entrance vestibuled cars. The plan is gradually to introduce the Birney car on all the lines at the rate of one or more lines a year if war conditions and deliveries make this possible. To explain to the public the reason for the change the company printed and distributed a pamphlet, "The Way of the Front-Entrance Car."

Prize Contest on Indiana Line.—The Union Traction Company of Indiana, Anderson, Ind., has announced its seventh prize contest. It will give $30 in gold to its employees for the best papers on "How Does the Obedient and Orderly Man Promote Safety First?" The contest is open to all employees, except department heads and sub-heads. The papers will be read at the next safety-first get-together meeting, at which time the prizes will be distributed. A first prize of $15, a second prize of $10 and a third prize of $5 will be awarded to the writers of the best three papers. The subject was selected by the General Safety Board and the local representatives. Thirty different suggestions for topics were presented.

Report on Service in Camden.—The Board of Public Utility Commissioners of New Jersey has given out a report on electric railway conditions in Camden, N. J., investigated by its inspector. The commission recommends additional service on several branches during the rush hours and calls attention to the inability of the Public Service Railway to obtain cars needed for relieving conditions in such hours. The report further says that many plants have been built in Camden and Philadelphia during the last two years and that thousands of additional employees make better service necessary. These conditions will be relieved when the company receives the twenty-five large new cars ordered last winter for delivery last summer.

Possible Zone System for Washington Jitneys.—The Public Utilities Commission of the District of Columbia is planning to reopen the question of the charge to be allowed for jitney service in the District. Early last fall the commission put into effect an order limiting the fare to 5 cents, and it has just recently received its first application from a licensee for permission to charge 10 cents. It is the plan of the commission to request all jitney operators to submit their views as to the reasonableness of the 5-cent fare. When the replies have been received a date will be set for a public hearing. It is said to be probable that the utilities board will consider the advisability of establishing a zone system for jitneys, which would regulate the amount of fare to be charged.

Richmond Company Seeks Suggestions from City.—Thomas S. Wheelwright, president of the Virginia Railway & Power Company, Richmond, Va., has petitioned the Common Council of that city to suggest some remedy for meeting the unprecedented increase in all operating costs. At the request of the company the petition will be considered by the finance committee, which will report what relief can be granted and upon what conditions. In a companion resolution, the company also petitioned the Council to be allowed to introduce the skip-stop system on the Main Street line for a period of ninety days. This resolution was referred to the committee on streets. The first hearing on the relief petition was held on Nov. 26. Further consideration of the matter was then put over until Dec. 10.

Fare Boxes and Metal Tickets in Dallas.—The Dallas (Tex.) Railway has ordered new cash fare boxes for installation on all cars in Dallas. The boxes will register the four different rates of fare now charged. There will be a place for the regular 5-cent fare, another for the commutation fare of twenty-two rides for $1, another for the school children's half fare and another for special fares. Richard Meriwether, general manager of the company, says that when the fare boxes are installed metal checks will be sold as tickets instead of the card tickets now in use. They will come wrapped in packages, twenty-two of the commutation fares in a package for $1 and twenty of the children's half-fare checks in a package for 50 cents. The new system will be put in use in Dallas about Jan. 1.

All Long Island Increases Refused Except One.—The Public Service Commission for the First District of New York, in a decision rendered during the week ended Dec. 1, refused with a single exception to permit the Long Island Railroad to increase its passenger fares within the city of New York as proposed in tariffs which were filed by it last April and May and suspended by the commission. The single increase permitted is in the mileage rates, the advance being from 2 to 2¼ cents per mile, and is in keeping with a similar increase permitted recently by the Public Service Commission for the Second District as applying to passenger transportation under its jurisdiction. The rate increases proposed in the First District affected several classes of tickets, including single-trip, round-trip, ten, twenty and fifty-trip tickets and mileage.

I. T. S. Talks to Peoria Public.—The Peoria (Ill.) Railway, included in the Illinois Traction System, is conducting a series of heart-to-heart talks with its patrons in the daily papers of Peoria. The series is entitled "Street Car Thoughts for To-Day," and is illustrated with the picture of a conductor showing passengers the way into a car of modern type. In the center of the illustration appear suggestions and points of general interest to the passengers. The underlying idea is to obtain close personal contact with patrons through the medium of daily education and suggestion. In a recent issue of the Peoria papers the company very unselfishly devoted its advertising space to an announcement of the "Sammies" Christmas Party, the proceeds to be used in buying a Christmas package for every person in war service from Peoria County.

Safety Island and Shelter for Buffalo.—The City Council of Buffalo, N. Y., has delayed consideration of the application of the International Railway for permission to enlarge the safety island in Shelter Square and build a steel shelter for the convenience of more than 40,000 passengers who board cars at this point every day. The Council believes that the proposed structure should be built by the city and leased to the railway. It is proposed to spend $10,000 for the construction of the shelter. The building will be of steel with a red ornamental tile roof, inclosed on three sides, with a public comfort station under the street. At a recent conference of members of the City Council, representatives of the railway and private architects, some details of the enlargement of the safety island were agreed upon, but the railway officials announced that they would prefer to have the company build the station rather than to arrange to lease it from the city.

Safety Equipment Prevents Accident.—An interesting incident is reported in connection with the operation of safety cars, in which a near-accident was averted the other day in Greensboro, N. C., where fifteen new safety cars are in service. A safety car was following another somewhat closely down the street, when the first car stopped to take on passengers. The operator on the second car did not notice that the car ahead had stopped, until he was very close to the rear of the first car. He then became excited, and instead of applying the brakes in emergency, he reversed his motors and in so doing knocked out the circuit breaker, without shutting off the power controller. In doing this he removed his hand from the controller handle. The brakes were thus immediately applied in emergency and the second car was stopped just as the two cars came together. It is apparent that if the motorman had relied on reversing his motor to stop the car, a serious accident would probably have resulted.

Personal Mention

F. M. Black has resigned as a member of the Alberta Public Utilities Board, in order to give his full time to his work as assistant to the food controller.

Chester A. Walling has resigned as superintendent of transportation of the Jersey Central Traction Company, Keyport, N. J., to enter the newspaper business.

William Haley has been appointed superintendent of transportation of the Jersey Central Traction Company, Keyport, N. J., to succeed Chester A. Walling, resigned.

A. S. Muirhead has been elected vice-president of the Buffalo, Lockport & Rochester Railway, Rochester, N. Y., to succeed W. O. Morgan, now president of the company.

Howard Rhoda, formerly with the Binghamton (N. Y.) Railway, has been placed in charge of the carhouse of the Trenton & Mercer County Traction Corporation in South Trenton, N. J.

J. H. DuFresne has resigned as auditor and assistant treasurer of the Pittsburgh County Railway, McAlester, Okla., to become auditor of the Minneapolis (Minn.) General Electric Company.

W. W. Foster, who has been secretary and treasurer of the Buffalo, Lockport & Rochester Railway, Rochester, N. Y., has been made general manager of the company to succeed M. C. Sauerwein.

William O. Morgan, who has been vice-president of the Buffalo, Lockport & Rochester Railway, Rochester, N. Y., has been elected president of the company to succeed C. Loomis Allen, of Allen & Peck, Inc.

Charles E. Elmquist has resigned from the Railroad & Warehouse Commission of Minnesota after nine years of service to become solicitor for the valuation bureau maintained at Washington by the National Association of Railway Commissioners.

F. W. Taylor, purchasing agent for the Pacific Electric Railway at Los Angeles, Cal., has accepted an appointment as purchasing agent for the Southern Pacific Company at San Francisco. He succeeds I. O. Rhoades, who resigned after ten years of service.

William Martin has resigned as auditor of the Illinois Traction System at Danville, Ill. Mr. Martin has not been active since last March, when he was stricken with mastoiditis and later with pneumonia. He will assume charge of the office of W. Lewis & Company, Champaign, Ill.

Frank R. Coates, president of the Toledo Railways & Light Company, Toledo, Ohio, was chairman of the committee for the Liberty Loan drive in Toledo. The committee under Mr. Coates raised about $12,000,000 though the quota for Toledo was only $10,000,000. At a concert given by Mischa Elman, the violinist, $2,400,000 was raised among the audience.

Merle F. Gustin has been appointed division passenger and freight agent of the Union Traction Company of Indiana, with headquarters at Anderson, to succeed Alva E. Moore, resigned. Mr. Gustin entered the service of the company in June, 1909, as ticket stock clerk. He has since held the positions of clerk in the general manager's office, clerk in the storeroom and chief clerk to the engineer of maintenance of way.

Stuart H. Patterson has been elected comptroller of the Guaranty Trust Company, New York, N. Y. For the last three years Mr. Patterson has been vice-president and treasurer of the American Water Works & Electric Company, Inc., New York, N. Y., which controls the West Penn Railways, the West Penn Traction & Water Power Company and other companies. He was formerly connected with the firm of Patterson, Teele & Dennis, certified public accountants.

Gaylor M. Cameron, formerly master mechanic and superintendent of buildings New York State Railways, Rochester lines, has become special representative for the Gurney Ball Bearing Company for Cleveland and vicinity. Mr. Cameron has had special experience in the use of ball bearings, his article in the ELECTRIC RAILWAY JOURNAL for Dec. 25, 1915, page 1263, being an example of his painstaking studies in that field. In addition to electric railway work Mr. Cameron will also handle other applications of the ball bearings. He was graduated from Ohio State University in 1904 with the degree of mechanical and electrical engineer. Soon afterward he entered the service of the Jeffrey Manufacturing Company, Columbus, Ohio. One year later he became connected with the Electric Controller & Supply Company, Cleveland. In 1906 he was appointed to the Cleveland Railway. In 1908 he became chief draftsman and engineer of buildings of the Rochester Railway, from which position he was advanced to master mechanic in 1910.

Dan G. Fisher will be appointed assistant to J. F. Strickland in charge of the publicity for the four so-called Strickland companies, the Dallas Power & Light Company, the Dallas Railway, the Texas Electric Railway and the Texas Power & Light Company. Mr. Fisher formerly held the position of personal representative of Mr. Strickland for the Texas Traction Company and the Southern Traction Company, now consolidated as the Texas Electric Railway with headquarters at Dallas in charge of publicity. He was at one time connected with the Dallas *Times-Herald.* His first railway experience was with the Santa Fé Railroad as assistant trainmaster and chief clerk to the division superintendent at Cleburne, Tex. Later he held a similar position with the Houston & Texas Central Railroad at Ennis, Tex. In 1908 he joined the staff of the J. F. Strickland Company and in 1912 was appointed assistant to R. B. Stichter, general manager. In January, 1914, Mr. Fisher was made assistant general manager of the Strickland lines. For several years he was secretary of the Southwestern Electrical & Gas Association and in 1914 was elected president of the association. He has recently returned to Dallas from a tour in which he visited many of the important electric railway systems in the East. Mr. Fisher was especially impressed with the work being done on the Bay State Street Railway along the lines of better public relations, and has announced that he will take unto himself the standard of that company for such relations as set down in the "Sermon on the Mount."

Obituary

Robert McLaren, St. Catharines, Ont., who built the first street railway in the vicinity of St. Catharines, died on Nov. 23. Mr. McLaren was eighty-one years old. He was also president of McLaren & Company, a large dry goods store in St. Catharines.

C. W. Batsell, former owner and operator of the local electric railway system in Sherman, Tex., now included in the system of the Texas Electric Railway, died at Brownsville, Tex., on Nov. 30. Mr. Batsell sold his holdings in Sherman and moved to Brownsville seven years ago.

Benjamin B. Davis, claim adjuster of the Columbus Railway, Light & Power Company, Columbus, Ohio, died on Nov. 21 at the home of his sister in Albany, N. Y. He had held this position since 1895. Early in his career Mr. Davis was connected with the claim department of the Philadelphia Rapid Transit Company. After this he was for some time in the government service at Washington and Baltimore. He had been secretary and treasurer of the American Electric Railway Claim Agents' Association since its organization in 1904.

Frank P. Smith, vice-president of the Interstate Public Service Company, died at his home near Franklin, Ind., on Nov. 28. He had been in his usual good health until Nov. 26, when he was stricken with apoplexy and never regained consciousness. Mr. Smith was born in Bartholomew County, near Columbus, Ind., in 1850, and for a number of years was engaged in business in Columbus. When the Indianapolis, Columbus & Southern Traction line was built by the late Joseph I. Irwin, Mr. Smith became vice-president of the company, and continued with the property when it was acquired by the Interstate Public Service Company. He is survived by his widow and two sons.

Construction News

Construction News Notes are classified under each heading alphabetically by States.

An asterisk (*) indicates a project not previously reported.

RECENT INCORPORATIONS

***Gary & Valparaiso Railway, Gary, Ind.**—Incorporated to construct and operate an electric railway. Capital stock, $10,000. Incorporators: William J. Henry, Edward H. Paine, Mearl T. Kitchen, John Polausky and Samuel J. Watson.

***Bethlehem (Pa.) Traction Company.**—Application for a charter has been made by the Bethlehem Traction Company to construct a line from South Bethlehem to Hellertown, 5 miles. Officers: Chester P. Ray, president; C. P. Ray, Jr., vice-president; L. M. Ray, treasurer, and Harry S. McDevitt, now Deputy State Auditor General, solicitor, all of Philadelphia. Edgar S. Gardner, president of the Middle City Bank, is interested.

FRANCHISES

St. Louis, Mo.—The Municipal Bridge Commission has granted permits to the St. Louis & East St. Louis Interurban Railway and the St. Louis & Illinois Railway to operate electric cars over the Free Bridge at St. Louis.

North Tonawanda, N. Y.—The Common Council of North Tonawanda has granted an extension of one year to the time in which the Frontier Electric Railway, owned by the International Railway, must begin construction of its line through the city. The proposed line will be for freight service between Buffalo and Niagara Falls, and will parallel the new fast service line of the International Railway. The Council also granted the request of the International Railway for an extension of one year within which the new Buffalo-Niagara Falls line must be completed through the city. Inability to obtain material was given as the reason for asking for the extension.

***Stayton, Ore.**—The City Council of Stayton has granted a franchise for the construction of a new railway in Stayton. An electric power right for a period of fifty years was also given at the same time. The proposed railway, it is said, will be operated by steam for a time, but later will be equipped for electrical operation. M. Lynott is interested in the project.

***Bethlehem, Pa.**—The Bethlehem Traction Company has asked the City Council of Bethlehem for a franchise to construct a line in Bethlehem. Chester L. Ray, Philadelphia, president.

Manitowoc, Wis.—The Wisconsin Public Service Company has accepted the provisions of the new franchise under which the company will be permitted to supply the city of Manitowoc with power.

TRACK AND ROADWAY

Alabama Interurban Corporation, Birmingham, Ala.—Announcement has been made that the Alabama Interurban Corporation is maturing plans for the construction of an electric railway from Gadsden and Mobile on the one end to Albany and Sheffield on the other. The plan provides, it is stated, for the Albany-Sheffield branch to extend through Jasper and connect with the Mobile-Gadsden branch at Greensboro. T. L. Cannon, president. [Nov. 17, '17.]

San Francisco, Napa & Calistoga Electric Railroad, Napa, Cal.—As a result of its rapidly growing freight service the San Francisco, Napa & Calistoga Electric Railroad has purchased 2½ acres of land in the first subdivision north of Vallejo, to be used in the operation of freight trains to and from the Napa Valley.

Municipal Railway, San Francisco, Cal.—In order that the municipal cars on Greenwich Street may reach the Baker Street entrance to the Presidio and go to the terminus of the system in the Presidio reservation, the public utilities committee of the Board of Supervisors recommended the building of three additional blocks of tracks at a cost of approximately $25,000. Only the small Union Street cars reach the Presidio at present. Owing to the traffic that has developed as a result of the war it is desired to run the heavy cars into the reservation.

Tidewater Southern Railway, Stockton, Cal.—This company is planning to complete its 10-mile extension to Livingston. It is also planned to electrify the line southward from Modesto.

***Kissimmee River Railroad, Kissimmee, Fla.**—This company has been organized wtih a capital stock of $100,000, and proposes to construct a line from Walinwa to Polk County, about 7 miles. J. A. Griffin, president.

Atlanta & Anderson Electric Railway, Atlanta, Ga.—The Railroad Commission of Georgia has authorized the Atlanta & Anderson Railway to issue $18,000,000 of securities, including $6,000,000 each of common stock, preferred stock and first mortgage 5 per cent bonds, to fulfill its plans for the construction of an electric railway from Atlanta, Ga., to Anderson, S. C., about 140 miles. J. L. Murphy, Atlanta, president, is reported as saying that, while war conditions may delay the construction of the line, it is hoped to complete the road in two years. [July 7, '17.]

Evanston (Ill.) Railway.—From present indications objection by property owners in the western part of Evanston to an extension of the lines of the Evanston Railway is being removed and a route of about 3½ miles has been proposed. The route as planned extends on Howard Street, north on Asbury Avenue to Main Street, west on Main Street to Dewey Avenue, and north to Church Street, thence on Dell Avenue north to Simpson, over the Simpson Street bridge, north to Payne Street and west to the city limits.

Inter-Urban Railway, Des Moines, Iowa.—A report from the Inter-Urban Railway states that it is building 10 miles of second track between Des Moines and Camp Dodge and 13 miles of yards and sidings.

Wichita-Walnut Valley Interurban Railway, Wichita, Kan.—This company's proposed line has been surveyed from Wichita to El Dorado and from El Dorado to Rock, 12 miles north of Winfield. It is expected the road will be completed to Winfield some time next summer. Charles Payne, secretary. [Nov. 3, '17.]

Frankfort & Shelbyville Electric Traction Company, Shelbyville, Ky.—Bids will be received by the Frankfort & Shelbyville Traction Company and opened about Jan. 1 for the construction of its line from Frankfort to Shelbyville. The construction includes one reinforced concrete bridge of about 70-ft. span and two steel bridges of approximately 100-ft. span. P. C. Phillip, of the P. C. Phillip Engineering Corporation, Real Estate Trust Building, Philadelphia, Pa., is general manager. [Oct. 27, '17.]

Hagerstown & Frederick Railway, Frederick, Md.—Extensive improvements are under way by the Hagerstown & Frederick Railway which will result in standard-gage tracks on the Chambersburg, Greencastle & Waynesboro Railway, recently taken over by the Hagerstown & Frederick Railway, to conform with the tracks of that company.

Plymouth & Sandwich Street Railway, Plymouth, Mass.—It is reported that an extension will be built by the Plymouth & Sandwich Street Railway during the coming spring or summer from Sagamore Village along the northern side of Cape Cod Canal to Buzzards Bay Village, about 5 miles.

Southwest Missouri Railroad, Webb City, Mo.—Grading has been completed by the Southwest Missouri Railroad on its extension from Baxter Springs to Galena and work will be begun at once grading its proposed line from Baxter Springs to Picher.

Atlantic Coast Electric Railway Company, Asbury Park, N. J.—This company is building a 16-ft. bridge across Sunset Lake. There will be footpaths on either side of the trolley track.

Cape May, Delaware Bay & Sewell's Point Railroad, Cape May, N. J.—The Navy Department has taken over the Cape May, Delaware Bay & Sewell's Point Railroad, sold at receiver's sale last April to a junk dealer, and will rehabilitate the line.

Morris County Traction Company, Morristown, N. J.—An automatic block signal system is being installed by the Morris County Traction Company at Dover. The company will use a semaphore by day and a light system at night.

Public Service Railway, Newark, N. J.—Work has been begun by the Public Service Railway on the construction of a short trolley route from Camden to Clementon, touching Stratford, Laurel Springs, Haddon Heights and Collingswood.

Trenton & Mercer County Traction Corporation, Trenton, N. J.—The tracks and poles of the Trenton & Mercer County Traction Corporation are being removed on its extension from Yardville to Crosswicks. A decision was recently rendered by the court to the effect that the company could not be compelled to complete its roadbed and operate the line because of its failure to lay tracks across the line of the Pennsylvania Railroad at Yardville. About 2½ miles of track had been laid. Property owners on whose land the poles and wires were erected requested that they be removed. The rails will be used for repair work.

International Railway, Buffalo, N. Y.—A single-track line is being laid by the International Railway in Ohio Street, between Illinois Street and Main Street, so that Main Street cars can loop around the new Lackawanna Railroad passenger terminal at Main Street and the Buffalo River. Ohio Street has been relocated and as soon as the paving is completed the new route of the Main Street cars will be ready.

Piedmont & Northern Railway, Charlotte, N. C.—A contract has been awarded to the Porter & Boyd Construction Company by the Piedmont & Northern Railway to construct a 2-mile spur from Spartanburg to Camp Wadsworth.

Chillicothe Electric Railroad, Light & Power Company, Chillicothe, Ohio.—Survey has been begun for the proposed extension of this company's line from Paint Street through the City Park to Camp Sherman.

Cleveland (Ohio) Railway.—Work will be begun at once by the Cleveland Railway on the laying of tracks on the new high level bridge at Cleveland. The cost of laying the tracks has been estimated at $250,000.

Ohio Electric Railway, Springfield, Ohio.—The tracks of the Columbus division of the Ohio Electric Railway will be relocated about 500 ft. south of the present tracks beginning just east of Harshmanville and ending near the Huffman farm, about 1 mile, preparatory to the construction of a dam by the Miami Conservancy District.

Altoona & Logan Valley Electric Railway, Altoona, Pa.—This company has completed the construction of its East Juniata extension as far as Fourteenth Street and operation of the line will soon be begun.

Dallas (Tex.) Southwestern Traction Company.—The contract for the erection of this company's bridge over the Trinity River at the foot of Commerce Street has been let to the Missouri Valley Construction Company. The contract calls for an expenditure of $63,300, which does not include $15,000 worth of materials to be used. The bridge will be 1300 ft. long and will be a replica of the present Commerce Street bridge. The piers of the new bridge will adjoin those of the Commerce Street structure on the north side. Work will be begun as soon as the company can get its materials and equipment on the ground. [Nov. 3, '17.]

Eastern Texas Traction Company, Houston, Tex.—The contract for surveying the proposed line of the Beaumont & Orange Traction Company between Houston, Beaumont and Orange has been awarded to L. S. Bryant, Beaumont. Part of the right-of-way for the line has been secured and preliminary work will be begun shortly. Ed Kennedy, Houston, president. [Oct. 27, '17.]

Puget Sound Traction, Light & Power Company, Seattle, Wash.—The City Council of Seattle has passed a bill authorizing the institution of condemnation proceedings for the acquirement of land for a street railway approach from the west end of the Spokane Street bridge. The entire cost of the proceedings will be borne by the Puget Sound Traction, Light & Power Company, the right-of-way to be used for street car purposes until such a time as a permanent bridge at Spokane Street proper is constructed.

Seattle (Wash.) Municipal Railway.—A bill has been introduced in the City Council whereby the proposed Market Street line instead of terminating at Market and Leary Streets will be built west to Sixty-seventh Street and Twenty-third Avenue Northwest to intersect with the Loyal Heights line, to which it is proposed to transfer. J. J. Wettrick, chief engineer of the Department of Public Utilities, states that the construction of the Fifteenth Avenue N. W. bridge and the laying of rails on the several approaches will be completed two or three weeks before the rest of the work. In addition to the extension north of the bridge 300 or 400 ft. of track will have to be laid from the present terminus of the city line at Thirteenth Avenue West and Nickerson Street to the bridge approach. North of the bridge as far as Market and Leary Streets the roadbed has been excavated, part of the ballasting laid and all of the ties placed. The laying of rails and erection of the trolley is yet to be done the entire length of the line.

Tacoma (Wash.) Municipal Railway.—The City Council of Tacoma has voted to extend the municipal car line from the present terminus at Eleventh Street and Taylor Way to Lincoln Avenue, a distance of about 1 mile. The extension will cost about $20,000.

Norfolk & Western Railway, Bluefield, W. Va.—It is reported that the Simmons branch of the Norfolk & Western Railway has been electrified and is now being operated by electricity.

SHOPS AND BUILDINGS

Greeley & Denver Railroad, Greeley, Col.—The carhouse of the Greeley & Denver Railroad, which also included the substation, office, storeroom and blacksmith shop of the company, was totally destroyed by fire on Nov. 23. Three cars which were in the building and the substation equipment were destroyed.

Ohio Electric Railway, Springfield, Ohio.—A new freight station will be built by the Ohio Electric Railway at Grand Avenue and the Cincinnati, Hamilton & Dayton Railroad tracks. The cost of the building is estimated at about $20,000.

POWER HOUSES AND SUBSTATIONS

Lake Shore Electric Railway, Cleveland, Ohio.—Approval has been given by the Public Utilities Commission of Ohio to the application of the American Gas & Electric Company and the Lake Shore Electric Railway to purchase the hydroelectric plant of the Ohio State Power Company for $120,000, located on the Sandusky River. The plant is to be used because of the current shortage of coal.

Northwestern Ohio Railway & Power Company, Toledo, Ohio.—A new transmission line will be built by the Northwestern Ohio Railway & Power Company from Danbury Stop to Danbury, 1½ miles, to supply the large pumping station of the New York Central Railroad with power. The company will also install an additional transformer at its station. The New York Central Railroad will pay the entire cost of building the 1½ miles of line and the cost of a third wire from Danbury Stop to Danbury, and will also pay one-half the cost of the transformer.

Conestoga Traction Company, Lancaster, Pa.—Extensions and improvements are being contemplated by the Conestoga Traction Company to its Engleside power house, to cost about $100,000. The plans provide for the installation of considerable electrical equipment.

Lynchburg Traction & Light Company, Lynchburg, Va.—The installation of an underground distribution system in Lynchburg has been begun by the Lynchburg Traction & Light Company, and it is expected that the lines will be completed by Jan. 1, 1918.

Wisconsin Traction, Light, Heat & Power Company, Appleton, Wis.—An addition has just been completed by the Wisconsin Traction, Light, Heat & Power Company to its power station at Brighton Beach, which nearly doubles the size of the station.

Manufactures and Markets

Discussions of Market and Trade Conditions for the Manufacturer, Salesman and Purchasing Agent

Rolling Stock Purchases Market Quotations Business Announcements

Rolling Stock Deliveries in Unsatisfactory Condition

Car Builders Handicapped by Material Supply, Labor and Other Conditions Over Which They Can Exercise No Control

As a concrete example of factory congestion, deferred shipments and lame deliveries, of which general complaint is heard in all lines of business, the delays incident to the building of rolling stock may be mentioned. Though the electric roads have not been such liberal buyers of new cars and equipment as in former years, at the same time the orders placed within the past year or so have not been negligible. They have come not only from railways serving cantonments, training camps and military and naval bases, but orders for new cars made necessary by increases in traffic have been quite general in all parts of the country.

The pressure to have these orders filled no doubt has been and is yet insistent, but apparently no marked headway is discernible. Even the Priority Board expediting certificate is either futile or has not been forthcoming. It is well known that the car builders have been handicapped by the lack of materials to meet specifications and that it is not improbable that orders are being sidetracked due to circumstances over which the manufacturers have no control. Allowing for all shortcomings at the car-building plants—and they are abnormal, as may be expected—the difficulty of meeting promptly the demands of the railways appears at present to be insurmountable. As instances of these deferred deliveries, which seem to be accepted in a most commendable if not altogether patient spirit, may be quoted that of an Ohio electric road that placed an order for twelve 52-ft. steel interurban cars and five steel cars for city service in February. Of the lot two were delivered a week ago.

Early in May a Tennessee traction company filed specifications for twelve double-truck cars with one of the largest and best-equipped manufacturers in the country. Under the contract they were to be delivered by Sept. 1. Up to this writing not a car has been shipped. The railway was notified that "completion of the order cannot be definitely set on account of war conditions and stringency," and delivery was not possible until March next. Subsequently the manufacturers stated they could not set a definite time of shipment, and if the traction company wished to take steps to expedite the arrival of the much-needed rolling stock they would cancel the contract. Now the road expects to receive the cars by next summer.

One other Southern company placed an order, about the middle of May, for twenty-three pay-as-you-enter cars, and, notwithstanding the contract specified delivery date, it will receive only a partial shipment about the first of the year. They have been en route since the middle of November, reports state, but the freight embargoes are holding them up. The balance of the order, it is expected, will follow in three months. Many other instances of this kind could be cited, but these suffice. The trouble in obtaining equipment and special parts and lack of material and war pressure and other obstacles of a reasonable nature, particularly labor, such as many manufacturers cannot readily or quickly overcome, are offered in explanation. It only emphasizes the troublesome but unavoidable fact, however, that car builders are subject to the same annoyances that nearly every other manufacturer in the country is experiencing at the present trying period. Under the circumstances, it is held anticipating requirements would hardly apply.

Market for Railway Freight Cars Looking Up

Congested Condition of Steam Roads with Unprecedented Transportation Requirements Send Many Electric Roads Into Market for Rolling Stock

With the existing congestion of freight on the steam railroads shippers in a number of sections are looking toward the electric railways for relief, if it can be provided. This new development may have an important and far-reaching effect on the freight business of the traction lines. Up to this time, with a few notable exceptions, the freight business of the electric lines has been largely in package transportation. Now, real freight haulage is contemplated.

Roads which are planning to purchase freight cars for this purpose must realize that at present such cars are hard to get even from builders with large plants, whose activities just now, besides being somewhat absorbed on government work or war material of one kind or another, are being impeded by the difficulty of obtaining materials and labor. Hence, unless an order is of considerable size, or it is given a priority preference, so as to obtain the steel, it is declined unless it is taken with "shipment at convenience of factory." This situation will undoubtedly cause a demand for second-hand cars as well as increase the number of freight cars manufactured in company shops. One company on the Pacific Coast has already started the manufacture of 100 box cars.

Discussing this new development, the sales agent of a company making standard and special equipments recently remarked that it not only opened up a new field for the railways but also created a large outlet for the appliance manufacturers and distributers. They would not only be called upon to supply equipment and appliances for the new cars but for revamping and reconstructing much of the existing freight car equipment. If longer trains are to be run, there should also be orders for electric locomotives as a result of this campaign for greater freight transportation.

Foreign Competition Here After the War

Possibility That Engineer Soldiers, Besides Bringing Back New Ideas on Foreign Goods, May Have Agencies for Them

When this war is over, according to statements by authorities on the broader phases of manufacturing, foreign competition in the electrical field will be stiffer than any we have ever known. They base their conclusions on two facts. The United States has made foreign alliances. These obligations carry with them not only military but commercial understandings. When peace comes we will not tolerate our allies setting up tariff barriers against us and we will not expect to set them up against our allies. The belief exists that the tariff wall which kept the products of cheap foreign labor out of this country will have completely crumbled. Besides this, our engineer soldiers now abroad are not required to give their entire time to defeating Germany. They visit England, France, Italy and other countries on furloughs. In their leisure moments they visit things that interest them—engineering projects, power plants and the like. There is therefore the possibility that when they get ready to return to the United States some of them will bring along agencies for these foreign goods. Certainly they will bring new ideas regarding the applicability of foreign goods to American problems. Naturally the United States will then cease to be a secluded country. It will become a world nation engaged in world trade.

There is now plenty of time, it is believed, to prepare for what is coming. And it is not expected that industrial America will be found unprepared. Costs are being studied not only in the factories, but in the distributing forces. More efficient methods of production and distribution are at hand. In fact, when industry returns to the manufacture of purely peaceful products there will be available such increased manufacturing facilities that quantity production at correspondingly low prices is expected to result.

Better Plan Early for Next Year

President of Important Property Recommends Making Up Budget Now Rather than in January or February

The president of a large Middle-West electric railway property recently directed his department heads to "buy all the materials and supplies you can get for your next year's work now." This might perhaps well be made the text of similar instructions to department heads of electric railway properties generally, for there is no indication that the supply of materials will be any more plentiful next year than now, in view of the constantly increasing demand for them on the part of the government. Such procedure should not contemplate hoarding, but if there is "must" work to be done next spring and summer, it will be the early bird in the market who is able to take care of this necessary work as planned.

Prices are becoming more and more stabilized through the influence of governmental price fixing, so that there is not great likelihood of future marked increase in costs. On the other hand, the extraordinary demand at present and the very remote probability of a slackening in the demand during the next year would seem to give little basis for anticipating any reduction in prices. For these reasons, the prices will have little bearing on the time of placing orders. Hence, the sooner now that orders are placed, the more probable will be the delivery by the time the supplies are needed.

There has been a tendency on many properties in the past not to make up the annual budget and construction plans until in January and even February. Under normal market conditions this is probably sufficiently early, but this year it seems especially important that inquiries for the contemplated supplies should be sent out as soon now as is possible, and that the information thus gleaned should be made the basis of the budget and the latter then completed and orders placed at the earliest possible moment. Such a program will have the effect of advising the manufacturers earlier of the needs of the industry, and thus give them a longer time before deliveries are required, in which to secure the necessary raw materials—a task of no mean proportions. A few of the railways have already sensed this condition and have been sending out inquiries during the last few weeks. The practice could well be adopted generally.

Market for Measuring Devices Broadening

Policy of Finding Out How to Make Existing Equipment Do Increased Work Instead of Buying More Creates Demand

Shortage of capital, the uncertainty of deliveries and high prices are responsible for broadening the market for measuring devices of many kinds. Every effort is being made to make apparatus on hand suffice. Repairs are going on to an extent far beyond that of normal times. Apparatus is shifted to meet conditions where formerly additional equipment would be purchased. In order to make sure, therefore, that the repairs have been well made and that the new disposition of apparatus will work, recording instruments become necessary. The demand consequently for portable instruments, such as instrument transformers, millivoltmeters, ammeters, etc., has increased considerably of late.

Wire Buying by Traction Companies Is Weak

Base Quotations Higher than Government Copper Price Would Represent Because Manufacturers Must Pay More for Stock for Private Orders

Traction companies are buying wire as everything else on the "hand to mouth" basis, and then paring the order down to the lowest possible quantity. On weatherproof and insulated wire the market is equally unsatisfactory to buyers, so much so, in fact, that the buying, for the last week or ten days especially, is down to about the irreducible minimum, according to the reports from influential sellers. The Philadelphia Rapid Transit Company recently placed a large order for cable, and it was promptly filled and delivered, on account of its being given priority for government use.

Jobbers' quotations on Monday of this week for weatherproof in large quantities was in the neighborhood of 35 cents per pound in the East and around 39 cents in the Middle West. There is a slight confusion in the quotations on wire base, ranging from 30 to 34 cents and even reaching 39 cents, but no transactions of any magnitude are reported.

Prices for wire are not as low as the government price of 23½ cents for ingot copper would represent. Wire base is 3 cents or more higher. The reason, however, is that manufacturers have not been able to buy 23½ cent copper for other than government work. Prices paid to-day for new copper for private orders are above the 26-cent mark.

Conditions in the Railway Iron and Steel Market

Reduction in Iron Pipe Not Reflected in the Price of Trolley Poles—Car Wheels Are Lower

Market conditions on every species of railway material of which steel or iron forms a part have not changed, excepting along more rigid lines. On many goods prices are not quoted unless official advices from the factory are first obtained. The rule appears to be change without notice, and in the seaboard territory no guarantee of freight delivery. The latter rule is growing more stringent.

A slight reduction in iron pipe, announced recently, becoming effective at once, in nowise affected the selling figures on overhead or street trolley poles or their equipment. Gears and pinions needed as auxiliary to the turning out of war material are being shipped promptly; but the private consumer is obliged to wait the convenience of the factories. Car wheels have dropped in cost with the loosening up of the government price on pig iron. The demand is stated as normal, but the trouble appears to be a shortage in old wheels, which are difficult to get anywhere. Deliveries are not behind because shipments are certified as essentials by the priority committee of the War Industries Board, a proceeding which takes about a week to push through.

ROLLING STOCK

Pacific Electric Railway, Los Angeles, Cal., expects to build 100 box cars during the coming year.

Greeley & Denver Railroad, Greeley, Col., lost three cars in a fire on Nov. 23 which destroyed its carhouse.

Inter-Urban Railway, Des Moines, Ia., expects to purchase one or two 60-ton electric locomotives during 1918.

Winona Interurban Railway, Warsaw, Ind., contemplates the purchase of some freight trail cars during 1918.

Massachusetts Northeastern Street Railway, Haverhill, Mass., is remodeling four open cars into closed cars in its shops.

Newport News & Hampton Railway, Gas & Electric Company, Hampton, Va., expects to construct and equip one 40-ton locomotive during 1918.

Princeton Power Company, Princeton, W. Va., reports that it will probably purchase during the year 1918, two closed trail cars for use on the interurban line between Princeton and Bluefield, W. Va.

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Buffalo & Depew Railway, Buffalo, N. Y., expects to purchase ten or twelve additional cars for carrying employees to the ammunition factories at Depew.

Gray's Harbor Railway & Light Company, Aberdeen, Wash., has ordered six one-man cars from the American Car Company. The company contemplates changing its single-truck cars during 1918 for one-man operation.

Lake Erie, Bowling Green & Napoleon Railway, Fostoria, Ohio, has ordered a 40-ft. combination baggage and snow plow car of a novel type. Instead of a plow at each end as is usual, it has a plow attachment on one side and a scraper on the other. The car, ordered in the spring, is just now being delivered.

TRADE NOTES

Locke Insulator Manufacturing Company has changed its address from Victor to Rochester, N. Y.

Blaw-Knox Company, Pittsburgh, Pa., held its annual salesmen's convention in that city on Nov. 22, 23 and 24.

Electric Storage Battery Company, Philadelphia, Pa., has opened new offices in Detroit, Mich., at 1158 Cass Avenue.

Lloyd P. Jones, recently made vice-president and general manager of the Federal Brass Works, Detroit, was formerly sales manager.

Weston Electrical Instrument Company, Newark, N. J., has increased its capital stock by the issue of 5000 new shares of common stock to $1,500,000.

General Electric Company, Newark, N. J., has acquired property opposite its present plant, from Boyd to Lillie Street, and is said to be planning for plant extensions.

C. G. Young has become associated with Ford, Bacon & Davis, 115 Broadway, New York, N. Y., giving up his offices at 14 Wall Street on Dec. 1. He will be engaged particularly on reports and appraisal of public utility and industrial plants.

Joseph McKay, Jr., for thirteen years with the Wheeler Condenser & Engineering Company, and for the last two years with the Pittsburgh Valve, Foundry & Construction Company, has recently been engaged as general sales manager of the Descharrel Engineering Corporation, New York City.

Railway & Power Engineering Corporation, Toronto, Ont., Canada., has been chartered by Theodore Malm, 55 Kingswood Road; Gerard Ruel, 127 Isabella Street; Frederick C. Allen and others. The company is capitalized at $50,000 and proposes to manufacture machinery, tools, etc.

Philadelphia Storage Battery Company, Philadelphia, has opened a branch office and depot at 37 Spear Street, San Francisco, Cal. The company's first Pacific Coast branch was opened in Los Angeles a year ago. Arthur Affeld will have charge of the Los Angeles office and A. P. Clark will operate the San Francisco office. C. L. McWhorter, manager of the Pacific Coast division, will make his headquarters at the San Francisco office.

Connecticut Brass & Manufacturing Corporation, Waterbury, Conn., has been organized to acquire and consolidate the business of the Connecticut Brass Corporation of West Cheshire and the Pilling Brass Company, Waterbury. It will be the largest concern of its kind in the country. The production of the constituent companies in twelve months has increased 1000 per cent. The prospectus of the new corporation has just been distributed.

National Railway Appliance Company, New York, N. Y., on Thursday received nine Johnson fare boxes by express from the Johnson Fare Box Company, Chicago, Ill., to be installed immediately on Brooklyn stations of the New York Municipal Railway Corporation. The latter title is that of the subway system operated and controlled by the Brooklyn (N. Y.) Rapid Transit Company. The boxes, to expedite delivery, were forwarded from Chicago Tuesday, by express, but at Pittsburgh, Pa., they were unloaded for the accommodation of a governmental shipment coming to an Atlantic port. They were then reloaded and went to Boston, and but for the retention of the car number by the consignee, possibly might have gone astray. However, the boxes reached New York, and the express bill was an even $100. The consignee, while gratified to receive the shipment—a rush order—dryly observed it was some bill.

NEW ADVERTISING LITERATURE

Worthington Pump & Machinery Corporation, New York, N. Y.: A bulletin descriptive of its Deane automatic pumps and receivers, steam, electric, single, duplex and triplex types.

Nuttall Company, Pittsburgh, Pa.: An illustrated bulletin descriptive of its industrial products. This book includes information on gears, expansion joints, flexible couplings and trolleys.

Ophüls-Hill & McCreery, Inc., New York, N. Y.: Data book for securing all data pertaining to plants and the operating conditions to make estimates on contemplated improvements.

Ampudia & Cahill, New York, N. Y.: An illustrated leaflet descriptive of a cable-winding machine. This machine does the winding on the ends of cables in the form required by both United States standards and foreign standards for aeroplane work.

E. I. du Pont de Nemours & Company, Wilmington, Del.: Another "Du Pont Products" book has just been published by the company and its associates, Du Pont Fabrikoid Company, Du Pont Chemical Works, the Arlington Works and Harrisons, Inc. It lists all the products of these concerns and describes their uses as well as who uses them. A new "Products" book will hereafter be distributed at least once a year.

Standard Underground Cable Company, Pittsburgh, Pa.: A revised bulletin on type D. O. A. outdoor cable terminals in which several new types of terminals are described and listed. Among these are the protected disconnection terminal, pipe-top terminal and bore-hole terminal. The bulletin gives tables of working voltages and sizes of conductors for which terminals of certain dimensions and weights are required; also instructions for ordering, installing, etc.

Borden Company, Warren, Ohio: Published 1918 catalog of "Beaver" die stocks and square-end pipe cutters. This catalog is said to be the finest tool catalog ever issued, and its attractive appearance indicates that no expense has been spared in securing the services of the best artists and printers. Several new "Beaver" tools are shown for the first time in this catalog—one of the most popular of these being the No. 3 "Beaver" junior ratchet die stock, which is built on the unit plan to thread pipe from ⅛ in. to 1 in.

NEW YORK METAL MARKET PRICES

	Nov. 28	Dec. 5
Prime Lake, cents per lb	23½	23½
Electrolytic, cents per lb	23½	23½
Copper wire base, cents per lb	30	29
Lead, cents per lb	6½	6½
Nickel, cents per lb	50	50
Spelter, cents per lb	7.97½	8.00
Tin, Straits, cents per lb	80	85
Aluminum, 98 to 99 per cent, cents per lb	36	36

OLD METAL PRICES—NEW YORK

	Nov. 28	Dec. 5
Heavy copper, cents per lb	22	22
Light copper, cents per lb	19½	19½
Red brass, cents per lb	17½	17½
Yellow brass, cents per lb	14½	14½
Lead, heavy, cents per lb	5½	5½
Zinc, cents per lb	5¾	5¾
Steel car axles, Chicago, per net ton	$42.00	$42.00
Old carwheels, Chicago, per gross ton	$31.00	$31.00
Steel rails (scrap), Chicago, per gross ton	$34.50	$34.50
Steel rails (relaying), Chicago, per gross ton	$55.00	$55.00
Machine shop turnings, Chicago, per net ton	$17.00	$17.50

RAILWAY MATERIALS

	Nov. 28	Dec. 5
Rubber-covered wire base, New York, cents per lb.	34	34
Rails, heavy, Bessemer, Pittsburgh	$38.00	$38.00
Rails, heavy, O. H. Pittsburgh, per gross ton	$40.00	$40.00
Wire nails, Pittsburgh, per 100 lb	$2.50	$4.00
Railroad spikes, 9/16 in., Pittsburgh, per 100 lb.	$5.50	$5.50
Steel bars, Pittsburgh, per 100 lb	$5.00	$5.00
Sheet iron, black (24 gage), Pittsburgh, per 100 lb.	$5.80	$5.80
Sheet iron, galvanized (24 gage), Pittsburgh, per 100 lb.	$4.85	$4.85
Galvanized barbed wire, Pittsburgh, cents per lb.	$4.35	$4.35
Galvanized wire, ordinary, Pittsburgh, cents per lb.	$2.50	$2.50
Cement (carload lots), New York, per bbl	$2.22	$2.22
Cement (carload lots), Chicago, per bbl	$2.31	$2.31
Cement (carload lots), Seattle, per bbl	$2.65	$2.65
Linseed oil (raw, 5 bbl. lots), New York, per gal.	$1.20	$1.21
Linseed oil (boiled, 5 bbl. lots), New York, per gal.	$1.23	$1.22
White lead (100 lb. keg), New York, cents per gal.	10	11
Turpentine (bbl. lots), New York, cents per gal.	51	50½

Electric Railway Journal

Published by the McGraw-Hill Publishing Company, Inc.
Consolidation of Street Railway Journal and Electric Railway Review

Volume 50 NEW YORK, SATURDAY, DECEMBER 15, 1917 Number 24

Detroit United "Seizes the Bull by the Horns"

LAST week's experience of the Detroit United Railway shows that there are some advantages to a railway company in not working under a franchise. For one thing, fares can be raised, if necessary, and this is just what the company did on Dec. 2. Incidentally, the raise was only to 5 cents, and that only on the high-fare line. The so-called "Three-Cent Line" continued its former low fares, and workmen's tickets are still being sold on the high-fare line at the rate of eight for 25 cents. Nevertheless, the raise has caused considerable commotion. Opinions may differ as to whether the Council or patrons received sufficient notice of the contemplated act. The Council thinks it did not, and all sorts of retaliatory measures are being discussed; but for the benefit of both parties we trust that the proposed suggestion of a careful investigation of the whole situation by an experienced firm of engineers will be undertaken. No one can recommend the continuance of electric railway operation without a franchise, and both the city and the company were at fault for allowing this anomalous condition to continue. Undoubtedly the company has been the gainer from the delay, because if a franchise had been drafted two or three years ago its provisions would hardly have contemplated war conditions, with its high prices for materials and labor. The prominence of Detroit as a manufacturing city makes the settlement of the controversy promptly a matter of national interest. Detroit needs good electric railway service, and we have no doubt is willing to pay a reasonable price for it. The company has always given good service, and we assume all that it asks is a reasonable fare. Let both get together and adopt a permanent agreement under which the company will be warranted in giving the city the service which it should have.

This Means You

THE Government of the United States of America is at war—real war. It needs for the most effective carrying on of that war every ton of coal that you can dispense with. It's up to you and your carmen to accelerate and brake faster, to shorten your stops, to coast more and to eliminate needless mileage and excessive heating. It's up to the employers of your community to stagger the working hours of their employees so that the curse of the peak will be cut down if not cut out; and it's up to your patrons and your regulators to permit the elimination of time-killing and power-wasting stops.

You have never had such an opportunity before to cast off the abuses and inefficiencies in your business. Are you going to help yourselves in helping your nation, or are you going to wail: "It may be possible elsewhere, but our conditions are different"? If you know you can save coal and need the help of Commissioner Garfield and the War Board to do so, ask for it. This means YOU.

The Opportunity of Women for Transportation Service

THE employment of women in train service by the Brooklyn Rapid Transit Company and the New York Railways constitutes an important step in the right direction. Although the word comes from other quarters that they are being considered for work as conductors, and in other positions in train service, these roads are, so far as we know, the pioneers in this country in this regard. While such a step would have appeared radical a year or even six months ago, it is far from such now. The war, and a knowledge of what other countries have done, have changed all this. In the same week that the New York conductors are starting in on their work the general post office in New York has put on a number of women letter carriers. The steam railroads have had crossing watchwomen and women working in other public positions for months. Unfortunately, a change of this kind encounters a certain amount of inertia, not because the work is so vitally different from other work done by women in the past, but because it brings them more before the public. In fact, however, the experience has been where they are now in transportation service that the public scarcely notices the change. The policy of the New York Railways of giving first choice of vacant positions to dependent relatives of employees doing military service deserves hearty commendation. If the duration of this conflict is to be a matter of years, every individual must be willing to contribute his or her part, be it service or sacrifice. We can be regarded on a successful war footing only when, as in the stricken countries of our allies, fashion shall have become largely obsolete, and the chief ambition of every man, woman and child is to do the utmost to insure a victorious end. Women doing car platform work will provide a valuable lesson to the community.

There Is No Use in Taking Up Publicity Half-Heartedly

PRESIDENT JOHNSON of the Trenton & Mercer County Traction Corporation has gone into publicity with a will, with his sleeves rolled up. It will be most interesting to watch the outcome. Realizing that "faith without works is dead"—that publicity without service to back it up is effort wasted—he has wisely set about forestalling criticism by going to the limit of the company's resources to improve the service. Mr. Johnson's welcome to Peter Witt, who has been retained by the city authorities to investigate the service in Trenton, and his offer to co-operate with this expert, are representative of the kind of publicity which, on its merits, should make real headway with the public. Some electric railway managers may not agree with Mr. Johnson, but it is certain that no one can point to any company that has made any progress by taking the other tack. Yet it has been tried often enough.

Voltage Rise in Third-Rail

ALTHOUGH comparatively few of the readers of this paper are directly affected by the extra voltage produced in a third-rail when a heavy short-circuit current is suddenly interrupted therein, there are principles involved in this phenomenon which should be understood by every distribution engineer. On the Michigan Railway 1200-volt line, with 80-lb. third-rail, it was found necessary to install aluminum cells to discharge the surges produced by such interruptions. On lower voltage railways it has not been necessary to follow this plan, although the possible effects of the collapse of the magnetic field in the rail have not been overlooked by any means. As far back as 1901 the engineers of the Manhattan Elevated Railway, New York City, noted that on a line having few cars the fuse on a train passing near a yard where experimental work was going on was apt to blow when a fuse blew in the yard. There is now no surge trouble on the Interborough lines, however on account of the large number of cars in operation.

While the whole subject has been under investigation for many years there is very little information in print regarding it, hence the contribution by Prof. D. D. Ewing printed this week is a distinct addition to the available literature. The article is based upon experimental data, and, therefore, contains first-hand information. The methods used for the tests are in themselves instructive and the results have been put into such form as to be readily understood and compared. The closeness with which the experimental results check with the calculations gives confidence in the theory, which after all must be the basis of substantial progress. As explained, the work is preliminary, but at least a good beginning has been made. We hope that this article will suggest to those having other experimental data in hand the desirability of bringing them out of the archives and putting them where they will do some good.

Employers Can Prevent Solicitation of Men Hired on Non-Union Basis

THE United States Supreme Court this week handed down two decisions that have a most important bearing upon the frequent efforts of labor unions and agitators to foment trouble on local properties. The meaning of the decisions in the Hitchman Coal & Coke Company and the Eagle Glass Manufacturing Company cases seems to be simply this: When men accept employment under an agreement not to affiliate with any union, attempts should not be made by the unions to extend their membership among these men in order to force the breaking of the agreement. In the cases considered the court held that none of the employees under the agreements had a right to remain at work after joining the unions, and the unions' deliberate policy of secret penetration, looking toward the stoppage of work by strike, was "unlawful and malicious." In other words, when a company has established a working agreement with its men, it has a right to be protected in the resulting status and injunctions can be secured against outside interference. Such opinions from the highest court in the land should be encouraging to those who are interested in overcoming the menace of foreign irresponsible labor leaders.

It Is Not Usually Desirable to Manufacture Stock Articles

AT THIS time when so many makers of electric railway equipment are gravely concerned at the inability of their customers to order the apparatus necessary to keep up standards of service, it is apropos to call attention to abuses of the principle of home manufacture. Generally speaking, we do not believe that a railway company can manufacture parts of electric railway apparatus or even complete cars as cheaply as it can purchase them in the general market. Sometimes the figures on the cost of such work when done in an electric railway shop appear to show a saving, but there is nothing so easy, in cases of this kind, as to underestimate the overhead expenses. The time of the master mechanic in planning the work, that of the other officials in giving oversight and that of the accounting department in keeping the records, the proper charge for rent for the space occupied and interest and insurance on the shop, tools and materials under construction—all these are matters which are apt to be overlooked in part when an estimate of the cost of home manufacture is made.

But even if all overhead expenses are included and the comparison still shows a saving for home manufacture, there are several remaining factors which tend to turn the scales in favor of the purchased article. One of these is that as the manufacturer is devoting his entire attention to the manufacture of his particular device and is watching its performance as well as that of other similar apparatus all over the country, he is in a better position than a single railway company to introduce improvements into both its manufacture and design. If this is done to any considerable extent and the improvements are patented, the railway company will have on its hands what are practically obsolete patterns and tools for the manufacture of that device. Conditions also may so change that it will no longer be desirable for a company to make some particular article, or to make it on so large a scale, so that in this way also the special tools may become largely unusable. The temptation to continue the use of obsolete equipment under such circumstances is great, so that the net result of home manufacture is often to keep a company behind the times by the use of old-fashioned equipment.

The reference to patents suggests another reason why a company should be very wary about engaging in home manufacture. Much of the electric railway apparatus developed during the last few years is still protected by patents, and any user making this equipment without the permission of the patentee is liable to heavy damages for infringement. In some cases of this kind, the manufacturer finds the copy of his apparatus thinly disguised by so-called "improvements," but on other occasions it is imitated outright, often with inferior materials and inferior workmanship. Indeed, conversation with manufacturers discloses the fact that there are railway properties to-day which are looked at askance when they ask for sample outfits. Past experience makes the manufacturer fear that the sample outfit is requested so that the railway will determine if it cannot make the mechanism itself without paying royalty or how nearly it can imitate it without running the risk of infringement. Experience also shows that by a curious inconsistency in human nature many of those users who are most reluctant to acknowledge patent rights are often the first to demand a royalty for anything that they invent in the same field.

From both an economic and a utilitarian point of view, therefore, the desirability of much home manufacture is doubtful, and if railway companies have not had the question of legal liability brought home to them oftener, it has been due simply to the natural desire of the manufacturer to avoid incurring the ill-will of possible patrons.

The Industry Assumes a New Outlook and Responsibility

AS the work rapidly progresses in organizing and preparing the electric railway industry for the important part it bids fair to take in the nation's transportation requirements, the possibilities for immense service to our government and for increased revenue to the railways assume a constantly expanding magnitude. Fortunate now are those roads which have been prepared in the past for handling freight, as has been so strongly and persistently advocated by this journal, for not only have they materially increased their earnings heretofore, but they are now in a commanding position to secure unprecedented quantities of government business and business usually routed in normal times over the steam lines. Whether formerly accepting freight shipments or not, the electric railways should now immediately take steps in co-operation with the Electric Railway War Board at Washington to handle all the local freight traffic within reach of their lines and thus relieve an immense number of steam road cars for the long-haul shipments and thereby greatly alleviate the congestion on the steam lines.

Certain points should be borne in mind as the electric railways solicit and assume this greater responsibility, many of them for the first time. One of the principal of these is that the electric railways as a group should depend on their own resources. In some of the conferences which have been held there has been some planning of how a section of steam line might be used to interconnect two electric lines in cases where steam lines paralleled one or both of the electric lines to the destinations under consideration; or how in Chicago, for instance, the steam railway belt lines could be used in transferring freight cars from one to another of the interurban lines radiating out of the city, but having no physical interconnection. Plans involving such schemes are in general fallacious. The great assistance which the electric railways can be to the government will be in what they can do to relieve the strain on the steam lines and to themselves in the better service they can give the shippers. The terminals are the most congested points of the steam lines, so that any plan which contemplates the use by the electric lines of these facilities for interconnection defeats its purpose both to the government and the electric roads themselves because it adds to the congestion and delays their own service.

Nor can the electric railways expect in general to bring about joint arrangement with steam lines whereby they will secure the use of the latter's terminal buildings and facilities. Such an advantage can be logically sought only in instances where a satisfactory amount of tonnage originates at the steam road terminal for shipment to points on the electric line not reached by the steam railroad. The more complete the reliance on strictly electric railway properties, the greater will be their assistance and their revenue.

Then there is the problem of rates, especially for those lines which will begin for the first time to carry freight. If the amount of business available is very large, as is anticipated in many quarters, there will be an inclination already manifested though not put in practice to charge an exorbitant rate. On the other hand there is a tendency perhaps more general to charge the same as steam road rates and thus avoid the necessity of any particular selling talk. Neither of these stands, in our opinion, is best. A proper rate would be one which was commensurate with the service rendered; that is, it would be higher than steam road rates in view of the practically express service which can be given and in order to offset a possibly higher terminal charge, and yet it should not be high enough to bear any of the earmarks of an "all-the-traffic-will-bear" scale. There will, of course, be some latitude in the establishment of rates where new tariffs are filed, and these should be most thoroughly considered before being placed in the final petition. They should be sufficient to assure a reasonable profit, but not so high as to suggest a "hold-up."

Tramways Render Invaluable Service in Halifax Disaster

Company Escaped with Loss of Few Employees and Comparatively Little Damage to Power Plant, Track and Rolling Stock—United States Bluejackets Assisted in Restoring Railway Property

PART OF THE HARBOR OF HALIFAX, N. S., AND SURROUNDINGS AFTER THE DISASTER OF DEC. 6

FOUR thousand tons of T. N. T. exploded on board the French munitions ship *Mont Blanc,* at Halifax, Nova Scotia, at 9.05 a. m. on Thursday of last week, killing more than 1250 persons, injuring many thousands and destroying approximately 5 square miles of the city and adjacent suburbs on the north side of the Nova Scotia capital. The explosion followed a collision in the narrows of Halifax harbor between the *Mont Blanc* and the Belgium relief ship *Imo,* and immediately led to a conflagration which transformed the afflicted area within a few hours into a waste of ruin. About 25,000 people were rendered homeless by the disaster, and scarcely a building in Halifax or neighboring Dartmouth went free from injury. The property loss is roughly estimated at $20,000,000. Despite the terrible and widespread devastation caused by the calamity, the public utilities of the city have in the main escaped crippling losses, and in the period of rescue and revival now under way are rendering service of untold value to the community.

ELECTRIC RAILWAY CONDITIONS

A representative of the ELECTRIC RAILWAY JOURNAL went to Halifax immediately after the disaster and reported that, in general, the Nova Scotia Tramways & Power Company's power plant equipment and repair shop proved almost immune from damage excepting the destruction of windows and doors from the concussion. As might be expected, the rolling stock of the company suffered considerably where it was in service on the streets. Five platform men were killed in the performance of their duties and four of the company's outside mechanics lost their lives. As yet it is impossible to tell how many laborers succumbed. Out of forty box cars in service thirteen are in first-class condition. Two were so badly damaged that they will have to be completely rebuilt. Twenty-five others suffered minor injuries, such as broken windows, door frames blown out or in, warped bodies, etc. One car body was torn off its truck and landed upon a sidewalk at the north end of the city.

Fortunately for the company, very little damage was done to track and roadbed on the system as a whole. The company operated only about 1 mile of track (60-lb. Lorain T-rail) in the worst part of the explosion zone, and this appears not to be in very bad shape. A few cars were started out on the system Friday morning, but unfortunately a blizzard descended upon the city. Automobiles and cars became stalled, and it was impossible to resume passenger service until Sunday morning. On Saturday night 150 United States bluejackets assisted the tramway company in track cleaning. Managing Director H. R. Mallison states that the aid rendered by these men enabled considerable progress to be made in the direction of opening the system for traffic, and that their unstinted service will never be forgotten either by the citizens or by the company. Eight cars were in operation by 10.20 a. m. Sunday. The railway distribution system was not seriously damaged except in the districts closely involved in the explosion. The company is well supplied with line material of all kinds, but is short of car carpenters and glass.

As its name indicates, the Tramways & Power Company supplies electric railway, light and power service in this district. It also manufactures and sells gas in Halifax. The total population served is about 65,000. The company's generating plant is located on the west side of Halifax harbor, about one-half mile from the business section of the city and about 2½ miles south of the explosion center. The company also owns important water rights on the Gaspereau River, 55 miles from Halifax.

The generating capacity of the steam plant is 5700 kw., produced in two horizontal turbo-alternators supplied by the Canadian General Electric Company and two 600-kw. units direct-connected to Rice & Sargent engines. The turbines are rated at 1500 kw. and 3000 kw. respectively. The boiler plant consists of seven 350-hp. and seven 300-hp. Babcock & Wilcox units, the former being equipped with Jones underfeed stokers and the latter with B. & W. chain-grate stokers. There are two Alphons - Custodis stacks, one 90 ft. high and of 7 ft. inside diameter, the other 175 ft. high, with an inside diameter of 8 ft.

For the tramway supply four motor-generator sets are operated in the power plant, including three of 225-kw. capacity each and one of 500 kw. capacity. A 1000-kw. unit will also be placed in service in the near future.

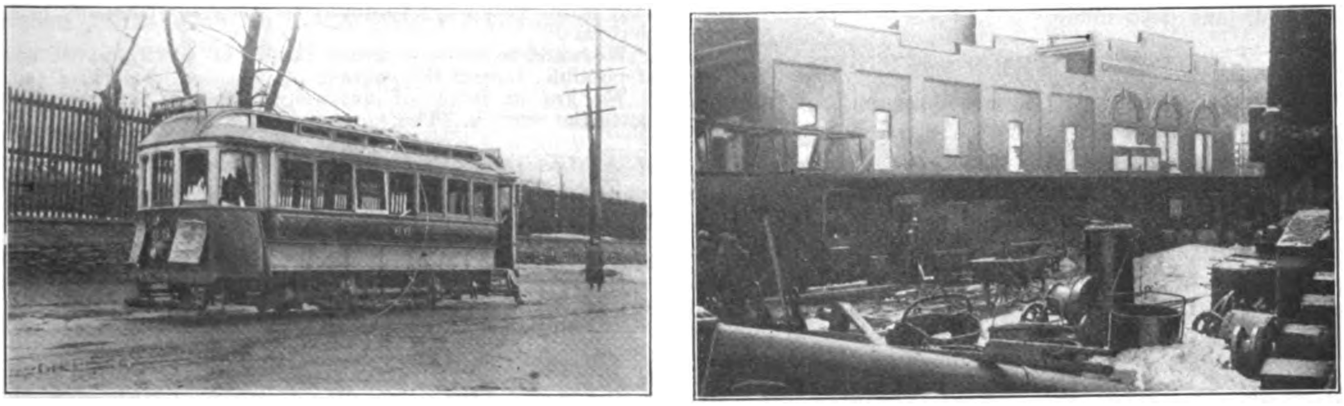
The explosion destroyed the greater part of the overhead lines in the so-called Richmond district of Halifax, as well as in Dartmouth. Breaks and short-circuits in the distribution system of the Tramways & Power Company necessitated the shutting down of the generating plant for a short period, but within an hour the station was again supplying energy through all parts of its territory outside the explosion zone. The fall of overhead circuits, trolley wire and feeders opened a large number of automatic breakers and switches at the power plant. Practically all the windows and doors on the north side of the station were blown into the building, debris scattering about the operating room for a distance of 40 to 50 ft. from the wall. As in many other parts of the city, the tremendous air currents set in motion by the explosion wave knocked down some of the employees. None of those in the station, however, was seriously injured. The windows on the north side of the station were of wired glass set in steel sashes, but these were blown to bits by the force of the blast. A large amount of glass was blown into the motor-generators near the north wall, and the railway switchboard was also subjected to a shower of this material. Little damage was done, however, either in the station or in the adjacent car repair shop of the company. The boiler room suffered little if at all.

Many of the short-circuits on the distribution system were quickly burned out. As soon as possible after the explosion the company's line superintendent and two men proceeded to the vicinity of the North Street station (the Halifax railroad passenger terminal) and cut clear across the city, beginning at North Street, all the overhead lines of the company entering the devastated district. This work was completed during the afternoon.

Prior to the disaster the average peak load upon the power station was 3100 kw., but the curtailment of demand resulting from the destruction of so large an area has reduced this to about 1500 kw.

The Local Utilities and the Halifax Disaster

The central station and electric railway service at Halifax, N. S., had a remarkable escape from crippling in the disaster which occurred in the harbor of that city. The explosion killed five carmen and four mechanics, but all the linemen, plant employees and officials were reported safe on Dec. 10. The overhead distribution system in the stricken districts was wrecked and the windows of the steam plant, 2.7 miles from the munitions ship, were blown in. This plant resumed service within one hour of the disaster. Two cars of the local electric railway were utterly wrecked and twenty-five others were damaged. Car service was resumed partially the same evening that the disaster occurred, but the cars were stalled by the blizzard until Sunday, Dec. 9. The station peak and output were halved by the explosion. The company needs car carpenters. The supply of line material is ample. The track and roadbed were little damaged. The telephone service was well maintained outside the fire area, but the overhead toll lines were badly damaged. The telegraph facilities were rapidly improving on Dec. 10. At first only radio communication was possible with the mainland. The water and sewerage systems appear to have suffered very little. The railroads and the dockyards in the vicinity of the explosion were hard hit. The gas plant was damaged, but service was restored on Dec. 9. It was considered doubtful on Dec. 10 if the property loss to the tramway and the power company would exceed $100,000, but it is expected that the loss of revenue will be heavy. Business was still almost demoralized on Dec. 10. The loss of life was more than 1250, while many thousands of persons were reported to be injured. Nearly all the buildings in Halifax were damaged.



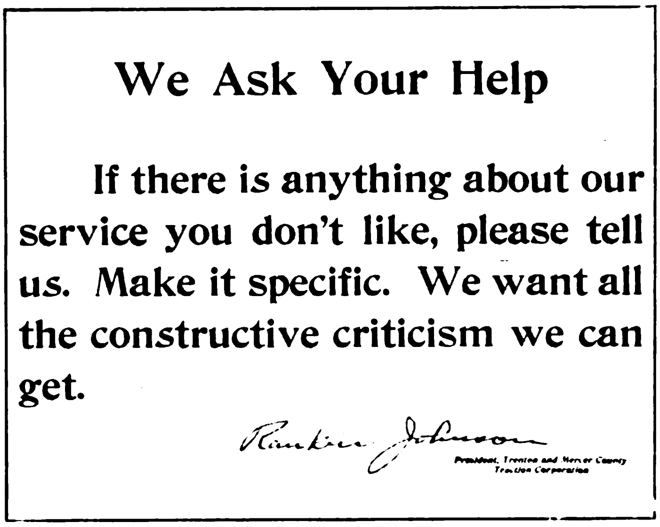
VIEW OF TROLLEY CAR DAMAGED BY EXPLOSION, AND VICINITY OF POWER PLANT OF TRAMWAY & POWER COMPANY, HALIFAX, N. S.

Going at Publicity Whole-Heartedly

How the Trenton & Mercer County Traction Corporation Is Trying to Overcome Public Abuse by Efforts to Improve Service and by a Frank Appeal for Constructive Criticisms

MANY electric railways have started publicity campaigns, but few have gone at it whole-heartedly. They write and speak as though they were afraid that somebody was going to say something disagreeable to them. Managers are probably not accustomed to trying to get the public's point of view, and it is natural that at first much of their publicity should appear half-hearted. But this really comes only from stage fright. Once they get into it and see how whole-hearted publicity helps them in their relations with the public, they will gain confidence in telling their story.

The Trenton & Mercer County Traction Corporation, operating in Trenton, N. J., and surrounding country, has adopted a policy of publicity, and it has gone into it with a will and a speed that are admirable. The company has left little room for any one to impugn either its motives or its intentions.



We Ask Your Help

If there is anything about our service you don't like, please tell us. Make it specific. We want all the constructive criticism we can get.

Rankin Johnson
President, Trenton and Mercer County Traction Corporation

FIRST CAR CARD USED BY TRENTON COMPANY

For many years the company has been the target for local politicians and a hostile press, particularly the Trenton *Times*, an influential afternoon newspaper. Its officers and directors have been held up to public scorn as amateurs, promoters and stock-waterers, but no reply has been made.

Getting the Public's Attention

It became evident to Rankin Johnson, president of the company, however, that this campaign of abuse was seriously undermining the *esprit de corps* of his employees, making it harder and harder to maintain good service on an already insufficient income. Mr. Johnson realized that he must get his story before the people of Trenton or suffer the consequences of the diatribes of his opponents being accepted as gospel truth. But the company could not get its story printed in the newspapers except in the advertising columns, and such a procedure was entirely too expensive for a company with an annual deficit. There was only one way to get the story to the public, and that was through the medium of the cars.

While Mr. Johnson was getting the material printed for distribution in this way, he published the following advertisement in the Trenton newspapers, the object being to focus immediate attention on the new efforts of the company:

> *We Ask Your Help*
>
> We are striving to give Trenton a good electric railway service. We ask your help. We want constructive criticism. If your service is poor and you know why, tell us why. Be specific, not general. For instance, don't say "Your cars are dirty." If you see a car with a dirty floor or windows, tell us. Give the number of the car. Your suggestions will receive prompt attention and serious consideration. Your cars may not run on time. If so, tell us. We want to know it. If it is the company's fault we can eliminate the cause. If it is due to something over which we have no control, maybe you can help us to remedy matters. This company is poor. We haven't paid a cent of dividends. We hope eventually to prosper, but we realize we cannot prosper unless we give good service—unless you know your service is as good as that of any other city of Trenton's size. There are many problems confronting the company about which the people of Trenton should know. We are going to tell you about them through little leaflets we shall distribute in our cars. Help us with your suggestions.

The *Times* rose to the occasion, as was expected. The day after the advertisement appeared it printed an editorial which said, in effect, that it was too bad the company did not mean what it said: "There is no hope," was the optimistic view of the newspaper.

The company's second step was to put small four-page folders in its cars. These folders, the front page of which is reproduced on page 1069, are 4 in. wide and 5½ in. long. Boxes marked "Take One," placed in conspicuous places in the cars, offer the folders to the public. The first folder read in part as follows:

> *We Ask Your Help*
>
> If you can tell us something we can do to improve our car service, you will help us.
>
> We don't think we know it all.
>
> If we do not adopt your suggestion it will be for a good reason, and we will tell you what it is.
>
> We want the people of Trenton to know that the primary aim of this company is to give good service. We believe that is the best way eventually to make our company prosperous.
>
> We want to know of every failure of service so we can, if possible, correct the causes.
>
> We are in favor of anything proposed that looks to bettering service. The more investigation the better.

At the same time the company posted in the car windows placards reading as follows:

> *We Ask Your Help*
>
> If there is anything about our service you don't like, please tell us. Make it specific. We want all the constructive criticism we can get.

In three days the company had its publicity campaign well under way. More important, the people of

Trenton were talking about it and beginning to appreciate that there was something in the company's story.

PUBLICITY HAD INTERNAL EFFECT

The principle that publicity does as much good within a company's own organization as it does with the public, and does it first, is borne out in the case of the Trenton company. The first thing the company did was to take steps to see that the field of criticism was pre-empted in so far as this covered those features of the service which it could control.

There had been charges that the company's cars were dirty. President Johnson admitted that his cars had not always been as clean as they might have been, but he said that this was due to the impossibility of securing enough car cleaners. This excuse being good only after every source of labor was exhausted, Mr. Johnson inserted an advertisement—a display ad, not just a little want ad—announcing that the company must have cleaners, men or women. The result was fairly successful. The supply of male labor was as scarce as ever, but some women cleaners were secured, and the company is now trying them.

Right there the publicity opportunity afforded by the subject of clean cars was seized upon. It would have been a grievous oversight not to do so. An electric railway's cars are constant points of contact with the public. Is it not natural that a company which always presents to its passengers exceptionally clean cars, with shining windows, clean floors and woodwork free from grime and dust should create a good impression?

WELCOMING AN INVESTIGATOR FOR THE CITY

About the time the company began its publicity campaign, the city authorities sent a committee to Cleveland to look into street-car conditions there and engage an expert to make an investigation of the service in Trenton. Peter Witt was the expert selected.

Here, then, was an opportunity for the Trenton company to show whether it really was going in for the only kind of publicity that is effective—the whole-hearted kind that lets the public see all sides, the good and the bad. The company had before it two courses which oftentimes have presented themselves to other companies. Should Mr. Johnson welcome Mr. Witt and co-operate whole-heartedly with him in his effort to suggest things that would improve the service, or should he take it for granted that Mr. Witt, brought to Trenton by a city administration openly hostile, was not intent upon a helpful mission, and treat him as an avowed enemy.

Here is the way the Trenton company met the proposition. The following advertisement appeared in the Trenton papers as soon as it was announced that Mr. Witt had been engaged by the city:

Welcome to Peter Witt

We are glad the city has secured the services of Peter Witt, of Cleveland, to look into our street car service.

Mr. Witt was at one time Street Railway Commissioner in Cleveland. He knows the problems of electric railways.

Trenton and the company are both to be congratulated on Mr. Witt's selection as an expert to come here.

We are sure Mr. Witt will give us some valuable suggestions.

We are up against the same problem—constantly increasing costs of operation—that a few days ago led the Cleveland Railway, with the city's approval, to increase its fare from 3 cents to 4 cents, with 1 cent extra for transfers.

The Cleveland street-car situation is unique in this country. In Cleveland the company escapes a large portion of the usual paving charges.

In Trenton the company's paving costs amount to about $25,000 a year.

The Cleveland company pays no franchise tax. We pay 5 per cent of our gross receipts. It amounted to about $32,000 last year.

Cleveland runs trailer cars, which few cities in this country tolerate.

Cleveland's cars, in the larger part of the city, stop only every other block.

We would like to secure in Trenton some of the conditions that exist in Cleveland. We believe we would be in a better position to improve our service.

We want the people of Trenton to know that every facility of this company will be placed at Mr. Witt's disposal to help him in his work.

We are in favor of this investigation of our service with all our hearts, because we firmly believe it will be helpful and constructive.

We Ask
Your
Help

If you can tell us something we can do to improve our car service you will help us.

We don't think we know it all

If we do not adopt your suggestion it will be for a good reason, and we will tell you what it is.

We are keenly alive to our obligation to the people of Trenton That feeling underlies all our policies.

Ask Mr.
Witt, He
Knows

PETER WITT, formerly Street Railway Commissioner of Cleveland, who is here to help us improve our trolley service, made an address in Cleveland on November 21. He declared that three-cent fares in Cleveland *had been maintained by crippling the service.*

Mr. Witt said that if the city administration had continued to buy cars and maintain service at a standard set when he left office the maximum rate of fare would be in effect.

COPIES OF FOLDERS USED IN "TAKE ONE" BOXES IN TRENTON CARS

Mr. Witt's visit to Trenton presented an excellent opportunity for the company to come out before the public in a forceful way and at a time when the point of contact existed, with the all-governing reason why the company could not provide all the convenience of service known to the art of electric railroading.

The second poster displayed in the Trenton car windows quoted Mr. Witt as saying that low fares have been kept in Cleveland by crippling the service, and then it continued as follows: "We can't give you the service you ought to have on six tickets for a quarter. Read the little folders in the 'Take One' boxes. They tell the whole story."

The folder referred to in the card read in part this way:

Ask Mr. Witt, He Knows

Peter Witt, formerly Street Railway Commissioner of Cleveland, who is here to help us improve our trolley service, made an address in Clevland on Nov. 21. He declared that 3-cent fares in Cleveland *had been maintained by crippling the service.*

Mr. Witt said that if the city administration had continued to buy cars and maintain service at a standard set when he left office the maximum rate of fare would be in effect.

We are sure Mr. Witt will tell you that when you want good service you can get it only by paying for it.

Every man, woman and child in Trenton ought to go to the City Commission and the Public Utility Commission and protest against keeping trolley fares so low that their service is held below the standard they ought to have.

We will do everything we can with our present facilities. But we do not fool ourselves, and we are not going to try to fool the people of Trenton.

A company that is permitted to earn a fair return on money actually invested in your trolley lines can give good service. No other company can do it.

GOOD START HAS BEEN MADE

The company has announced to its patrons that it will give the best service possible with the facilities and means at its command. It has even intimated that it will increase those facilities if it is permitted to earn sufficient revenue. Figuratively speaking, it has told the people that in the matter of service it is going to hitch its wagon to a star. To carry out this figure, the company is placing a large blue star in the background of all its car posters. The idea back of this is similar to the idea back of the colored band that has characterized the posters which the Interborough Rapid Transit Company has been displaying in its cars in the New York subway and elevated lines. That this adds to the eye-catching qualities of the posters has been proved amply.

The Trenton company has just started, but it has made a running start. If President Johnson keeps his promise to its patrons that he will, up to the limit of his resources, leave nothing undone to improve the service, and if, at the same time, he keeps talking to his passengers about his problems through the medium of his folders and posters, it should not take long to convince the people of Trenton that he means what he says. If the service is good and the public knows it, and knows that the management is earnestly trying to please its patrons, the company has little to fear from unfair criticism. Such criticism will react upon itself.

Utah Electrification Embodies Latest Developments

Automatic Substations with 1500-Volt Motor-Generator Sets, and All-Steel Cars with Equipment for Automatic Acceleration and Constant-Potential Motor-Generator Sets for Supplying Energy to the Control and Lighting Circuits Are Features of Salt Lake, Garfield & Western Electrification and Extension

WHAT promises to be one of the most interesting electric railway installations of the country is under way and promised for completion by May 1, 1918, at Salt Lake City, Utah. The Salt Lake, Garfield & Western Railway, which extends from Salt Lake City to Great Salt Lake and Saltair Beach, a distance of 15 miles, and has been operated with steam for the last ten years, is being electrified and extended to Garfield and to the plant of the American Smelting & Refining Company, making a total of 20 miles of single-track electric line. The special features of this installation include the use of automatic substations equipped with motor-generator sets for supplying power to the trolley at 1500 volts. These will be the first motor-generator sets to be thus operated, for all previous automatic substation installations have been for rotary converter control. Another new development is the use of a small motor-generator set on each car to supply energy for the control system, headlight and interior car lights. This energy is supplied at constant voltage even with an extremely wide variation in the trolley voltage.

TRACK AND OVERHEAD CONSTRUCTION

A 66-ft. right-of-way has been purchased for the extension. While only 20 per cent of the line as built at this time will be double track, the one track is so situated that a second track can be added without changing the overhead or present roadbed construction. About 25 per cent of the grading on the extension has been completed.

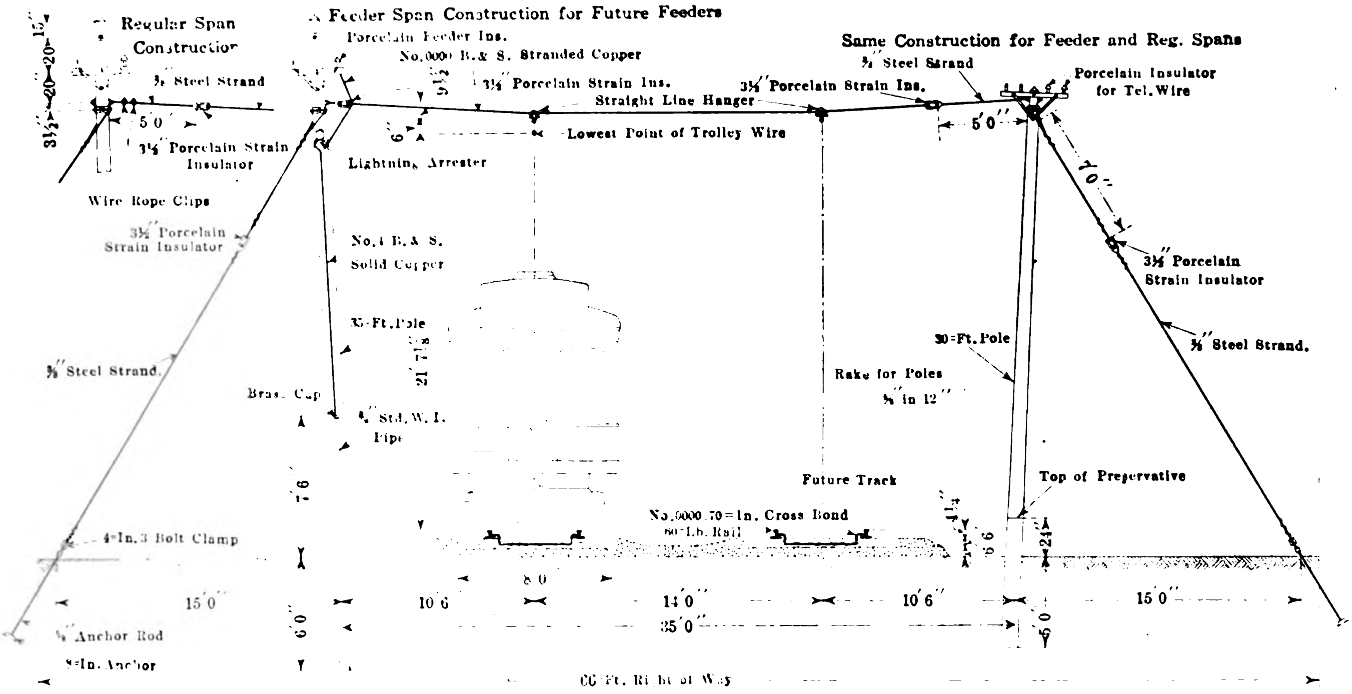
The track is being laid with 60-lb. T-rail and No. 1 grade Western cedar ties with 24-in. spacing on gravel ballast with 6 in. of gravel beneath the ties. Four-bolt angle bars and ordinary drive spikes will be used to fasten the rails. Tie plates and rail braces will be used where needed. A No. 0000 American Steel & Wire Company gas-welded bond will be placed on every joint, and No. 0000 cross-bonds will be installed 600 ft. apart. The locations of the cross-bonds will coincide with the 200 Garton-Daniels lightning arrester installations and with the feed-in points, should a feeder be necessitated later by heavier traffic. Burdette oxygen torches and gas supplied by the Burdette Oxygen Company of Salt Lake City, and by the Prest-O-Lite Company of Los Angeles, are being used in putting on the rail bonds.

The drawing showing a cross-section of the right-of-way gives an idea of the construction of the overhead, which is to be of a direct-suspended cross-span type. The cross-spans will be 3/8-in. Siemens-Martin steel strand, suspended from Western cedar poles. The length of cross-spans will be 35 ft., and the spacing of poles 90 ft. Thirty-five-foot poles will be used on one side of the right-of-way and 30-ft. poles on the other side. The longer poles will carry a cross-arm above the trolley suspension for future feeder cables, and the shorter poles will carry a cross-arm on which will be mounted two pairs of No. 10 gage galvanized-iron wire for a private telephone system. Every pole on the system will be guyed and anchored with an 8-in. Bierce anchor set in crushed stone.

The trolley wire is to be No. 0000 American standard grooved section, two wires for the present being suspended from independent hangers over the one track. These are so arranged that upon the construction of another track later one of the hangers can be centered on the span wire over the second track without disturbing the overhead construction. These two No. 0000 trolley wires will supply sufficient copper so that on the basis of a maximum drop of 10 per cent in any part of the line, and under conditions of heavy traffic, no additional feeder copper will be required. The traffic conditions considered in deciding upon this copper section include the hauling of 300,000 passengers during the ninety-day summer resort season. The trolley wire will be furnished by the Standard Underground Cable Company and the span and telephone wire by the American Steel & Wire Company.

Power Supply and Substation Equipment

Energy will be purchased from the Utah Power & Light Company, which has a 44,000-volt, three-phase transmission line paralleling the railway. It will therefore be necessary for the railway company simply to tap into this high-tension line at its two substations, which are automatic. One of these is located 5 miles from Salt Lake City and the other 15 miles from the city, which places each substation in the center of a 10-mile section of line. Each substation will contain a motor-generator set made up of a 900-hp., three-phase, 60-cycle induction motor direct-connected to a 600-kw., 1500-volt, compound wound, direct-current generator. These units will be controlled entirely with the General Electric automatic substation equipment. The buildings will be constructed with concrete foundations carried up to the water table and will have brick walls and steel roof trusses and reinforced-concrete floor and roof.


Regular Span Construction
Feeder Span Construction for Future Feeders
Porcelain Feeder Ins.
No.0000 B.& S. Stranded Copper
⅜" Steel Strand
3½" Porcelain Strain Ins.
Straight Line Hanger
3½" Porcelain Strain Ins.
Same Construction for Feeder and Reg. Spans
⅜" Steel Strand
Porcelain Insulator for Tel. Wire
3½"—20—20—15"
5'0"
3½" Porcelain Strain Insulator
Wire Rope Clips
Lightning Arrester
Lowest Point of Trolley Wire
5'0"
7'0"
3½" Porcelain Strain Insulator
No.4 B.& S. Solid Copper
35-Ft. Pole
21'7⅛"
30-Ft. Pole
Rake for Poles ⅜" in 12"
⅝" Steel Strand.
⅝" Steel Strand.
Brass Cap
¾" Std. W. I. Pipe
Future Track
Top of Preservative
No.0000 70-In. Cross Bond
60-Lb. Rail
4-In.3 Bolt Clamp
7'6"
24"
8'0"
15'0"
10'6"
14'0"
10'6"
15'0"
35'0"
6'0"
5'0"
⅝" Anchor Rod
8-In. Anchor
66 Ft. Right of Way

UTAH ELECTRIFICATION—VIEW ACROSS RIGHT-OF-WAY, SHOWING OVERHEAD CONSTRUCTION

Special Features of Motor Cars

A contract has been let to the McGuire-Cummings Manufacturing Company for six all-steel, double-end passenger cars, which will be 56 ft. long and 9 ft. wide and will seat sixty passengers. These will be equipped with four 110-hp., GE-240, 1500-volt motors and electro-pneumatic control for automatic acceleration, also furnished by the General Electric Company. This includes a change-over arrangement for operation on the 525-volt system of the Utah Light & Traction Company in Salt Lake City where the cars will operate. The cars will be equipped with a combination straight and automatic air-brake system, built with a double commutator compressor for operation on both the 1500-volt and the 525-volt trolleys. This compressor will deliver 35 cu. ft. of free air per minute against 90 lb. pressure. The trucks specified are of the McGuire-Cummings No. 70 A, M.C.B. special interurban type, arranged for inside motor and brake hanging.

The car equipment is designed with a capacity for hauling three trailers, as the cars will be operated in four-car trains. The car bodies will have vestibuled platforms so that passengers can go from one car to the other. Delivery on the six motor cars is promised for May 1, 1918. Ten trail cars of similar design will be purchased next season. It is also intended to purchase two electric locomotives next year, but the use of steam locomotives for hauling freight will be continued until electric locomotive prices are more favorable.

One of the principal features of the equipment of the cars is a motor-generator set hung from the car body for supplying direct current at 32 volts for the control and complete car-lighting systems. This is a new development of the General Electric Company and is the first installation. The generators are designed to deliver current at constant voltage regardless of the variation in trolley voltage. This includes the variation from 1500 volts to 525 volts when the car passes onto the city streets. The set is connected directly to the trolley without the interposition of any controlling device other than a hand cutout switch and fuse. The advantages of this machine are that an incandescent headlight can be used satisfactorily, that all lamps inside the car can be connected in multiple, so that the failure of one lamp does not put out others, and that no magnetic blow-outs are required in the control system.

The electrification work and the extension of the Salt Lake, Garfield & Western were engineered by H. A. Strauss, consulting engineer, Chicago, who is also acting as contractor and doing the construction work. The president of the railway is Joseph Nelson, Salt Lake City.

Voltage Rises in Third-Rail Circuits

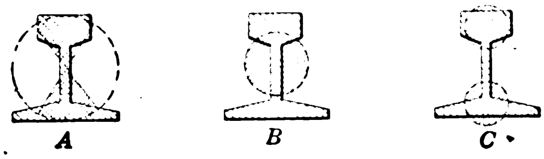
A Study of the Causes of High-Voltage Rises in Third-Rail Systems Is Presented in This Article Together with Oscillograms of Such Surges—Rises in Voltage of Two or Three Times the Normal Found Possible

By D. D. EWING
Associate Professor of Electric Railway Engineering, Purdue University, Lafayette, Ind.

IN third-rail practice both voltages in interurban service and power currents in rapid transit service have been increasing at a rather rapid rate during the last few years. Inductive effects, always present, have been magnified by these increases. It is not an uncommon occurrence for a motor flashover on the interruption of a heavy current on one car to cause trouble on other cars operating in the same vicinity. In order to get some idea of the scope of the problem some work has been done upon it at Purdue University during the last year. While this work has been only of a preliminary character and the results are not conclusive it has been thought that, such as they are, they might be of some interest to railway operators not only from the third-rail standpoint but also in connection with the proposed use of iron or steel cables as feeders.

CALCULATION OF THE RAIL FLUXES

Upon breaking any inductive circuit which is carrying a current, a voltage, caused by the change in number of magnetic lines inclosed, is set up therein. As this voltage is a measure of the time rate of change of the magnetic lines linked with the circuit the first thing to be determined is the number of these lines, then the rate of decay of the current which causes them.



INDUCED VOLTAGE IN THIRD RAIL—FIG. 1—EQUIVALENT RAIL SECTIONS USED IN RAIL FLUX CALCULATIONS

Since the rails are irregular in cross-section some assumptions must be made in order to apply the laws of magnetism to the calculation of the rail fluxes. The flux of each rail can be divided into two parts, that inside the rail and that outside. Of these only that outside or at least that leaving the head or flange of the rail can be definitely measured. The assumptions made as to rails in order to calculate fluxes are as follows:

TABLE I—COMPARISON OF CALCULATED AND MEASURED FLUXES IN MEGALINES PER 1000 FT. OF TRACK PER 1000 AMP. IN THIRD-RAIL

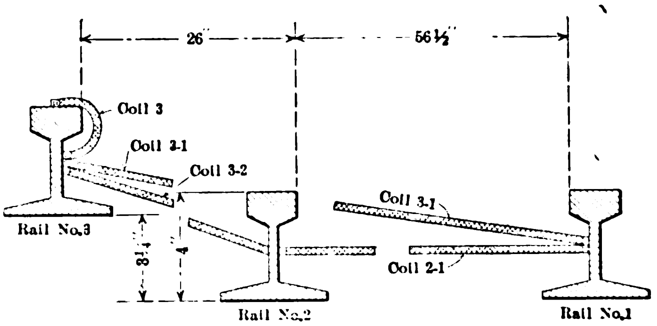
Location of Flux	Flux Measured in Test	Flux Calculated from Assumption			Discrepancies, in Per Cent.		
		1	2	3	1	2	3
Third rail head	3.05	3.05	....	....	0.0	...	
Rails 3-2	29.15	29.15	28.45	31.6	0.0	−2.4	+8.4
Rails 3-1	37.90	36.40	35.60	38.80	−3.9	−6.0	+2.4
Rails 2-1	7.47	7.18	7.18	7.18	−4.2	−4.2	−4.2

1. As the general shape of the rail section is that of two sectors of a circle, diametrically opposite, the cross-section can be assumed to be as in *A*, Fig. 1. As the iron portion of the circular flux path is relatively small, in calculating the flux within the cylinder the permeability may be considered unity.

2. The cross-section was assumed that of a cylinder as in *B*, Fig. 1.

3. The cross-section was assumed equal to that of two cylinders located as in *C*, Fig. 1.

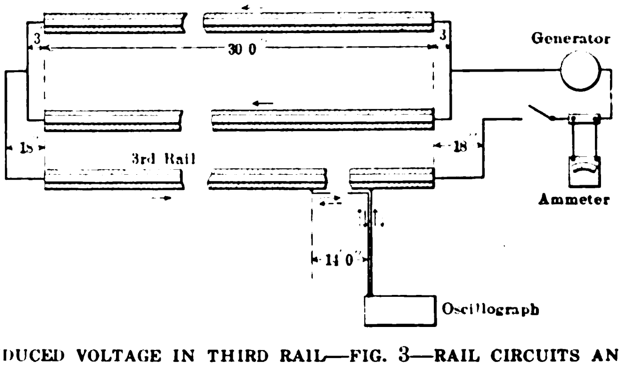
It was also assumed that the surfaces of equal magnetic potential were cylinders whose axes were coincident with the axes of the rails. The fluxes calculated on the basis of the foregoing assumptions and with the rail arrangement indicated in Fig. 2 are tabulated in Table I. The rails weighed 55 lb. per yard, were 4 in. high and had a cross-section of 5.4 sq. in.



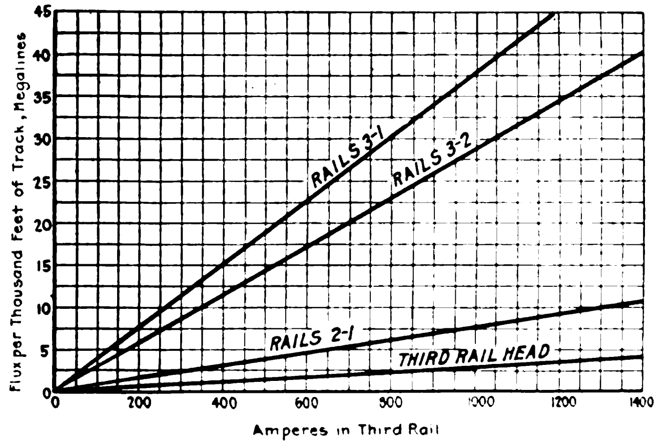
INDUCED VOLTAGE IN THIRD RAIL—FIG. 2—DIAGRAM OF RAIL AND TEST COIL ARRANGEMENT

MEASUREMENT OF ACTUAL FLUXES

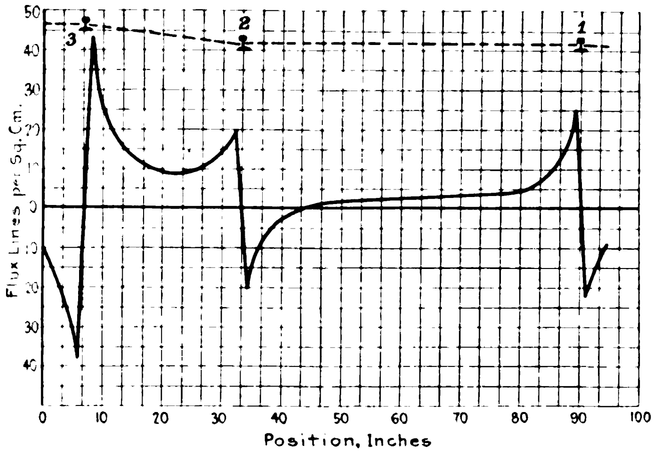
The actual fluxes were measured by means of test coils, arranged as in Fig. 2, and a ballistic galvanometer. The rail circuit is shown in Fig. 3. For the purpose of comparison, the measured fluxes are also recorded in Table I. It will be noted that the first assumption as to rail cross-section gives results which compare very



INDUCED VOLTAGE IN THIRD RAIL—FIG. 3—RAIL CIRCUITS AND OSCILLOGRAPH CIRCUIT FOR MEASURING VOLTAGE



INDUCED VOLTAGE IN THIRD RAIL—FIG. 4—RELATION BETWEEN RAIL FLUXES AND THIRD-RAIL CURRENT



INDUCED VOLTAGE IN THIRD RAIL—FIG. 5—FLUX DISTRIBUTION BETWEEN RAILS, THIRD-RAIL CURRENT 1000 AMP.

favorably with those obtained by test. The larger discrepancies in the last two fluxes are probably due to inequality of currents in the first and second rails. The relation between the fluxes and the third-rail current, as determined experimentally, is shown in Fig. 4. The small amount of iron in a portion of the magnetic path has little influence on the shape of these graphs.

The flux distribution between rails is shown graphically in Fig. 5. Data for this graph were obtained by the use of a small exploring coil and a ballistic galvanometer and were used to check the total flux measurements made with the larger coils.

CALCULATION OF VOLTAGES

For the purpose of determining voltages the fluxes, in air only, calculated under assumption 1, may be separated into the components listed in Table II. The flux between head and flange is not included in these figures as a portion of its path is through iron. With it included the totals would be the same as those listed for assumption 1 in Table I. These fluxes through the air surrounding the rails if caused to collapse in 0.002 second—a figure which the accompanying oscillograms show to be about the average for the oscillographic tests—will set up in the several rail loops the average voltages listed also in Table II, the voltage in each case being equal to the flux in lines divided by 10^8 times the time, 0.002 second. As the third-rail current is the sum of the currents in the other rails it might be expected that the voltage induced in it would be greater than in the track rails. A careful consideration of the voltages induced in the rail loops by the fluxes due to the different rails enables an allocation of the rail voltages. These are as follows: Third rail, 102 volts; second rail, 21 volts; first rail, 57 volts.

As in the case of the fluxes, these voltages are per 1000 amp. per 1000 ft. of track.

MEASUREMENT OF ACTUAL VOLTAGES

In measuring actual voltages and in determining the rate of decay of the current an oscillograph was used. For measuring voltages in the rails themselves the circuit connections were as shown in Fig. 3, the distance between contact points on the rail being 14 ft. The generator was of the low-voltage type, rated at 5 volts, 1000 amp. The circuit was opened by a quick-break knife-blade switch. Care was taken to minimize the voltages induced in the oscillograph leads. A 60-cycle alternating-current wave was photographed to indicate

TABLE II—FLUXES IN AIR CAUSED BY THE VARIOUS RAILS IN MEGALINES PER 1000 FT. OF TRACK PER 1000 AMP. (CALCULATED)

Rail Loop	Flux in Rail Loop Caused by Each Rail			Total
	Rail 3	Rail 2	Rail 1	
3-1	22.85	− 2.45	11.45	31.82
3-2	15.65	7.83	1.11	24.58
2-1	7.18	−10.30	10.30	7.18
Voltages Induced in Rail Loops by Above Fluxes (Calculated)				
3-1	114	−12	57	159
3-2	78	39	6	123
2-1	36	−51	51	36

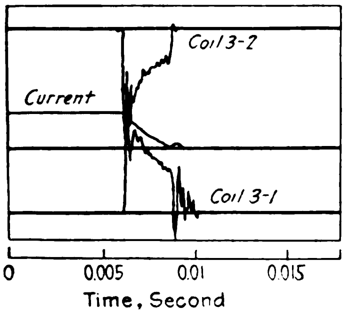


Fig. 6—Voltages induced in test coils between third and first and third and second rails. Third-rail current, 1000 amp. Time of break, 0.0027 second.

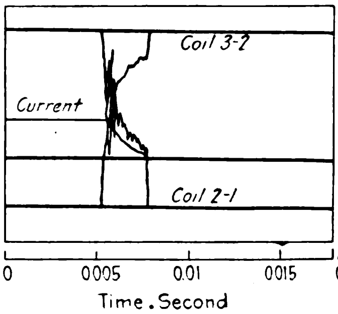


Fig. 7—Voltages induced in test coils between third and second and second and first rails. Third-rail current, 1000 amp. Time of break, 0.0026 second.

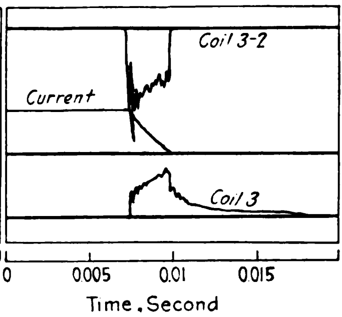


Fig. 8—Voltages induced in test coils between third and second rails and in third-rail head coil. Third-rail current, 1000 amp. Time of break, 0.0026 second.

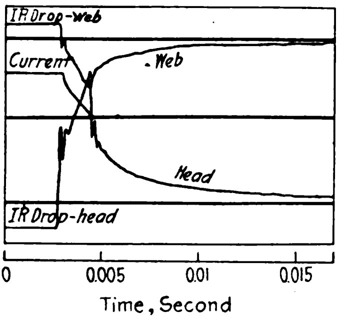


Fig. 9—Voltages measured in head and web of third-rail. Current, 1000 amp. Resistance drops, 0.24 volt each. Time of break, 0.0017 second.

INDUCED VOLTAGE IN THIRD RAIL—OSCILLOGRAMS OF VOLTAGES INDUCED IN TEST COILS AND MEASURED IN HEAD AND WEB OF THIRD RAIL

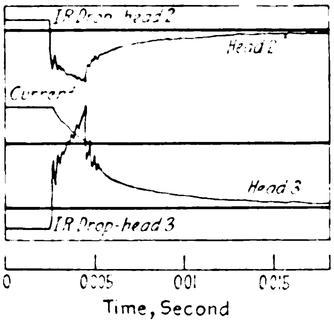


Fig. 10—Voltages measured in heads of second and third rails. Third-rail current, 1000 amp Resistance drop in second rail, 0.12 volt; third rail, 0.24 volt. Time of break, 0.0021 second.

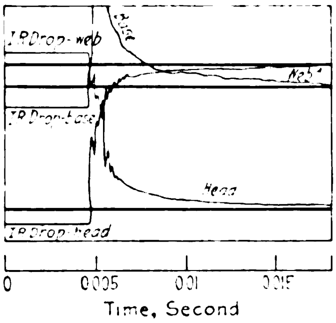


Fig. 11—Voltages measured in different parts of the third-rail. Current, 500 amp. Resistance drops, 0.12 volt each. Time of break, 0.0008 second.

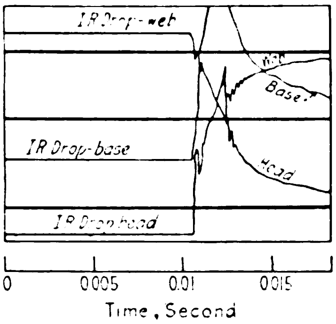


Fig. 12—Voltages measured in different parts of the third-rail. Current, 1000 amp. Resistance drops, 0.24 volt each. Time of break, 0.0017 second.

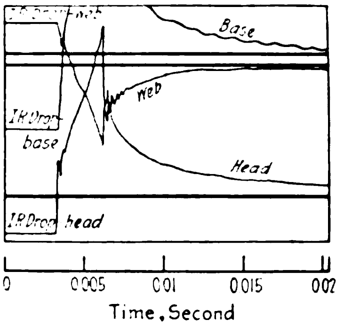


Fig. 13—Voltages measured in different parts of the third-rail. Current, 1500 amp. Resistance drops, 0.36 volt each Time of break, 0.003 second.

INDUCED VOLTAGE IN THIRD RAIL—OSCILLOGRAMS OF VOLTAGES MEASURED IN HEADS OF SECOND AND THIRD RAILS AND IN DIFFERENT PARTS OF THIRD RAIL

time. This was replaced in the accompanying figures by scales to simplify the diagrams.

In Figs. 6, 7 and 8 are shown oscillograms of the voltages induced in the test coils indicated in Fig. 2. These voltages were caused by the sudden interruption of a current of 1000 amp. in the rail circuits. As the coils contained different numbers of turns a comparison of the ordinates is of no significance. The oscillograms are presented because they show approximately the form of voltage disturbance set up by the collapse of the air flux. The term "approximately" is used because the test coils inclosed the head-to-flange flux. However, this flux is small as compared with all of the main loop fluxes except that between the first and second rails. The effect of the iron in the head-to-flange flux path is plainly seen in the coil 3 oscillogram, Fig. 8. In all of the coils except coil 3 the peak occurs at the instant the current starts to decay and the induced voltage decreases as the rate of change of the current decreases. With other methods of breaking the circuit a radically different current-time curve might obtain, in which case the form of the induced voltage disturbance would also be different. As might be expected, the several voltage graphs for the same coil are not quite alike, it being impossible to interrupt the circuit exactly the same way every time.

The remaining oscillograms show the actual voltages in the rails resulting from the rupture of the rail current. The resistance drop with steady current flowing is also shown on each oscillogram and affords a ready means of calibration. The reason for the reversal of the voltage graph becomes apparent when one considers the direction of current flow through the oscillograph element just before and just after the circuit is broken. These directions are shown by the full and dotted arrows respectively in Fig. 3.

TABLE III—MEASURED VOLTS PER 1000 FT. OF TRACK

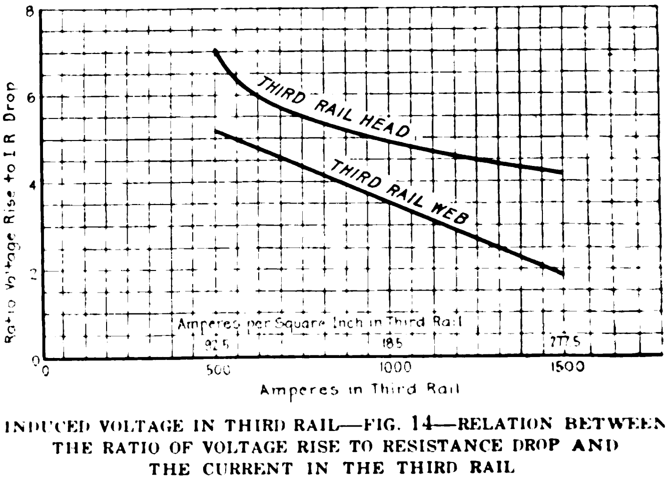
Fig. No.	Current, Amp.	Time, Sec.	Head Voltages			Web Voltages		
			Initial	Max.	Drop at Break	Initial	Max.	Drop at Break
11	500	0.0008	48	61	42	27	45	26
9	1000	0.0017	64	87	43	30	63	10
10	1000	0.0022	52	79	43			
12	1000	0.0017	54	90	48	25	59	25
13	1500	0.0029	49	110	61	15	47	31

It will be noted that the maximum voltage caused by the action of the fluxes within the rail is induced just before the current dies out. The total voltage disturbance will be the resultant of the disturbances set up by the flux in the air surrounding the rails and by the action of the fluxes within the rails themselves. Obviously the quicker the air flux is caused to collapse the greater will be that portion of the voltage peak which is due to the air flux. Upon the remaining portion of the voltage peak the quality of the iron evidently has much influence. Of course, both portions are influenced by the magnitude of the current interrupted.

From our knowledge of skin effect it might be inferred that the voltage measured in the different parts of the rail would be unlike. The initial rise, peak and the drop just following the peak for the last five oscillograms are listed in Table III. The figures are for 1000 ft. of track.

The ratios of peak voltage to the steady current resistance drop for the oscillograms tabulated in Table III have been plotted in Fig. 14. While there were not enough observations to define the graph with any degree of accuracy, the general tendency is that the ratio decreases with increased current density in the rail and therefore increased magnetic saturation in the rail. Under short-circuit conditions, when practically the whole station voltage is absorbed in resistance drop, one might expect the voltage rise incident to the interruption of the current to be two or three times the normal station voltage.

As noted in the first paragraph the tests here de-



INDUCED VOLTAGE IN THIRD RAIL—FIG. 14—RELATION BETWEEN THE RATIO OF VOLTAGE RISE TO RESISTANCE DROP AND THE CURRENT IN THE THIRD RAIL scribed were of a preliminary character and the results obtained, therefore, are indicative of work to be done rather than of work already done. The author desires to acknowledge his indebtedness to D. E. Branson and L. B. Gaskill, who performed the experimental work in connection with their senior theses.

Women Conductors on Surface Cars

New York Railways Has Seventy-five in Service on P. A. Y. E. Cars and Anticipates No Difficulty in Their Further Introduction for This Work

ON ACCOUNT of the large number of its men removed by war necessities, the New York (N. Y.) Railways has just placed in service about seventy-five women as conductors on surface cars. This number will be gradually augmented as the women are trained to qualify for the work. As stated in a brief note in last week's issue of this paper, it is the company's intention to introduce women only to the extent of filling existing vacancies. As there is no intention of using motorwomen, some of the men conductors now employed may be taught the duties of motormen and put on the front platform. The women conductors will work the same number of hours as the men in the same position, will begin at the same rate of pay and perhaps ultimately will work late runs also, although that is still indefinite.

In securing applications the company made its first offer to women relatives in the families of its employees in military service. An appeal was next made to the members of all other employees' families, and lastly to the general public. Applicants receive preference in this order. The company found no difficulty in securing requests for employment, the age limits being twenty-one and forty-five years. Those accepted are placed in school for about two days, after which they receive a mental test covering familiarity with company rules, making change, etc. A physical standard is also required. Trial runs on the cars for a few days under the direction of an instructor complete the period of training.

The first women conductors are being assigned to the low-level cars operating on the Broadway-Columbus Avenue and Broadway-Amsterdam Avenue lines, which have the heaviest surface traffic in the city. These cars have only center doors, the conductor being seated back of the fare box, which is in the center well opposite the doors. The doors are air operated and controlled with a foot trip by the conductor. The women will be assigned as necessary to other cars, on some of which the fares are collected, after acquiring experience with those of the more improved type.

An idea of the uniform selected can be obtained from the photographs reproduced herewith. It is made of khaki cloth similar to the army drab. The coat is quite long, has four pockets and also a lower inside pocket for carrying transfers. The collar can be buttoned in three different positions. The lower part of the uniform fits closely around the ankles, in effect very similar to the military leggings. This uniform is also quite suitable during bad weather conditions at times when the conductress is required to leave the car.

The employment of women in the transportation department, of course, has necessitated the introduction of accommodations for their convenience at carhouses and terminals.

B. R. T. to Sell Potatoes to Employees

The Brooklyn (N. Y.) Rapid Transit Company has purchased 4000 bushels of potatoes which will be sold to the employees at cost during the winter. Sixteen hundred bushels are already en route. The entire consignment will be stored in the DeKalb Avenue carhouse. About the middle of October President T. S. Williams requested G. W. Edwards, welfare administrator, to look into the potato market with a view to getting in a large supply and authorized the sending of M. L. Ackerley of Fresh Pond Depot to one of the potato-raising centers in Pennsylvania, where the potatoes were purchased. The potatoes will be sold in 20-lb. bags. The price, according to Mr. Edwards, will not exceed 4 cents a pound.

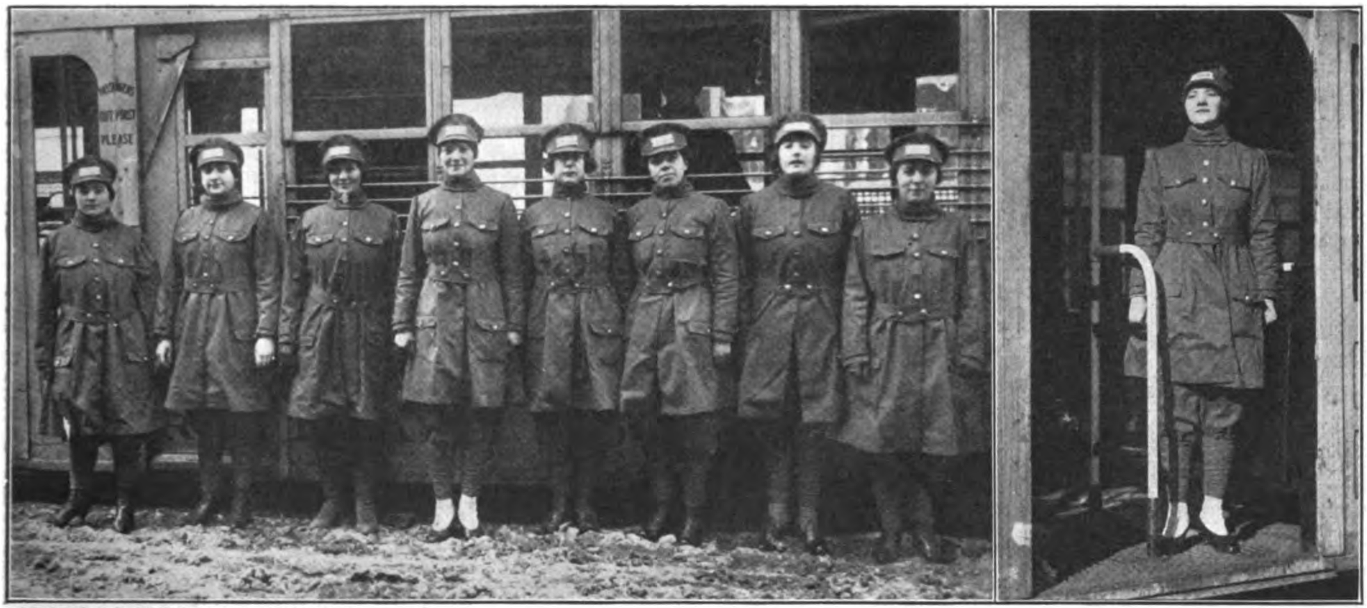


Photo by Social Press Association

WOMEN CONDUCTORS ON NEW YORK RAILWAYS

Six-Cent Fare Needed in Connecticut

For Immediate Relief Connecticut Company Deems Increase in Unit Fare Best, but Will Be Glad Later to Make Exhaustive Study of Whole Fare Problem—City's Contention that All Lines Should Be Self-Supporting Is Attacked

HEARINGS in regard to the recent institution of 6-cent fares on the lines of the Connecticut Company were continued on Dec. 10, 11 and 12 before the Public Utilities Commission in Hartford. The testimony and cross-examination dealt in general with two points: the desire of the company for a 6-cent fare, and the leaning of the city of Hartford toward a zone system.

The first hearing in this case, which was held on Dec. 3, was reported in the ELECTRIC RAILWAY JOURNAL of Dec. 8, page 1054. The hearings will be continued on Dec. 19.

CITY FAVORS ZONE SYSTEM

The forenoon of Dec. 10 was occupied in the cross examination of Dr. Thomas Conway, Jr., professor of finance in the University of Pennsylvania, by Corporation Counsel Cole for the city of Hartford. It was evident that the idea of the city was that the company should have adopted a zone system of increasing its revenues, in case an increase could be justified. The consensus of opinion of those present was that the city's contention would probably be that the company should have reduced the area of the first fare zone and put a copper zone system in force in the balance of the present first fare zone, extending this copper zone throughout the suburban and interurban portions of the territory. This would have preserved a 5-cent fare as the unit for riders in the central part of the city of Hartford, but it would have reduced the ride for such fare.

It was evident that the city was prepared to oppose strongly any attempt to saddle the burden of unprofitable suburban and interurban lines in whole or in part on the city rider. Mr. Cole's questions indicated that the city's position was that the rate of fare should be fixed at a point which would yield no more than operating expenses and a fair return upon the actual investment within the corporate limits of Hartford.

SYSTEM SHOULD BE CONSIDERED AS A WHOLE

Dr. Conway testified that the company, in raising the fares from 5 to 6 cents, had taken the only course which good judgment would endorse. He stated that the only equitable method of immediately instituting a higher fare was a horizontal advance in rates. The investigation necessary to the intelligent application of a zone system to the conditions under which the Connecticut Company operates would require from six to nine months and the company could not afford to wait so long to offset the rising costs of operation.

Dr. Conway further contended that the attempt to regard the city of Hartford as separate and apart from its suburban lines in fixing a rate of fare was neither fair to the company nor to the best interests of the community. There are portions of the company's system situated in sparsely settled rural districts which are not in themselves profitable, nor could they be made profitable under any rate of fare which the traffic would be willing to pay. The deficit on these outlying lines must be made up in some fashion and the only recourse is to distribute it in some equitable manner over the profitable portions located in more populous territory. As a general proposition, the unavoidable deficits in outlying districts must be borne by cities. These outlying lines contribute to the prosperity of the cities by furnishing a method of transportation from the rural districts and a means of distributing express matter, representing sales by city merchants to suburban and rural customers.

Dr. Conway further stated that the company should give careful study to traffic conditions in order accurately to determine the possibilities of the zone system or other methods of securing the necessary revenue. The results of this study should be given wide publicity in order that the riding public might be fully acquainted with the details of the alternative methods of securing the required revenues. When this had been done the majority of the public should decide what system of fares it preferred. The company's purpose should be to adopt the system of fares which was most satisfactory to its patrons.

The afternoon session on Dec. 10 was occupied in hearing the testimony of Carl W. Stocks, general passenger agent Bay State Street Railway, and A. M. Collens, manager of the investment-analysis bureau maintained by three of the large fire and casualty insurance companies of Hartford. Mr. Stocks described the efforts of the Bay State company to secure higher revenues, particularly in the suburban and interurban zone case now pending. His testimony covered practically the same ground as that of Vice-President Stearns before the Massachusetts Public Service Commission on Nov. 19, an abstract which appeared in the issue of Dec. 8, page 1051. Rates of fare within the proposed zone system in suburban and interurban territory are to be fixed on a mileage basis, the rate varying roughly according to the profitableness of each mile of line. In so far as possible each portion of the line is to be made self-sustaining, but where this cannot be done at a practicable rate of fare the deficit which then occurs must be provided in some other fashion. While Mr. Stocks disclaimed any knowledge as to how these deficiencies in earnings were to be made up, he admitted that it was obviously necessary to recoup them in some fashion in the cities.

Mr. Collens testified that the earnings of the Connecticut Company have not inspired confidence on the part of the investing public, and that just as long as investors see that the rate of fare fixed years ago cannot be changed, just so long will they be wary of buying the stocks or bonds of the company. The Connecticut Company under a 5-cent fare could not give such protection that investors would be attracted. Any new stock that the company might issue, even with the 6-cent fare an established fact, would not sell at par. The 6-cent fare, Mr. Collens believed, would have to show definitely that it could increase the earning-power of the company before the corporation would be in a position to attract new capital. Yet a concern like the Connecticut Company must have a constant supply of new capital to keep on giving good service.

WHY THE 6-CENT FARE WAS CHOSEN

The feature of the session on Dec. 11 was the testimony of President L. S. Storrs giving the reasons which had prompted the company to advance its fares to 6 cents. Mr. Storrs stated that the company had carefully considered all of the possible methods of increasing its revenue. The plan of charging for transfers was discarded because of the small amount of increased revenue to be obtained and the unequal distribution of the increase, for a large portion of patrons do not use transfers. A readjustment of the length of haul for a single fare, it was thought, would involve the company in an endless number of controversies for it would be most displeasing to so large a portion of the public. The zone system would so completely upset the entire basis upon which the life and activities of the various communities had been founded as to preclude its adoption. A careful study of the company's operations, Mr. Storrs said, indicated that no portion of the system was earning a fair return. The company's decision to adopt a 6-cent fare had met with popular approval, because no real opposition had developed in the seventy-six cities, towns and villages served.

COMPANY WILL BE GLAD TO STUDY LOCAL FARE PROBLEM FURTHER

Continuing, Mr. Storrs said: "It is quite possible that there is necessity for a certain change in the theory of electric railway rates that will more nearly recognize the relative density of riding, but such change cannot be made without a great amount of study of the riding characteristics of each individual community. Moreover, it is clearly evident that a more logical fabric of rates can much more easily be effected from a basis of rates that fairly represents the needs of the corporation for revenue than would be possible from an admittedly inadequate rate.

"We are willing, if the commission so desires, to undertake a very exhaustive study of the conditions throughout our territory in an attempt to devise a more flexible and, if possible, more logical system of fares and one more pleasing to the public served. We will be pleased to provide the commission with the full record of such investigation, together with the conclusions of the experts engaged in such undertaking. These conclusions will not, of course, be available in the decision of the case now pending.

"All the Connecticut Company wishes to obtain is a reasonable rate of return upon the value of its property, this to be obtained from a system of fares that will be most pleasing to the great majority of the patrons. We believe that the present method meets with more nearly uniform approval than any of the other methods that have been proposed."

In cross examination by Mr. Cole, Mr. Storrs stated that he was convinced that the American public was too impatient of delay to permit the successful installation of the zone system in congested central districts. An attempt to contract the central zone would have created intense confusion and serious political agitation which would have precluded the prompt settlement which the company's financial necessities demanded.

Mr. Storrs stated that the 6-cent fare would increase the revenue $700,000 in the current fiscal year. Mr. Cole pointed out that the data furnished him by the company showed that the operating expenses had increased in the first nine months over the same period in 1916 by more than $600,000. He asked whether, in view of this fact, the 6-cent fare would completely solve the financial problem of the company. Mr. Storrs replied that it would not enable the company to earn a fair return; it would simply put the company back in the financial position which it occupied in 1916.

The testimony of representatives of electric railway manufacturers, introduced before the Public Service Commission for the Second District of New York in the 6 cent fare cases of last August, was read into the record with the consent of Mr. Cole and the commission.

Annual Meeting of A. S. M. E.

The keynote of the annual meeting of the American Society of Mechanical Engineers, held in New York from Dec. 4 to 7, was the service of the engineer to the public in times of crisis. Some of the important subjects covered were "Universal Public Service in Peace and War," "Engineering Societies in National Defense," "The Fuel Problem" and "Army Transportation."

On the evening of Dec. 4 ex-President William H. Taft addressed the meeting on "The War's Call to Professional Men," and an honorary membership was conferred upon Major-General George W. Goethals. A reception to the new president, Charles T. Main, followed.

Other interesting features of the meeting were a stereopticon lecture by Past President John R. Freeman, on his recent trip to the Orient, and a lecture by Past President John A. Brashear on the "Science of the Beautiful in Commonplace Things." Two very important subjects, the employment of women in industrial plants and shops, and the preparatory work for training the large number of crippled men who may be expected to return from the war and who should be encouraged to become self-supporting, were covered on Friday.

Abstracts of the papers of most interest to the electric railway profession, including the paper on "Preventable Waste of Coal in the United States," by David Moffett Meyers, referred to in an editorial last week, will appear in a later issue of this paper.

The officers elected for the coming year are as follows: President, Charles T. Main, Boston, Mass.; vice-presidents, Spencer Miller, New York, N. Y.; Max Toltz, St. Paul, Minn.; John Hunter, St. Louis, Mo.; A. M. Greene, Jr., Troy, N. Y.; Charles H. Benjamin, Lafayette, Ind., and Charles T. Plunkett, Adams, Mass.; managers, Frederick Geier, Cincinnati, Ohio; D. R. Yarnall, Philadelphia, Pa.; F. N. Bushnell, Boston, Mass.; Robert H. Fernald, Philadelphia, Pa.; William B. Gregory, New Orleans, La.; C. R. Weymouth, Berkeley, Cal.; John H. Barr, New York, N. Y.; J. A. Stevens, Lowell, Mass., and H. DeB. Parsons, New York, N. Y.; treasurer, William H. Wiley, New York, N. Y.; secretary, Calvin W. Rice, New York, N. Y.

Spread Rush-Hour Travel—Think About Handling Freight

Thus New Jersey Commission Speaks to Electric Railways of the State—Co-operation of All Interests Is Needed to Meet Demands of Abnormal Traffic Situation

THAT the present time is one for all to co-operate in relieving rush-hour travel on electric railways, and that such carriers should consider how to aid the movement of freight, is the opinion of the Board of Public Utility Commissioners of New Jersey. This is the gist of a statement issued on Dec. 11 after a painstaking investigation for the last few months by inspectors of the board.

The commissioners appreciate the suggestion of the United States Fuel Administration that the greatest economy of operation be effected without undue and unnecessary inconvenience to the riding public. They hope that no curtailment of travel will be necessary by reason of shortage of fuel or lack of equipment, and they feel that to avoid such a situation should be the aim of all. They recommend, however, that the railways immediately consider how economies in fuel and facilities may be secured without inconvenience to patrons, and that they report whether power can be more economically secured from other power stations than their own.

UNUSUAL CONDITION OF TRAFFIC EXISTS

As a matter of fact, the board says, present facilities are inadequate to meet the demands of the public. The reports of its inspectors show that the abnormal development of industrial plants in New Jersey has created a condition which calls for unusual methods of treatment in the local transportation field. Government contracts alone are bringing into the State plants for the building of ships and the manufacture of munitions and other materials which will add tens of thousands of men to the working forces that have to be transported at least twice daily. Without transportation facilities the plants cannot be kept going, as their character makes it necessary that they be situated, in many instances, in localities which do not permit employees to live within convenient walking distances of their work.

Several of the larger industrial centers in the State are especially affected, as, for instance, Newark, Jersey City and Camden. The Newark and Hackensack Meadows have developed a most perplexing transportation problem, owing to the building of shipyards and warehouses for the engineering and quartermaster departments of the army. Several thousand men of the building trades are now engaged in the construction of these plants, and the present number is only a regiment or so compared to the industrial army that will be employed when the establishments are in full swing. One of these plants alone reports that it will have at least 15,000 men working on ship contracts.

In the central part of the State munition plants require their quota of help. The national government has acquired an option on a large tract of land located on Raritan Bay. Camden, already a center of industrial activity, is seeing preparations for the enlargement of present, and the establishment of new, shipyards which will require thousands of additional workers. In all probability, twenty-four-hour operation will be necessary.

RUSH-HOUR TRAFFIC SHOULD BE SPREAD OUT

While transportation in these cities, owing to the proximity of the great plants referred to, is directly and materially affected during the rush hours, in other important cities the high pressure under which their industries are working has made more difficult the problem of providing adequate transportation facilities during these hours.

After a careful study of present and prospective conditions, the commissioners have reached the conclusion that the time is at hand for closer co-operation between employers, employees and the railways. As the industrial plants must have more men than ever and as it will be impossible for the railways to carry them all practically at one time, it would seem that the problem would have to be solved by a readjustment of the working periods in the shops and shipyards so that all employees would not start and stop at virtually the same time. For instance, it is said, it would appear to be practicable for certain establishments to agree to advance or set back the beginning of their working periods, say one hour or more, with a corresponding change for the closing time. This would benefit thousands of workmen, who would save time and have better accommodations getting to and from work. It would also benefit the employers, who would have less difficulty in keeping their working forces to maximum capacity when some of the discomforts of transportation were eliminated. This applies particularly to large plants operating throughout the twenty-four hours. Such an arrangement, the commissioners believe, is worth a trial.

The women of the State and all others whose duties do not require them to travel during the rush hours could also help materially in relieving congestion. This might well be applied in all the cities and larger towns in the State, whether or not they be centers of unusual industrial activity. If the women would endeavor to do their shopping earlier in the day so as not to have their homebound trips coincide with the riding of those whose hours of labor and business require them to ride during certain fixed periods, the result would be tantamount to an increase in transportation facilities. Moreover, there are hours during the day when the mercantile establishments are not at all busy, and other hours when they have a rush of business. If their trade could be more uniformly distributed, it would result in economies that would redound to the benefit of buyers and merchants alike.

ENLISTING THE CO-OPERATION OF ALL

In order to secure a more even distribution of traffic and consequent improved service, definite steps should be taken by the various industries, electric railways, commercial houses and all others concerned. The Board of Public Utility Commissioners, therefore, recommends:

1. That the electric railways throughout New Jersey adopt such means as may be considered most efficient to induce such of their patrons as can do so to ride on the cars during other periods than the rush hours.
2. That the electric railways of the State which are not provided with sufficient equipment and other facilities to handle properly the present and prospective traffic make every effort to secure such equipment and facilities, as far as may be practicable, at the earliest possible date.
3. That the attention of the officials of industrial and government plants be directed to the necessity of full co-operation, in order that the electric railways may be aided in the work of transporting the employees of such plants.
4. That the attention of the managers of department stores and other commercial establishments be directed to this matter, in the hope that they will adopt such means as may be considered most efficient to induce their patrons to co-operate in the movement.
5. That the newspapers of the State join in the movement in order that the widest publicity may be obtained.
6. That the hearty co-operation of the authorities of the various municipalities in the State be given to the movement.
7. That the Boards of Trade or Chambers of Commerce assist to accomplish the result sought.

CONSIDER THE HANDLING OF FREIGHT

Another matter which it may shortly be necessary to consider is the provision of relief by the electric railways for the congestion in the transportation of freight. The steam roads are overburdened. Some measure of relief, the commissioners believe, might be afforded if the street and interurban railways could make deliveries of local freight. These companies should give thought to this question and should ascertain what expenditures would be necessary for facilities, and whether the carriage of freight by them is practicable. Enabling legislation might be necessary, but it is assumed that this could be secured. The board makes no specific recommendations at this time, but it states that it will be glad to counsel with the companies on this matter.

The annual sale of umbrellas from the lost article department of the Puget Sound Traction, Light & Power Company, Seattle, Wash., took place recently at the new Westlake Public Market. The proceeds from this sale are devoted to the general fund of the benefit association for employees.

Closer Co-operation Between Government and Industries

Mobilization of Industries the Aim of the Chamber of Commerce of the United States

A CONVENTION of the Chamber of Commerce of the United States was held at Washington this week. The convention was addressed by representatives of a number of government departments on Wednesday morning, and at the Wednesday evening session a central war industries committee of the National Chamber was created. The new central committee was empowered by the convention in its resolutions either to increase its number or to organize any advisory council from the chairmen of the various war service committees, or both.

The convention voted that where there are at present war service committees they be requested to ask recognition of the war committee of the National Chamber, and it was provided that if they are organized in conformity with this report that they be so recognized. All existing national trade organizations or associations which have not already appointed war service committees are requested to do so immediately. Where there is no national trade association or organization it was recommended that such organization be formed immediately. It was the sense of the convention that war service committees, as far as possible, shall be representative of the entire industry they represent. All war service committees now existing or selected, as provided in the resolutions, are to be vested with authority to represent the industries in their relations with the government during the war.

HIGH POINTS IN WEDNESDAY MORNING DISCUSSION

The speakers at the Wednesday morning session were W. S. Gifford, director of the Council of National Defense; Daniel Willard, chairman of the War Industries Board; Harry A. Garfield, Fuel Administrator; Edwin B. Parker of the Priority Board; Clarence M. Woolley, representing the War Trade Board; George N. Peek, industrial representative of the War Industries Board, and others.

An important point made by Mr. Gifford was that it is advisable to have the industries themselves name committees which shall do some of the work formerly done by the co-operative committees of the Council of National Defense. He intimated that it would not be an easy task to organize industry in this country completely. In discussing the industrial end of the war, Mr. Willard said that one mistake made was in concentrating orders too much in certain localities. This brought with it housing problems, transportation problems, and in certain instances too great a demand for electric power.

Dr. Garfield startled his hearers by proposing that there might be combined action by agreement in each industry with the purpose of reducing the consumption of coal, and said he would be glad to make such an arrangement if the business men present wished to do so. He gave figures to show that coal is being produced and supplied to all industries in larger quantities than in normal times, but that the United States is still 50,000,000 tons short of the unusual demand. These figures led him to suggest willing, co-operative conservation as the only method by which American business can get out of the hole it is in for want of coal.

The objects of the War Industries Board were analyzed by Mr. Parker, as the representative of Judge Lovett, director of priority in transportation. One of these is to increase production, if necessary, and another is to curtail demand if necessary to meet supply. He explained some of the problems of the priority agency in supplying the government as well as private industry, and its successful work through a system of classification, under which certificates allowing shipments are issued in twelve classes. The first, under "A," of which there are six, comprehend the demands of the United States and the allied governments, in the way of munitions; and those under "B," of which there are also six, cover materials for manufacturers, power for manufacturers, and transportation requirements for manufacturers.

AMERICAN ASSOCIATION NEWS

Electric Railway War Board Notes

New Director Is Finding Many Definite and Timely Things to Do at Washington Headquarters

The American Electric Railway War Board met at Washington on Dec. 7 and will meet again on Dec. 21.

Col. J. Stanley Moore, formerly connected with the Empire United Railways, Inc., Syracuse, N. Y., and later military secretary to Governor Whitman of New York, is to have charge under C. Loomis Allen of the Washington office of the War Board. Colonel Moore will also represent the electric railways of the country with the United States Fuel Administration.

At the request of the War Board, Presidents F. R. Phillips of the Engineering Association and L. C. Bradley of the Transportation & Traffic Association have appointed a committee to recommend means of saving fuel in power houses, in the operation of electric and coal heaters in cars, in carhouses, etc. The committee comprises J. P. Barnes, Schenectady, N. Y.; G. H. Kelsay, Anderson, Ind.; L. H. Palmer, Baltimore, Md.; J. F. Layng, Schenectady, N. Y., and M. B. Lambert, East Pittsburgh, Pa.

The board expects, with the co-operation of the Washington Railway & Electric Company and the Capital Traction Company, to apply tentatively the suggestions of the committee locally.

The War Board, through Mr. Allen, has requested of the Treasury Department an interpretation of the war revenue act as it applies to the taxes to be paid on freight and express shipments over electric railway lines. The Accountants' Association has appointed a committee to suggest to the Commissioner of Internal Revenue ways for carrying out the provisions of the act with the least expense. The committee comprises M. R. Boylan, Newark, N. J.; Howard Abel, Brooklyn, N. Y., and F. H. Sillick, New York City.

TRAFFIC COMMITTEE

Britton I. Budd, president Elevated Railroads of Chicago, has been appointed chairman of a committee in charge of matters relating to traffic. He will supply information as required by government bureaus and others as to the facilities at the disposal of electric railways.

So far the names of seventeen men have been passed upon by the War Board, and these men requested to accept the appointment. In all there will probably be about forty appointments made. Representatives for the remaining states are at present under consideration and definite appointments will be approved by the War Board at its next meeting in Washington. The appointments to date pending acceptance are as follows:

Northeastern Military District: New Hampshire, D. A. Belden, Haverhill, Mass; Massachusetts, H. B. Potter, Boston, Mass; Rhode Island, A. E. Paddock, Providence, R. I.; Connecticut, V. S. Curtis, New Haven, Conn.

Eastern Military District: New York, James P. Barnes, Schenectady, N. Y.; Pennsylvania, C. L. Tingley, Philadelphia, Pa.; New Jersey, H. C. Donecker, Newark, N. J.; Maryland, J. J. Doyle, Baltimore, Md.; Virginia, J. W. Hancock, Lynchburg, Va.

Southeastern Military District: Georgia, J. L. Murphy, Atlanta, Ga.; Florida, Hardy Croom, Jacksonville, Fla.

Central Military District: West Virginia, H. S. Newton, Huntington, W. Va.; Illinois, F. E. Fisher, Joliet, Ill.; Wisconsin, George Kuemmerlein, Jr., Milwaukee, Wis.

Southwestern Military District: Texas, G. H. Clifford, Fort Worth, Tex.; Oklahoma, A. E. Morris, Oklahoma City, Okla.

Western Military District: California, W. V. Hill, Oakland, Cal.

Business Editors Hold Conference

Representatives of Technical and Trade Papers Hear Government Policies Described by Federal Officials

AN EDITORIAL conference of the business papers was held at Washington on Dec. 13, the speakers being the heads of various government departments. The purpose of the meeting was to learn first hand the progress and thought of different branches of government work. Among the speakers were the following: F. W. Taussig, chairman United States Tariff Board; Eliot Wadsworth, vice-chairman American Red Cross; Harry A. Garfield, fuel administrator; Frederic A. Delano, member Federal Reserve Board; Senator Francis G. Newlands, chairman joint Congressional committee on interstate commerce; E. N. Hurley, chairman of Shipping Board; Senator Atlee Pomerene, member of committees on banking and currency, foreign relations, and manufactures; Dan C. Roper, commissioner of internal revenue; A. W. Shaw, chairman commercial economy committee, Council of National Defense; Dr. Anna Howard Shaw, chairman woman's committee, Council of National Defense; C. A. Richards, chief Bureau of Exports, and J. D. A. Morrow, secretary Coal Operators' Association.

A longer account of this meeting will be published in a later issue.

On account of his continued generosity toward the Toledo Zoo, the directors of the Toledo Zoological Society recently presented a polar bear rug to F. R. Coates, president Toledo Railways & Light Company.

EQUIPMENT and MAINTENANCE

HAVE YOU A GOOD WAY
OF DOING A JOB?
—Pass It Along

These Articles Have Been Selected to Provoke Thought and Stimulate Discussion. All of the Technical Departments Are Represented

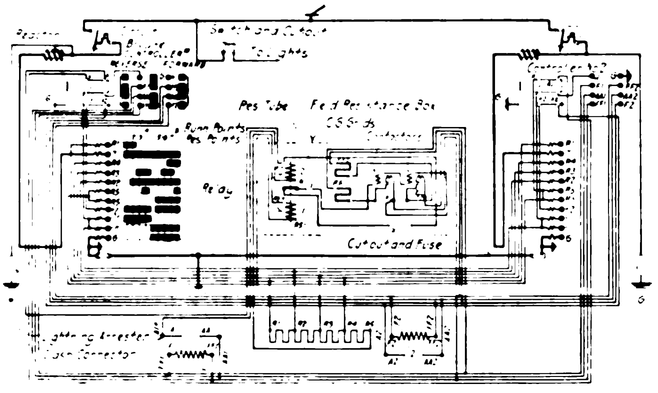
Field Control for Existing Equipments

One-Third of 1 Per Cent Additional Weight Permits Use of Field Control on Cars of a California Railway

BY W. P. JACKSON
Master Mechanic San Francisco-Oakland Terminal Railways, Oakland, Cal.

The editorial in the issue of the ELECTRIC RAILWAY JOURNAL for July 28, under the heading, "Large Pinions on City Cars Not Only Useless But Costly," appealed to me as being particularly timely. The suggestion that some of the well-known principles governing gear ratios for cars in city service are somewhat neglected was also a point well taken.

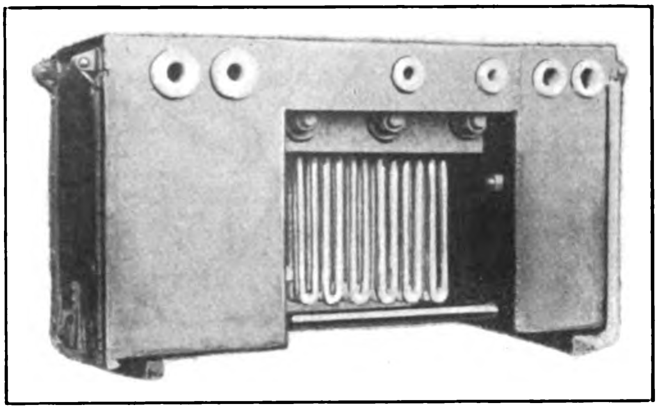
While it is true that high maximum speed does not necessarily produce high schedule speed it must be admitted that there are many classes of strictly city service in which the characteristics are such that ability to operate at free running speeds of from 25 to 30 m.p.h. over certain portions of the route is a factor which cannot be disregarded in selecting the most suitable gear ratio for a given schedule speed. It is the class of service in which an occasional opportunity is afforded for runs of several minutes' duration at maximum speed that prompts the retention of gear ratios which are manifestly unsuitable on the major portion of the route.



In controller No. 2 connect *R5* finger base to *X* on cutout switch.
Connect *A1* binding post in controller No. 2 to *X* binding post in controller No. 1.
Connect *A1* motor lead to No. 1 controller only.
For single-end operation connect *R5* finger controller No. 1 to *X* on cutout switch.

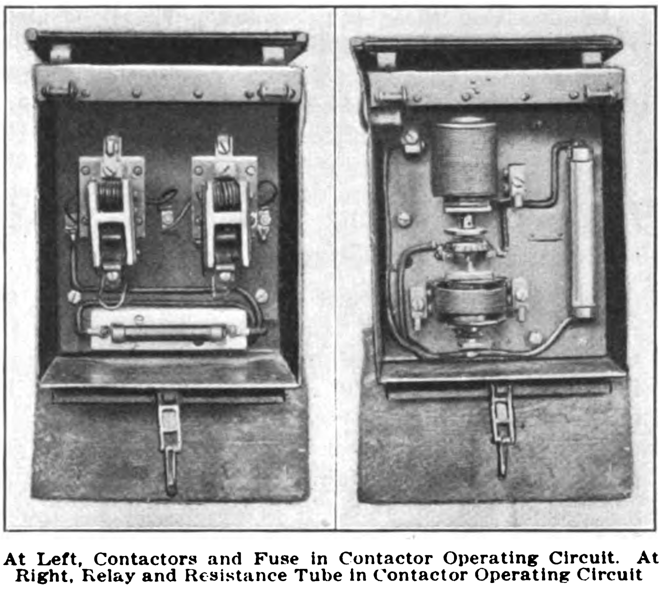
DIAGRAM OF CONNECTIONS FOR SHUNT-FIELD CONTROL

The reason is generally advanced by the transportation department that a high maximum speed enables the motorman to make up lost time. No consideration is given to the fact that, had the gear ratio been properly selected to fit the schedule speed and number of stops per mile in the congested districts, the time might not have been lost. Unavoidable delays will occur, of course, and it would appear that field control is one solution of the problem of making up for them. By the use of field control all of the benefits obtained by the use of a maximum gear ratio can be secured with the frequent stops in congested districts, and at the same time advantage can be taken of all opportunities for free running at comparatively high maximum speeds.



SIDE VIEW OF SHUNT RESISTOR GRIDS AND RUBBER-BUSHED HOLES FOR CONNECTING WIRES

A system of field control which can be applied to existing equipment without entailing any changes or additions to motors or controllers has many manifest advantages. Such a system has been in use on the



At Left, Contactors and Fuse in Contactor Operating Circuit. At Right, Relay and Resistance Tube in Contactor Operating Circuit

END VIEWS OF FIELD CONTROL APPARATUS

traction division of the San Francisco-Oakland Terminal Railways for the past year or more where we have had thirteen cars equipped with automatic field control. These cars are of the pay-as-you-enter type. They weigh 37,800 lb. each and are equipped with two GE-210 motors (16:71 gear ratio) and K-36 controllers. The General Electric Company also furnished the auxiliary field-control apparatus.

The installation of automatic field control raised the maximum speed of these cars from 22½ to 28 m.p.h., and helped considerably in maintaining the schedule on a line subject to many annoying but unavoidable delays.

The field control equipment weighs 104 lb. per car complete, and is installed by hanging it to the underframe with four bolts and making eight electrical connections to the existing control circuit wires. Reference to the wiring diagram and photographs will give a very good idea of the operating principles and appearance of this equipment.

Contactors Nos. 1 and 2 are operated by the voltage between No. 1 motor armature terminals and are adjusted so that they will not operate on 300 volts or less. This feature prevents the fields from being shunted on the series running position.

The operation of these contactors shunts the motor fields through an ordinary grid resistance which may be varied at will to obtain the most economical maximum speed for a given schedule. The operating coils of these contactors are controlled by a current relay, which may be readily adjusted to close at any desired current value in No. 1 motor from 60 to 120 amp.

The No. 1 coil in this relay will hold the relay open until all the motor resistance has been cut out. Thus the motor field circuits cannot be shunted until the controller has been advanced to the last notch, and they will not be shunted then unless the motor current has dropped to a predetermined value.

It would appear that field control equipments of the above type are particularly advantageous in that they may be applied to existing equipment without regard to type of control or motors used, and further they are readily adjustable to suit a given schedule, both as to maximum speed and as to the current at which the shunts will be cut in.

In operating these equipments on the lines above referred to they are adjusted to shunt the fields in about seven seconds from the first notch on level track, the controller being ordinarily advanced from the first to the last notch in from five to six seconds.

High Ash Content Offsets Increase in Coal Production

According to a statement issued this week by the director of the Bureau of Mines, Department of the Interior, the increase in coal production this year, amounting to possibly 50,000,000 tons, is more than offset by the decrease in the heat producing value of this fuel.

Analyses which would show from 6 to 8 per cent ash in normal times in certain cases now show 12 to 18 per cent of ash. It is not improbable that 5 per cent more ash on the average is included in this year's coal than in that produced in previous years. As experiments carried on by the government at the St. Louis Exposition showed that, with the coals used, there was a decrease of about 1½ per cent in efficiency for each 1 per cent addition to the ash content of the coal, the inclusion of 5 per cent more ash in the fuel means a reduction in efficiency of the remaining good coal of about 7½ per cent, which added to the 5 per cent useless ash makes the total reduction in effectiveness 12½ per cent. Hence, not only is the effective coal supply not being increased this year, but more than 600,000 carloads of ash are being added to the present burden of transportation.

The actual decrease in effective coal is about 30,000,000 tons which, added to the estimated increased needs of 100,000,000 tons, makes a deficiency equivalent to 130,000,000 tons. It is necessary that this be made up by good engineering and true fuel conservation in the boiler room.

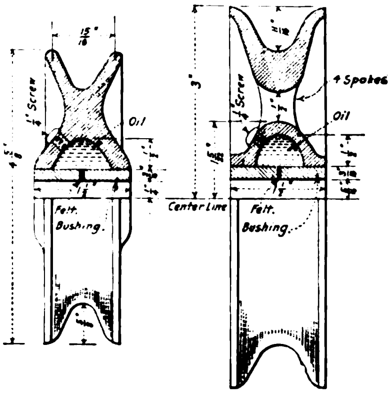
Hard Bronze Trolley Wheels with Two-Piece Bushings

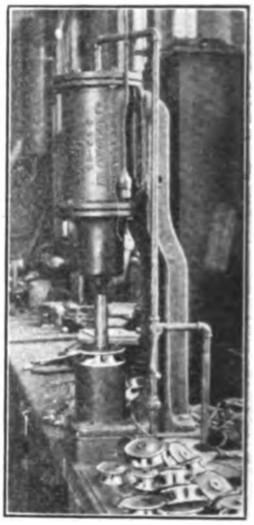
BY R. A. WILLSON

General Superintendent Washington Water Power Company, Spokane, Wash.

Hard bronze trolley wheels are used by this company, and they are cast and finished in the shop. The city wheel weighs about 3 lb., and costs us 80 cents, the interurban wheel weighs 4¼ lb., and costs us $1.25, these figures being based on before-the-war prices.

The composition of the bronze is 79 per cent copper, 8 per cent tin, 8 per cent lead, and 5 per cent zinc. At present each melt consists of 130 lb. of scrap brass, 20 lb. of copper, 2 lb. of tin, 2 lb. of lead and 1 lb. of zinc. After being cast the wheels are taken to the machine shop and turned in a turret lathe. The wheel is held in a special chuck which supports the outside of the casting while the cut is being made with a tool of high-grade steel.





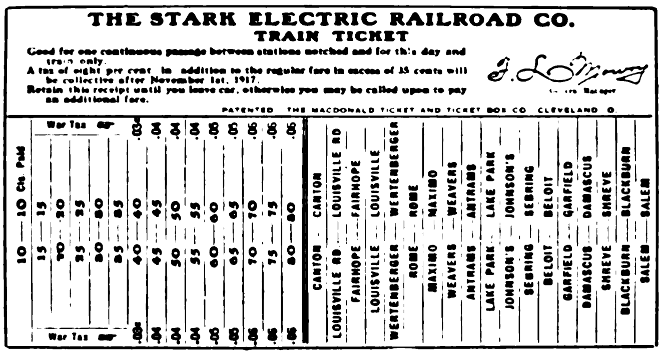
DETAILS OF HOME-MADE TROLLEY WHEELS, AND AIR-BRAKE CYLINDER CONVERTED INTO TROLLEY WHEEL PRESS

After being turned the wheels are placed on a home-made press, illustrated above, and the bushings are pressed in. The bushings for the city wheels are ⅞ in. in diameter and ¾ in ling. As shown in the drawings two bushings are used for each wheel and between them in the oil reservoir is placed a felt filler which feeds the oil from the reservoir to the pins. This method of lubrication has eliminated any trouble with the pins as shown by the fact that when the wheel is worn out the bushings still have a perfect fit. The city wheels make about 5000 miles before being returned to the shops to be trued up, and about 15,000 miles are made before the wheel is scrapped. The interurban wheels are made in the same way except that the dimensions are larger. They are not quite so long-lived, however, but they make a total of about 4200 miles each.

Tax Returns Simplified

Cash Fare Receipts Printed with Tax Amounts Included Opposite Fares Give a Check on the Turn-ins and Show Passenger the Amount of Tax Paid

The two cash fare receipts reproduced herewith show how two railways have met the new conditions requiring the collection of an 8 per cent tax on passenger fares over 35 cents. These printed receipts are used in conjunction with Macdonald ticket holders. The amount of the war tax corresponding with the fare paid is printed on the receipt, which is torn off in the holder and given to the passenger. This informs the passenger of the amount of fare and the amount of war tax he has paid and also gives him a receipt for both.



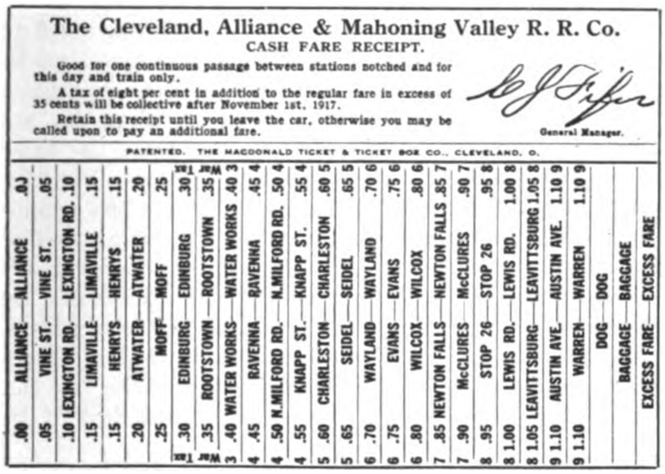
THE STARK ELECTRIC RAILROAD CO.
TRAIN TICKET

Good for one continuous passage between stations notched and for this day and train only.
A tax of eight per cent in addition to the regular fare in excess of 35 cents will be collective after November 1st, 1917.
Retain this receipt until you leave car, otherwise you may be called upon to pay an additional fare.

J. L. [illegible]
General Manager

PATENTED THE MACDONALD TICKET AND TICKET BOX CO CLEVELAND O.

10—10 Cts. Paid
15—15
20—20
25—25
30—30
35—35
40—40 War Tax .03
45—45 .04
50—50 .04
55—55 .04
60—60 .05
65—65 .05
70—70 .06
75—75 .06
80—80 .06
CANTON—CANTON
LOUISVILLE RD—LOUISVILLE RD
FAIRHOPE—FAIRHOPE
LOUISVILLE—LOUISVILLE
WERTENBERGER—WERTENBERGER
ROME—ROME
MAXIMO—MAXIMO
WEAVERS—WEAVERS
ANTRAMS—ANTRAMS
LAKE PARK—LAKE PARK
JOHNSON'S—JOHNSON'S
SEBRING—SEBRING
BELOIT—BELOIT
GARFIELD—GARFIELD
DAMASCUS—DAMASCUS
SHREVE—SHREVE
BLACKBURN—BLACKBURN
SALEM—SALEM



The Cleveland, Alliance & Mahoning Valley R. R. Co.
CASH FARE RECEIPT.

Good for one continuous passage between stations notched and for this day and train only.

A tax of eight per cent in addition to the regular fare in excess of 35 cents will be collective after November 1st, 1917.

Retain this receipt until you leave the car, otherwise you may be called upon to pay an additional fare.

C. J. Fifer
General Manager.

PATENTED. THE MACDONALD TICKET & TICKET BOX CO., CLEVELAND, O.

.00 ALLIANCE—ALLIANCE .00
.05 VINE ST.—VINE ST. .05
.10 LEXINGTON RD.—LEXINGTON RD. .10
.15 LIMAVILLE—LIMAVILLE .15
.15 HENRYS—HENRYS .15
.20 ATWATER—ATWATER .20
.25 MOFF—MOFF .25
War Tax
.30 EDINBURG—EDINBURG .30
.35 ROOTSTOWN—ROOTSTOWN .35
3 .40 WATER WORKS—WATER WORKS .40 3
4 .45 RAVENNA—RAVENNA .45 4
4 .50 N.MILFORD RD.—N.MILFORD RD. .50 4
4 .55 KNAPP ST.—KNAPP ST. .55 4
5 .60 CHARLESTON—CHARLESTON .60 5
5 .65 SEIDEL—SEIDEL .65 5
6 .70 WAYLAND—WAYLAND .70 6
6 .75 EVANS—EVANS .75 6
6 .80 WILCOX—WILCOX .80 6
7 .85 NEWTON FALLS—NEWTON FALLS .85 7
7 .90 McCLURES—McCLURES .90 7
8 .95 STOP 26—STOP 26 .95 8
8 1.00 LEWIS RD.—LEWIS RD. 1.00 8
8 1.05 LEAVITTSBURG—LEAVITTSBURG 1.05 8
9 1.10 AUSTIN AVE.—AUSTIN AVE. 1.10 9
9 1.10 WARREN—WARREN 1.10 9
DOG—DOG
BAGGAGE—BAGGAGE
EXCESS FARE—EXCESS FARE

TWO FORMS OF CASH FARE AND TAX RECEIPTS

The same information is contained on the stub, which is retained in the holder, and which thus simplifies the work of the auditing department in checking up the war tax returns made by the conductors. The auditor has simply to go through the stubs turned in and sum up the tax amounts indicated on each slip to arrive at the total amount due the government.

Training Apprentices for Railway Trades

New Plan of Steam Railroad to Develop Skilled Mechanics Offers Suggestions to Electric Railway Shop Managers

BY F. G. LISTER

Mechanical Engineer El Paso & Southwestern System, Formerly Mechanical Engineer Spokane, Portland & Seattle Railway

[While Mr. Lister is now with a steam road, he has written this article because he appreciates, from his electric railway experience, that some systematic plan for training apprentices is needed in this field also.—EDS.]

War conditions have taken away so many of our mechanics, both young men and men of middle age, that we have been handicapped, possibly more than railways in the other sections of the country where labor is more plentiful. At one time we had a great many Mexicans, but as a rule they do not make good mechanics, and when a state of war was declared between this country and Germany many of them flocked back to the other side of the line. To overcome the labor difficulty we finally decided to secure a large number of bright, healthy boys between the ages of sixteen and twenty years and educate them for our mechanical trades.

On Oct. 1, 1917, the new plan went into effect. Under this plan four-year apprenticeship is required and those entering the service will be considered on probation during the first year. During this period the boys will be studied closely by the shop instructors and foremen, and if during that time it is found that they do not obey the shop rules or appear not to be fitted for the trade which they have started in to learn, they will be dropped. If found worthy and capable they will be paid as follows:

First and second periods of six months	20 cents per hour
Third period of six months	22½ cents per hour
Fourth period of six months	25 cents per hour
Fifth period of six months	27½ cents per hour
Sixth period of six months	30 cents per hour
Seventh period of six months	32½ cents per hour
Eighth period of six months	35 cents per hour

These rates, which are exceptionally high for apprentices, will render the young man self-sustaining from the start.

After completing the eighth six-month period, if he has properly availed himself of his opportunities and has become a competent mechanic, the apprentice will be allowed the full rate of pay of the craft.

It is our purpose to start a school of instruction after the first of the year, with an adequate and attractive building, to be presided over by a competent instructor who will be more or less in charge of the apprentices while in the shop as well as the instruction room.

The course in the school will comprise mechanical drawing and mathematics, and such other studies as will be found to be useful in the trade the apprentice may be learning. School instruction will be given during working hours under pay.

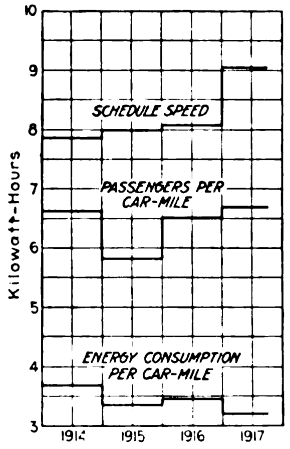
Before employment each applicant must pass a medical examination and possess certain educational qualifications. The medical examination must show the applicant to be free from organic heart or lung trouble, have good hearing in each ear and have normal vision. The urine must be normal and applicant must not be afflicted with hernia.

Significant Saving from Car Energy Metering

Power Consumption Decreasing Despite Increasing Schedule Speed and Passenger Haul

Since the publication of an article on the cost of maintaining Economy meters, by F. V. Skelley, assistant superintendent Tri-City Railway, Davenport, Iowa, in the Nov. 3, 1917, issue of the ELECTRIC RAILWAY JOURNAL, an analysis of the total company operating figures has been made to determine what the metering of the energy consumption at the cars has meant to the company in savings realized. The findings of this study are set forth in the following paragraphs:

The records covering the entire Illinois and Iowa electric railway properties of the Tri-City Railway for the last four years and averaged over all lines for each year, show an increase in schedule speed of 15 per cent, an increase in passengers per car-mile of 0.9 per cent and per car-hour of 15.9 per cent and, despite these increases, a decrease in energy consumption per car-mile of 13 per cent. The similar unit figures for the nine months of 1917 as compared with those for 1916, show increases in passengers per car-mile of 2.6 per cent, in passengers per car-hour of 15 per cent and in schedule speed of 12 per cent, while the decrease in kilowatt-hours per car-mile has been 7.2 per cent.



OPERATING DATA FOR CARS OF TRI-CITY RAILWAYS—METERS INSTALLED JUNE, 1915

(System—Year Averages)

In view of the emphasis which is being laid nowadays on more economical operation, and especially on lowering the energy consumption, the record of the Davenport company is of special interest. How this company has been able to load its cars more heavily, which means more stops, and run them faster and yet show a less energy consumption per car-mile, is a matter which cannot be said definitely to depend on any certain thing, but it is significant that 100 Sangamo Economy watt-hour meters were installed in as many cars in May and June, 1915. These 100 cars constitute the regular run equipment. In addition there are seventy-five cars used to fill in in the regular service, and for the tripper and short-run service. These latter cars are not equipped with meters, but their energy consumption and mileage are included in the over-all property unit figures. Also, it is undoubtedly true that the installation of any of the economy devices on part of the cars of a company has its influence on the operation of all cars, because of the educational work which goes with their use and the natural influence of part of the men over their fellow employees through the power of example and discussion.

Other than the installation of the meters, there has been no change in particular on the system which would tend to better the energy consumption. There has been no important change in the mechanical or electrical equipment of the cars during the four years considered, nor has there been any change in type of car or operating practice. The number of new cars with more efficient equipment which have been added are not sufficient to have any particular effect on the average energy consumption. So it would seem logical to assume that at least a good part of the flatness of the energy curve, despite the rising trend of the schedule speed and passenger per car-mile curves, must be due to the presence of the meters.

HOW THE UNITS WERE DERIVED

Graphs which show the trend of the kilowatt-hours per car-mile, the passengers per car-mile, and the schedule speed, as factors in the operation of the company, are reproduced herewith. The total figures used in arriving at the unit quantities determining these were in each case taken from the company's official summary sheets. The total sums of each item used in deriving the units were used, so that the units represent grand averages. For instance, the schedule-speed unit for each year was arrived at by dividing the total car-miles of the entire system by the total car-hours. Thus in both items are included regular cars, tripper cars, extra cars, etc., and also layover time at the ends of lines if there was any, although there is none under ordinary practice. The item of passengers per car-mile unit was obtained by dividing the total cash, ticket, transfer and complimentary fare passengers by the total car-miles. The unit energy consumption was figured by dividing the total kilowatt-hour consumption as summed up from the kilowatt-hour readings on all the railway feeders at all the substations, thus including the line and collector losses, energy used by electric welders, grinders and miscellaneous track machines and tools and the car-lighting and heating energy, by the total car-miles for the year. The energy consumed by the Clinton and Muscatine interurbans is also included in the substation meter readings, but their mileage is not reckoned in the total mileage, so that the unit energy figures computed on the basis of these two totals are somewhat higher than the actual figures. For 1917 the records cover only nine months. When the remaining three months are included, they will have the effect of slightly increasing the kilowatt-hour per car-mile consumption, and slightly raising the passenger per car-mile units for the year, on account of the increasing riding as the holidays are approached, and on account of the bad weather and rail conditions and the fact that the electric car heaters will be on a good deal of the time.

THE PSYCHOLOGY OF CHECKING CAR OPERATION

One of the important accomplishments noted by the Davenport company as the result of the meter installation on the cars, is the psychological effect of the metering of each man's consumption. This places the men in competition with one another and if the desire to hold first place in the comparison of men is not the principal impelling motive, then at least the desire not to be in last place or near the bottom is controlling. The men are frequently found in groups discussing how they had improved previous records or why some motorman's poor work naturally placed him at the bottom of the comparative list.

This audible evidence of the psychological influence of the meters is extremely important in its bearing upon the results to be obtained with economy devices, for once the men come to a thinking consciousness of the use of energy, and with this thoughtfulness maintained prominently in their minds through the comparative checking of their operating skill, then is a long advance made in the saving of power.

Other evidence has been furnished the Tri-City Railway of the value of the economy meter as a saving influence, through the check it gives on the condition of brakes and motors. The motormen soon learned that dragging brakes materially affected their energy consumption records. Accordingly, cars were promptly turned in in considerable numbers at the end of the first run each morning, during the first few months the meters were installed. This gave a direct check on the night men responsible for the brake adjustment. In order to reduce the number of turn-ins from this cause, John Sutherland, master mechanic, has made use of a shim which is placed between the wheel and the brakeshoe during adjustment. This shim is ¼ in. thick and the shoe is tightened up against it so that a practically uniform adjustment is maintained. Anderson slack adjusters are now being installed to reduce the amount of this inspection labor.

The meter also affords a very valuable check on the motors. For instance, if a car shows a sudden increase in energy consumption of 10 kw.-hr. for a day's run, when weather conditions and traffic are normal, this gives very dependable evidence of a defect in the motors, and these are tested that night for a short-circuited field coil. Such a short between two or three adjacent turns of a field coil might exist in a motor continued in service for years without detection of the fault, were it not for the presence of the meter. Other inherent motor failures which do not noticeably affect the running characteristics of a car are likewise promptly made known by a close following of the car energy consumption records, and the motors are thus maintained in their most efficient state.

Strength of Gas-Welded Joints in Steel Plates

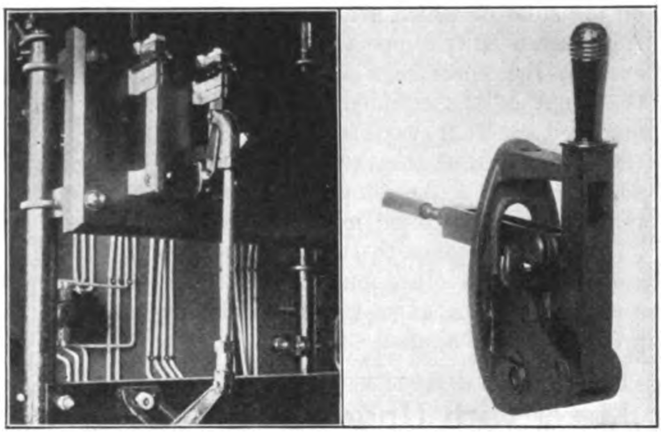
A series of tests of the strength of joints welded by means of the oxy-acetylene process in mild steel plates has been completed by the Engineering Experiment Station of the University of Illinois on specimens supplied by the Oxweld Acetylene Company of Chicago. Tests were made under three conditions of loading: (a) static load in tension (in a testing machine), (b) repeated load (bending), and (c) impact in tension (in a drop testing machine). The station, located at Urbana, Ill., will furnish free on request copies of Bulletin No. 98 containing the results of the tests in full.

By way of summary it may be said that, for joints made with no subsequent treatment after welding, the joint efficiency for static tension was found to be about 100 per cent for plates ½ in. in thickness or less, and to decrease for thicker plates. For static tension tests, the efficiency of the material in the joints welded with no subsequent treatment was found to be not greater than 75 per cent. The joints were strengthened by working the metal after welding and were weakened by annealing at 800 deg. C. For static tests and for repeated stress tests, the joint efficiency sometimes reaches 100 per cent; the efficiency of the material in the joint is always less. This indicates the necessity of building up the weld to a thickness greater than that of the plant. The impact tests show that oxy-acetylene welded joints are decidedly weaker under shock than is the original material; for joints welded with no subsequent treatment, the strength under impact seems to be about half that of the material.

In general, the test results tend to increase confidence in the static strength and in the strength under repeated stress of carefully made oxy-acetylene welded joints in mild steel plates.

Back-of-Board Type Field Switches

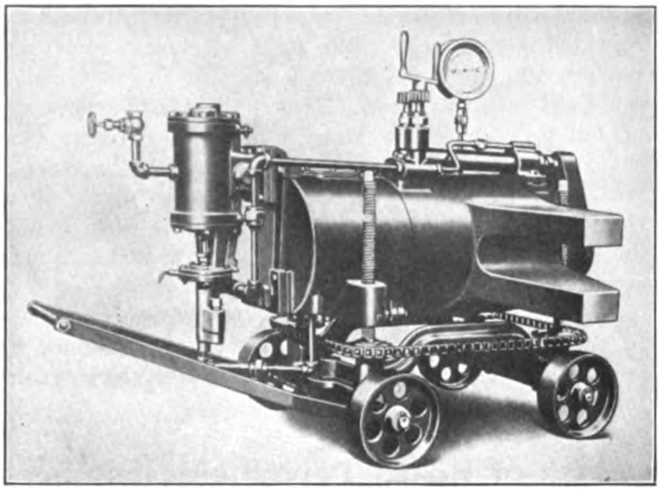
In the starting of a synchronous motor from an alternating-current source with the field open-circuited, which is the practice of the General Electric Company on all alternating-current motors using 125-volt excitation, there is considerable induced voltage across the field terminals until the motor reaches synchronous speed. Under these conditions an exposed field switch on the front of a switchboard is more or less of a source of danger to the operator.



FIELD DISCHARGE SWITCH ON BACK OF SWITCHBOARD, AND OPERATING LEVER USED ON FACE OF BOARD

The company recommends as a method of reducing this danger in connection with hand-operated field switches the back-of-board switch shown. This switch embodies all the essential features from a safety-first viewpoint. It consists of an operating handle similar to an oil circuit breaker lever mounted on the front of the board and the switch proper mounted on a slate base, which is supported on a framework back of the switchboard. The switch is connected mechanically to the operating handle by means of connecting rods and bell hangers. This locates all live parts on the back of the board. This type of switch can be used also in connection with alternating-current generators, and with high-voltage direct-current generators for 1200 volts or more. In the latter case the field switch is single pole instead of double pole.

On synchronous motors utilizing 250-volt excitation it is the practice to start with the field short-circuited through the discharge resistance. In such cases a double-pole switch is provided to short circuit the field through the discharge resistance during the period of starting.



PORTABLE PNEUMATIC PRESS

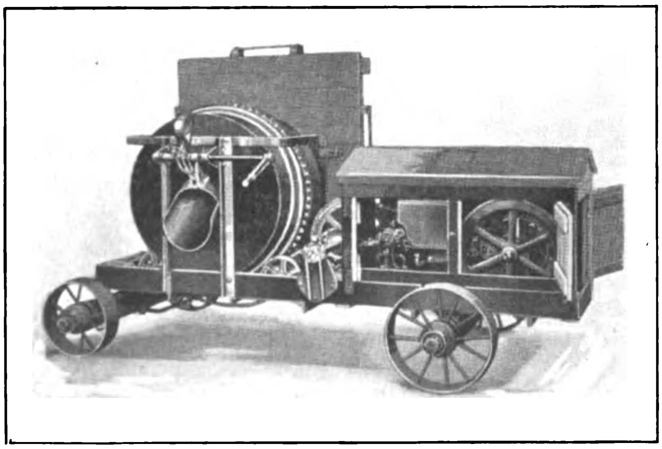
Pneumatic Press for Shop Use

For electric railway shop use the portable press shown in the illustration has been developed by the Watson-Stillman Company of New York. The main portion of the press is an open-hearth steel cylinder on the sides of which are heavy cast-iron forks. These forks are used to support the rods which hold the work against the operating ram. The ram operates from the front of the cylinder casting. The whole unit is mounted on four vertical threaded supports, so that the center line of the ram can be raised or lowered to suit the work to be done. An air engine, pump, and reservoir are mounted on the rear of the press, and it is necessary only to connect the press with the air supply as with other pneumatic tools. The press is equipped with a gage which accurately indicates the pressure being applied.

Mixer with Underslung Chain Drive

The T. L. Smith Company, Milwaukee, Wis., is putting on the market a new type of Smith-Chicago concrete mixer, a special feature of which is an underslung chain drive. The chain, instead of passing around the mixer drum, goes under the truck frame, around an idler pulley on the roller shaft, and back under the drum. This not only permits the use of a shorter chain and decreases the friction, but the chain, being in contact with fewer teeth, is less likely to ride off.

Another new feature is a self-locking discharge chute designed to eliminate the tendency of the concrete to flip the chute when falling upon that portion of it inside the drum. The chute is simply inserted in the drum, and the toggles automatically lock. It can be operated from either the feed or discharge side.

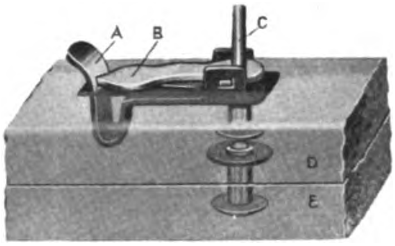


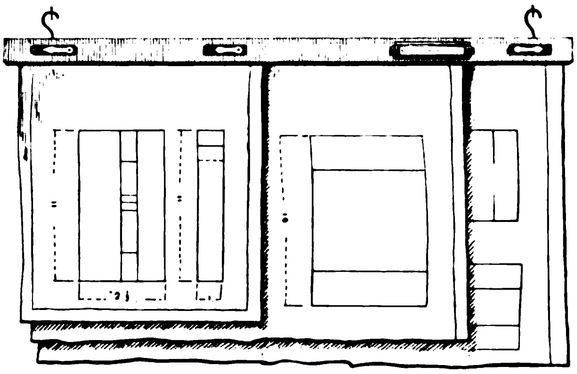
VIEW OF CONCRETE MIXER WITH UNDER-SLUNG CHAIN

The machines are furnished with a power charger or a charging platform 18 in. high, which can be removed or hooked up in a vertical position. They are equipped for either steam or gasoline power.

Simple Holder for Filing Drawings

The National Company, Boston, Mass., is putting out a new device called the "Presto Holder," for filing blueprints, drawings, etc. The holder consists of two wood strips, designated as *D* and *E* in one of the illustrations, between which the prints are clamped. It carries three locking devices, the middle one being located off center for convenience in clamping narrow prints. The locking mechanism has two parts, *A* and *B*, which are pressed as desired either to lock or to release, *B*, from the stud *C*, which is securely fastened in the lower strip.





HOLDER CLAMPING DEVICE AND DRAWINGS IN POSITION

The holders are made in 30-in., 36-in. and 42-in. lengths, each holder having a capacity of sixty prints. An index card holder is attached for filing purposes, and hooks are provided for hanging on the wall or in rows on a suitable rack.

New Insulating Material

An insulating material, to be known as "Dorrite," said to be fire, water and acid proof, has been developed by Harry A. Dorr, and will be made by the Dorrite Insulating Company, Inc., Newark, N. J. It is composed chiefly of chemically treated pulverized waste material which can be molded, stamped or pressed into many shapes and sizes, and can be sold at a reasonable price.

A piece of this material, 3 in. in diameter and 1/8 in. thick, withstood successfully a test pressure of 40,000 volts after it had been immersed in water for seventy hours, and again after it had been boiled for one hour in cutting oil at 650 deg. Fahr. A piece 6 in. square and 1/8 in. thick was tested at 88,000 volts in oil without showing evidences of breakdown, and another piece the same size was unchanged after immersion in a 10 per cent solution of sulphuric acid for nineteen days.

News of Electric Railways

Traffic and Transportation

Financial and Corporate Personal Mention Construction News

Decision Against Labor

Right of Employers to Prevent Solicitation of Non-Union Employees for Union Membership Upheld by the U. S. Supreme Court

The right of employers to prevent labor unions from soliciting non-union employees to join the labor organizations was upheld on Dec. 10 by the United States Supreme Court by a divided vote of six to three, in test cases against the United Mine Workers of America and the American Flint Glass Workers' Union.

Methods of the labor organizations in attempting to unionize the "open shop" workmen and bring about strikes were declared "unlawful" and "malicious." Injunctions granted previously by Federal Judge Dayton, in West Virginia, to prevent the union activities, were sustained.

The court admitted the right of workmen to organize into unions for lawful methods, but held that the employers were entitled to operate their plants "open shop," and to protection.

The court holds that what the defendants were endeavoring to do at the Hitchman mine and neighboring mines was not a bona-fide effort to enlarge the membership of the unions, since the new members were not desired or sought except as a means to the end of compelling the owners of the mines to change their methods of operation.

WHAT THE COURT SAID

The majority opinion says in part:

"The Supreme Court holds that the plaintiff was acting within its lawful rights in employing its men upon the terms that they should not be members of the United Mine Workers; that, having established this working agreement between it and its employees with the free assent of the latter, the plaintiff is entitled to be protected in the enjoyment of the resulting status as in any other legal right.

"By way of justification or excuse, defendants set up the right of workingmen to form unions and enlarge their membership by inviting other workingmen to join. The opinion of the court freely conceded this right, provided the objects of the union be proper and legitimate, which is assumed to be true in a general sense, with respect to the United Mine Workers of America.

MUST NOT INJURE OTHERS

"But the court holds that it is erroneous to assume that this right is so absolute that it may be exercised under any circumstances and without any qualification; that in truth it must always be exercised with reasonable regard for the conflicting rights of others.

"Hence, assuming that the defendants were exercising the right to invite men to join their union, nevertheless, since they had notice that plaintiff's mine was run non-union, that none of the men had a right to remain at work there after joining the union, and that the observance of this agreement was of much importance and value both to plaintiff and to its men who had voluntarily made the agreement and desired to continue working under it, the defendants were under a duty to exercise care to refrain from unnecessarily injuring plaintiff. Yet they deliberately and advisedly selected that method of enlarging the union membership which would inflict injury upon plaintiff and its loyal employees, by persuading man after man to join the union, and, having done so, to remain at work, keeping the employer in ignorance of their number and identity, until so many should have joined that by stopping work in a body they could coerce the employer and the remaining miners to organize the mines. The conduct of defendants in so doing was unlawful and malicious."

Amended Lease Presented

Representatives of Philadelphia City Administration Present Modifications of Proposed New Agreement with Philadelphia Rapid Transit Company

Dr. William Draper Lewis and Director of City Transit Twining, on behalf of the city administration of Philadelphia, Pa., on Dec. 7 submitted to the joint committee on street railways and finance of City Councils a proposed lease between the city and the Philadelphia Rapid Transit Company which provides for the abolition of exchange tickets, the installation of a 5-cent fare with universal free transfers, an assured 5 per cent return to the company, automatic raising or lowering of the 5-cent base rate according to the amount of the net revenue, a board of supervising engineers to consist of two members, and equal division of net revenue by city and company. The option is reserved to the city, however, of deciding whether deficits shall be met by taxation or increased fares.

THE REASON FOR THE CHANGES IN THE ORDINANCE

The proposed contract and lease of the city's high-speed lines to the company was submitted to Councils on Aug. 17. The ordinance embodying the proposed contract was referred to the committee. During the latter part of September and the early part of October a series of public meetings was held which afforded opportunity for a full and free discussion of every phase of the proposed lease and the intricate problems involved in providing for the operation as a unified system of all transit facilities. At the conclusion of the series of hearings Messrs. Lewis and Twining, although certain that the contract proposed was fair alike to the city and the company, were convinced that the discussion showed that further consideration should be given to:

1. The abolition of the exchange tickets, at least inside of the delivery district.
2. The insertion of a definite provision reducing fares when an existing fare exceeded the fare requirements of the contract, and in general more definite provisions regarding the method of presenting to the commission changes in fares.

Messrs. Lewis and Twining were also satisfied that the discussion also showed the desirability of:

1. The insertion of a definite provision to enable the city from time to time at its option to reduce the fare requirements of the contract by relinquishing to such an extent as it may desire, and for such periods as it may determine, the rental paid for the use of the city's high-speed lines.
2. The insertion of a definite provision making it clear that the board of supervising engineers created by the contract, while having power to require the company to furnish adequate equipment and good service, will have no power to alter, postpone or delay the building or operation of any line which Councils has heretofore or may hereafter determine to build.
3. The insertion of a definite provision making it clear that the board shall not usurp any power vested by law in the director of the department of city transit or the Public Service Commission, and that nothing in the contract shall prevent any person bringing before the commission, without being first required to go to the board, any matter within the jurisdiction of the commission.
4. The modification of the organization of the board so as to meet the objection that as originally planned it may be subject to political or other influences interfering with its full efficiency.

In addition to the above matters the representatives of the city administration were convinced that while there was no general objection to the assurance to the company of a fare which would give to the company's stockholders a reasonable dividend, if practicable it was desirable to provide that the maximum dividend which the stockholders could receive should be less than a 6 per cent cumulative dividend from the date upon which the contract becomes effective.

WHAT THE AMENDMENTS AIM TO ATTAIN

Messrs. Lewis and Twining say that the amended lease as it now stands aims to attain the following objects:

1. To make sure that the city for the next forty years will be provided with proper service and efficient transit facilities.
2. To relieve congestion on the surface of the streets in the business districts.
3. To provide an efficient operator for the unified system, whose interest will not be centered on one branch of the service to the detriment of other branches.
4. To provide proper compensation for the operator of the unified system.
5. To provide that the interest and sinking fund payments on the city's investment in transit lines should be provided surely and certainly.
6. To release the city's borrowing power as soon as possible.

In this connection the city's representatives say that they believe that the principles underlying the draft of last August were correct, and that those principles are applicable, whether it be that war exists or not. Those principles are:

1. That such unified service as the people desire should be furnished at a minimum cost.
2. That the cost of that service should be supplied by the users of that service.
3. That the authority of the Public Service Commission to regulate service and fares should be fully recognized.

The main differences between the articles on the distribution of gross revenue and on fares in the contract as first submitted and as now amended are summarized as follows by Messrs. Lewis and Twining:

1. The return on the city's investment was placed before the return on the company's investment. Under the amended contract the return on each is placed side by side.
2. The company's stockholders would have had an assurance of a 4 per cent dividend, a probable 5 per cent dividend and a possible 6 per cent dividend. As amended the stockholders have an assurance of a 5 per cent dividend and are limited to a 5 per cent dividend throughout the term of the contract.
3. Fares were to be revised upward by the company filing the new schedule. As amended the board will file the schedule, and the city will have a voice in determining how the schedule will be arranged.
4. There was no express provision for the revision of fares downward. Such revision could have been effected by the commission acting on a petition of citizens or on recommendation of the board. Now fares are reduced by the board filing a reduced schedule with the commission whenever the surplus earned under the contract has reached $2,000,000.

THE FINANCIAL RISK DIVIDED

In regard to the matter of the financial risk the report now presented says:

"For two years the city negotiated with the company on the basis of a division of this financial risk. Last January the company submitted a proposal in which the company agreed to limit its share in the profits of the business to a guarantee of 5 per cent on its capital stock, and the city would have assumed all future risks of the business. This proposition was rejected by the city, and under a counter-proposition introduced last August the company was to assume the risks of the business, in return for which the city assured the company that it should not receive less than 4 per cent and might receive as much as 6 per cent upon its capital stock. The present amended draft is based on a plan under which the business risk is assumed equally by the city and the company and the company's profits from the business are limited to 5 per cent on its outstanding capital stock."

With respect to the exchange tickets the report says:

"Everyone has realized the expediency of abolishing the exchange ticket and has also realized that the unified system needed for its proper operation not only all its present revenue, but much additional revenue, and therefore the revenue represented by these tickets must in some way be replaced. The lease of last August and the amended form of that lease which is now before you each proposed that the loss of revenue due to the abolishing of the ticket should be restored by a revision of the fare when necessary, which provision should be so made that it would not be held discriminatory, unjust or unreasonable by the commission."

Aside from the changes introduced to clarify moot points of interpretation, the fundamental difference between the present lease and that to which it is an amendment has been summarized as follows: Whereas the lease of August last made the city's interest and sinking-fund charges a preferred payment out of net revenue over the company's dividends, put all the risks of the business on the company, but gave it an assurance of 4 per cent with a probability of 5 and a possibility of 6 per cent dividend, the new lease puts the city and the company on a level as to risks, the distribution of net revenue being made in proportion to the respective investments of the city and the company in transit facilities. A surplus is provided for to meet fluctuations in revenue, and the company is given an assurance of 5 per cent and no more.

A. MERRITT TAYLOR OBJECTS

A. Merritt Taylor, former director of city transit, in a long statement issued on Dec. 9, announced his opposition to the revised lease and suggested that further negotiations between the city and the company, so far as the whole system is concerned, be deferred until after the war. Meanwhile, he suggested that a temporary agreement be negotiated between the company and the city for the operation of the Frankford line as an extension of the Market Street subway. And furthermore, that the exchange-ticket problem, together with the company's fare requirements, be placed before the Public Service Commission for investigation and decision.

Dr. Lewis replied on Dec. 10 to Mr. Taylor's criticism of the revised lease, making the point the former transit director had, in the past, opposed the making of separate leases. Further, Dr. Lewis answered the suggestion for a deferring of negotiations until after the war with the declaration that the very fact that times were abnormal made it possible for the administration to present the best possible lease.

Sympathetic Strike Called Off

A general strike of allied trades labor unions was ordered for the Twin Cities as an outcome of the recent strike and lockout of the men in the employ of the Twin City Rapid Transit Company for refusing to obey the order of the Minnesota Safety Commission for the removal of union insignia when on duty as trainmen. The general strike was being voted on Dec. 11 and 12 by different unions. This action followed the refusal of Governor J. A. A. Burnquist to submit the question to arbitration to Washington at the request of Samuel Gompers. John Lind of the commission is in Washington. He was urged by Mr. Gompers to represent the commission on the arbitration board. It was estimated that a general strike would involve 40,000 men. It was believed that the strike agreement would obviate the need for the general convention planned for Minneapolis on Dec. 11 and postponed until Dec. 12 to learn from the Twin City labor delegation sent to Washington whether there would be federal interference.

Telegraphic advices from Minneapolis to this paper on Dec. 14 reported the sympathetic strike a fizzle. Only a few men reported out and some unions did not even take a strike vote. The strike was called off in three hours by President E. G. Hall of the Minnesota State Federation of Labor after information had been received from Washington that the Secretary of War had requested the president of the mediation commission in Seattle to stop in the Twin Cities on Dec. 17 on the way east and investigate the situation informally. Electric railway service was about normal on Dec. 13, considering the cold.

Supreme Court Upholds Commission

Authority of New York Body to Order Private Companies to Increase Service Confirmed by the Court

The authority of the Public Service Commission of the First District of New York to order public utility corporations to increase service was confirmed by the United States Supreme Court in a decision handed down on Dec. 10 in the case of the commission against the Queens Gas Company. On an application by citizens living in Douglaston and Little Neck, the commission directed the company to extend its mains from the terminal at Flushing to these localities. Testimony offered by the company was to the effect that the return on the investment of $60,000 required to be made by the commission would not be more than 3 per cent, and that therefore the order was unreasonable. The commission insisted that its order be obeyed, and denied that it was unreasonable, because the growth of the communities interested was so rapid as to speedily insure a fair net return on the expenditure. The Appellate Division set the order aside on the ground that when the commission law referred to the reasonableness of an order it meant reasonable in the opinion of the court and not in that of the commission. The Court of Appeals reversed this opinion. It held that the commission was entitled to determine questions of fact and of policy involved as to what was reasonable, and that the courts could not substitute their judgment for the "fact findings" of the commission. The gas company thereupon carried the case to the United States Supreme Court on a writ of error.

Waterloo Franchise Passed

The new franchise for the Waterloo, Cedar Falls & Northern Railway in Waterloo, Iowa, the terms of which were outlined in the ELECTRIC RAILWAY JOURNAL for Nov. 24, page 961, was passed at the Dec. 5 special election by a substantial majority. The franchise provides that the city shall share in the profits when the gross income for the entire property has exceeded 5 cents per car-mile over and above the cost of operation, to the extent of 10 per cent. A number of improvements in the property are specified and must be made within a certain time limit. Among other things these include the purchase of twenty new fully-equipped one-man cars which it is said the company will order in the very near future.

M. O. Bill for New York City

A draft of a bill providing for municipal ownership of surface railroads in the city of New York, which it is proposed to ask the Legislature to enact into law, was submitted to the Public Service Commission on Dec. 12 by Commissioner Travis H. Whitney. Copies of the measure will be sent to various civic organizations, to the railroad corporations, and to other persons especially interested in municipal ownership. All will be invited to participate in a public hearing in the rooms of the commission on Dec. 20.

Under the provisions of the present rapid transit act the commission may, with the approval of the Board of Estimate, acquire for the city any railway which might be used for rapid transit. It is also provided that the money necessary for the purchase shall be paid by city bonds. These powers, under the proposed bill, would be extended to permit the acquiring of "any line or lines of street surface railroad already constructed or in process of construction which, in the opinion of the commission, it is for the interest of the public and the city to acquire in order that the same shall be operated for a single fare in conjunction or in connection with any existing rapid transit railroad owned by the city or of which the receipts are combined with the receipts of any road of the city under any contract made pursuant to this chapter."

Some few weeks ago Commissioner Whitney made a speech in Flushing in which he suggested that the companies, in view of the losses which they have said they suffered recently, might view with complacency the purchase of the roads by the city. A long extract from this speech was published in the ELECTRIC RAILWAY JOURNAL for Dec. 1, page 1003.

Skip Stops and Rerouting Withdrawn

Detroit United Railway Complies with Reprisal Measures Adopted by the Council Following the Recent Fare Increase

In compliance with reprisal measures adopted by the Common Council of Detroit, Mich., following the action of the Detroit United Railway in raising fares to 5 cents straight, the company on Dec. 7 discontinued skip-stop operation and put cars back on routes which were used prior to the adoption of the general rerouting plan in the downtown district. The Council in an effort to punish the company for the fare increase abolished the skip-stop and rerouting plans. The latter plan had cost the company $500,000 in the way of special track work, curves, etc., and the plan followed was one which was recommended by engineers employed by the city.

SERVICE SLOWED UP

Since the abolition of skip stops and rerouting the congestion of cars in the downtown district has been so bad that car riders find that it now takes them from twenty minutes to a half hour longer to get home than it did before the Common Council took its drastic action. Public indignation led Mayor Marx on Dec. 11 to send a communication to the Council asking that skip stops and rerouting be re-established. The ruling faction in the Council, however, is at war with the Mayor and the recommendation of the chief executive of the city was promptly voted down at the Council session by a vote of twenty-four to sixteen. The Council then adopted a resolution providing for the appointment of a committee of five of its own members to draft an ordinance providing for a stiff rental for the use of the streets on which franchises have expired and also to consider action toward ousting interurban and freight cars from city streets.

The situation regarding fares and investigation of the company's books to determine whether the increase was justified has been complicated by a measure adopted by the Council. A week ago the Council voted a fund of $35,000 for an investigation to be made by engineers to be employed by the Municipal Railway Commission. The members of the commission were all appointed by Mayor Marx, and the Aldermen therefore consider it as the Mayor's commission. So that the Mayor may not get any glory out of the investigation the Aldermen have practically decided to stage an inquiry of their own in addition to the Mayor's. A resolution for the purpose of engaging engineers to probe the company's affairs has been referred to the ways and means committee, the chairman of which is the political boss of the Council and the probable opponent of Mayor Marx in the mayoralty campaign next year.

PEOPLE'S REPRESENTATIVES ALONE RESPONSIBLE

Meanwhile the company is collecting 5-cent fares and is putting the responsibility for the present inadequate service squarely up to the Aldermen. In *Electric Railway Service* for Dec. 14, the company states to the public:

"Your representatives in the Common Council are alone responsible for what has happened. If the manner in which the cars do not get through the center of the city and do not get you to your destination in the same time as before Dec. 7 pleases you, they must have the glory. It is not our intention to take it from them. Our repudiated solons are so accustomed to 'pass the buck' that they are trying to do it again and under cover from the effect of their angry action. They cannot 'pass the buck' to us. We decline to accept it. We are keeping our word as the people well know. If the Council will not let us put these cars through on time; if the Council insists on wasting the people's time, it cannot be charged to us, and we do not propose to let any newspaper or Alderman get away with any such charge. If any Alderman endeavors to shift responsibility by suggesting that we are holding back cars, tell him he says what is not so."

In regard to the $10,000 a day rental resolution adopted by the Council, Harry J. Dingeman, Corporation Counsel, declares that it cannot be enforced by the city. The company states positively that it will not even consider the payment of a rental, declaring that this would only add to the company's expense and consequently make an even higher rate of fare necessary. Mr. Dingeman says that while the city cannot collect a rental it can order the company off the streets where franchises have expired.

Mail Delay Explained

War is no respecter of persons. Uncle Sam himself is not exempt from its inconveniences. This, in a word, accounts for the slow and irregular deliveries of their papers, concerning which some of the readers of the ELECTRIC RAILWAY JOURNAL have written us. A careful investigation has been made into the causes for the complaints. The irregularities that have occurred are traceable to the unprecedented congestion of the mails. This in turn is due, in part, to the war program of curtailing train schedules, but mostly to the going into military service of many thousands of postal clerks. The post office authorities promise that no stone will be left unturned to get back to normal service at as early a date as possible. Meanwhile, until the necessary readjustments in service are made and new clerks are trained to take the places of the enlisted men, readers are requested to be tolerant and patient.

George Ade at His Best

Advises Americans More Than Thirty How to Help to Win the War

This is no time to waste precious hours and vocal energy in trying to prove that two and two make four, and water is wet, and the sun sets in the West, and the mad dog of Prussianism must be muzzled.

THE BILIOUS FEW

Do not try to convince the miniature La Follettes, because they do not wish to be convinced. They derive a bilious comfort from being different. They have learned that no cloud has a silver lining; it is festooned on the interior with crêpe.

THE TWO-LEGGED CRAB

If all the optimists along your street should arise some morning into a world bedecked with dew sparkles and exclaim in unison, "What a beautiful, sunshiny day!" then some two-legged crab would emerge from behind a lilac bush and say, "Yes; but I think it'll rain before night."

BEWARE THE BANANA SKIN

If you find a banana skin on the threshold of patriotic opportunity, kick it aside and do not permit yourself to become fussed.

The stalwart men and women of middle age are to keep the home fires burning during the supreme ordeal now at hand.

They are to raise the crops, speed the factories, collect the taxes, organize the home guards, conserve the wheat and meat and sugar, pack up the Red Cross, peddle the Liberty Bonds, write the letters, pack the comfort kits and stand by for orders at all times.

If a busy worker feels some one tugging at his coat tail, the thing to do is to kick straight back and kick hard, but do not waste time in looking around.

AN IMPORTANT TIP—DON'T BRAG

By the way, here is an important tip for every man past thirty. Do not tell around that you would be keen to enlist if you were just a little younger. Some of the men just under thirty will have their doubts, and even those who believe you will not find entertainment in your conversation.
—*George Ade.*

Strike on Ohio Interurban

Motormen and conductors of the Cleveland, Southwestern & Columbus Railway, Cleveland, Ohio, struck on the morning of Dec. 10, after the company had offered to increase the wage scale 4 cents an hour from Dec. 1 of this year to April 1, 1919. The men demanded an increase of 8 cents an hour. The increase offered by the company would have made the wages of the men 32 cents for the first year, 34 cents for the second year and 36 cents for the third year and thereafter. They are under contract with the company at the present scale until April 1, 1918. About $40,000 additional expense would have been incurred by the company in paying the advance of 4 cents an hour. The management felt that with interurban conditions as they are, this is all that could possibly be offered. About 300 men are involved in the trouble. Substation men are on duty and the light service has not been affected.

War Bonus in Davenport.—The Tri-City Railway & Light Company, Davenport, Iowa, has announced that it will pay a 7 per cent bonus on the wages to all employees during the period of the war. The bonus will be distributed every three months.

Novel Use for Thrift Stamps.—At a luncheon of the Institute of Electrical Contractors held in New York City on Dec. 10 a speaker suggested the use of thrift stamps in giving tips for service. His practice was to give a waiter no cash tips but, when the service warranted, to give a thrift card with a stamp attached or a loose stamp.

Cleveland May Have Public Utility Counsel.—W. S. Fitzgerald, director of law of Cleveland, Ohio, is preparing legislation for the creation of the office of city public utility counsel, whose duty it would be to gather data in regard to utilities and conduct preliminary negotiations for all franchises that may be asked of the City Council.

Valuation of Omaha Lines by Commission.—The City Council of Omaha, Neb., has adopted a resolution requesting the State Railway Commission of Nebraska to make a physical valuation of the property of the Omaha & Council Bluffs Street Railway. This information is desired in connection with suits relating to franchise rights and to rates of fare.

Increase in Wages in York.—The York (Pa.) Railways has announced an increase of 10 per cent to all wages below $100 a month, effective from Dec. 1, to help the employees to meet the present living costs. Gordon Campbell, president of the company, stated that the company will probably ask for a slight increase in rates in order to meet the increased wages and federal taxes, maintain the railway in first-class condition and provide for the growth and improvement of the property.

Short Strike on Utah Line.—Traffic was suspended on the lines of the Salt Lake & Utah Railroad, Salt Lake City, Utah, for about twenty-four hours when a majority of the trainmen and other employees struck recently to enforce their demand for the reinstatement of one of their number. Formal letters were mailed to all of the men notifying them that they had been discharged and calling upon them to turn over all the property of the company in their possession. They were also told to call immediately for pay checks. The places of the strikers were filled with experienced men and none of the employees who was responsible for the strike will be allowed to return.

Conciliation Board Reports.—The board of conciliation and investigation appointed by the Labor Minister recently in connection with differences between the Ottawa (Ont.) Electric Railway and its employees, has filed its report. The matters in dispute were in relation to certain alleged violations by the company of provisions of the agreement entered into with the men on July 10. The board found that there was no real difference between the company and the men. Misunderstandings had arisen, as a result of a failure to come together for complete discussion such as the board was able to bring about, and as a result the misunderstandings disappeared and mutual assurances were given which are practically certain to result in harmonious operation in the future.

Delay in Operation of Steel Cars.—The Public Service Commission for the First District of New York has been informed by officials of the New York Municipal Railway Corporation that several weeks must elapse before the necessary work can be done to station and structure, so as to permit of the operaiton of all-steel cars through the Center Street Loop in Manhattan and over the Broadway-Myrtle Avenue elevated line in Brooklyn. Changes must yet be made to the elevated railroad structure at the Wyckoff Avenue station on the Myrtle Avenue line, and some minor changes in the station in the Center Street loop subway must also be completed before the all-steel car operation is possible. It is believed that this operation when begun will result in a very greatly increased service, owing to the fact that the capacity of each steel car is estimated as approximately 20 per cent more than the wooden car.

Financial and Corporate

Annual Report

Kansas City Railways

The comparative income statement of the Kansas City (Mo.) Railways for the fiscal years ended June 30, 1916 and 1917, follows:

	1917		1916	
	Amount	Per Cent	Amount	Per Cent
Revenue from transportation	$6,909,603	93.26	$6,576,233	93.19
Revenue from other railway operations	498,416	6.74	480,271	6.81
Railway operating revenue	$7,408,018	100.00	$7,056,504	100.00
Maintenance of way and structures	$802,060	10.83	$755,606	10.71
Maintenance of equipment	374,899	5.06	459,649	6.51
Maintenance of power buildings and equipment	65,154	.88	66,557	.94
Power—operating	734,957	9.92	594,528	8.43
Conducting transportation	1,866,038	25.18	1,755,598	24.88
Traffic	2,041	.03	3,069	.04
Board of Control	31,308	.42	23,141	.33
Injuries and damages after July 8, 1914	321,755	4.34	304,010	4.31
General and miscellaneous	323,722	4.37	281,110	3.98
Railway operating expenses	$4,521,935	61.03	$4,243,268	60.13
Net operating revenue	$2,886,084	38.95	$2,813,236	39.87
Taxes	473,150	6.38	434,486	6.16
Operating income	$2,412,934	32.57	$2,378,750	33.71
Miscellaneous income, company	$30,453	.41	$3,850	.06
Miscellaneous income, joint	6,031	.08	11,398	.16
Non-operating income	$36,484	.49	$15,248	.22
Gross income	$2,449,418	33.06	$2,393,998	33.93
Interest on Missouri injury and damage certificates	34,342	.46	....	....
	$2,415,076	32.60	$2,393,998	33.93
Surplus above 6 per cent on capital value to be applied as provided in franchise	411,302	5.55	506,315	7.17
Company's share	$2,003,774	27.05	$1,887,683	26.76
Company's income:				
Net income from Missouri properties	$1,652,722	22.31	$1,626,450	23.06
Net income from Kansas properties	320,599	4.33	257,382	3.65
Income from unfunded securities and accounts	21,386	.29	3,851	.05
Bond exchange fees	14	....	....	....
Discount on bonds purchased for sinking fund	9,053	.12	....	....
Gross income, company	$2,003,774	27.05	$1,887,683	26.76
Deductions from company's income:				
Bond interest	$1,442,569	19.47	$1,269,724	17.99
Bond discount and expenses	1,524	.02	503	.01
Services of registrars and trustees	4,033	.05	1,016	.01
Interest on Kansas injury and damage certificates	6,937	.09	....	....
Kansas injuries and damages, prior to July 8, 1914, paid with cash	16,864	.24	19,996	.29
Taxes	1,106	.01	677	.01
Total deductions from income	$1,473,033	19.88	$1,291,913	18.31
Net income	$530,741	7.17	$595,770	8.45

The transportation revenue of the company for the fiscal year ended June 30, 1917, showed a gain of $333,369 or 5.07 per cent, the passenger revenue increasing $324,239 or 4.98 per cent. Mail revenue rose $5,278 or 14.20 per cent, and freight revenue $2,705 or 11.85 per cent. The gross revenue increased $351,514 or 4.98 per cent.

Two maintenance items, for equipment and for power buildings and equipment, showed decreases of $84,749 or 18.44 per cent, and $1,403 or 2.11 per cent, respectively. The expenses for maintenance of way and structures, however, increased $46,454 or 6.15 per cent, the net maintenance effect being a decrease of $39,698 or 3.10 per cent. Power expenses rose $140,429 or 23.62 per cent; conducting transportation, $110,440 or 6.29 per cent, and general and miscellaneous, $42,612 or 15.15 per cent. Traffic expenses fell off $1,028 or 33.51 per cent. Injury and damage payments on account of claims arising prior to July 8, 1914, are not charged to operations, and are, therefore, not included in the foregoing statement. For the purpose of comparing expenditures, the injury and damage account should read: For 1917, $390,163 or 5.27 per cent of gross; for 1916, $571,775 or 8.10 per cent of gross.

The total operating expenses showed an increase of $278,667 or 6.57 per cent, and this was extended by an increase of $38,663 or 8.90 per cent in taxes. The operating income, therefore, gained only $34,184 or 1.44 per cent, and the gross income $55,419 or 2.31 per cent. After paying $400,000 in dividends and making appropriations of $112,944 to sinking funds, the balance in the company's profit and loss account as of June 30, 1917, was $194,844.

The company in 1917 carried 137,394,143 revenue passengers and 69,516,515 transfer passengers as compared to 131,075,084 and 67,342,528 in 1916, and operated 26,527,687 car-miles and 2,802,931 car-hours as compared to 25,892,693 and 2,734,480 respectively. The railway operating revenue per car-mile in 1917 increased to 27.92 cents from 27.25 cents in 1916, while the maintenance per car-mile fell off from 4.95 cents in 1916 to 4.68 cents in 1917. The total operating expenses per car-mile rose from 16.39 cents in 1916 to 17.04 cents in 1917, and the total operating expenses and taxes from 18.07 cents in 1916 to 18.82 cents in 1917. The operating income per car-mile decreased from 9.18 cents in 1916 to 9.10 cents in 1917, but the gross income per car-mile rose 0.01 cent to 9.24 cents. The total single-track mileage is 302.477, and the transportation revenue per mile of single track operated $22,843.

The company has been called upon to make large expenditures in rehabilitating and improving its properties during the last three years. During this time 22.86 miles of single track have been constructed and, in addition thereto, 53.4 miles of single track have been completely rebuilt in the most modern way. There is now under contract and in the process of construction 3.69 miles of single track of extensions. Seventy-five new cars have been purchased and placed in operation and 238 cars have been rebuilt, of which number 174 were equipped with folding doors and steps. Considerable improvements are now being made to the power house at Second and Grand Avenues, and the construction of four new substations has been authorized, two of which have been completed. The expenditures for additions and renewals in the last three fiscal years totaled $3,955,129, of which $1,333,165 was for the last year. This was about half way between the totals shown for the years 1915 and 1916.

Conferences in Paving Case

Hope is entertained that an amicable adjustment may be reached for the problems confronting the Chambersburg & Gettysburg Electric Railway. These all revolve around the paving question as a center. Some time ago the company asked for relief from paving charges sought to be imposed upon it by the Borough Council of Chambersburg, Pa. At a meeting of the Council in September the company filed a letter setting forth its side of the case. It is said that since 1905 the gross earnings had averaged only $40,132 a year, the expenses $37,748 a year, and the net income after the payment of taxes only $1,739 a year. All of the net had been put back into the property for improvements and extensions. The company said that it would cost about $16,800 to pave the six blocks called for in the ordinance. The carrying charges on this sum would amount to about $1,680, or almost as much as the average annual net income of all the lines of the company for the last twelve years.

Subsequently the Borough Council presented a petition asking for a receiver for the company on the ground that the refusal to meet the paving charges forfeited the franchise rights in town and perhaps in the county. Twenty days' time was given to answer the petition.

The Chamber of Commerce appointed a committee to confer with a similar committee of the Borough Council to take up the railway situation. The joint committee met and as a result of its deliberations the committee of the Council decided to request the court not to act at this time upon the petition for a receiver. It is expected that meanwhile negotiations will be conducted toward a settlement.

Receiver for Bay State

Friendly Receivership Proceeding for Company Much in the Public Eye on Account of Its Fare Increases and Public Methods

Wallace B. Donham, Boston, was appointed receiver for the Bay State Street Railway on Dec. 12 by Judge Frederick Dodge, in the United States Court at Boston as the result of a bill in equity filed in the United States District Court in that city on Dec. 7 by A. McNeil & Sons Company, Bridgeport, Conn., a creditor to the amount of $19,674 for coal.

The complainant in the case asked for a temporary receiver pending the appointment of a permanent receiver, setting forth that a receivership was necessary because of the present financial condition of the road, in order that it may continue to be operated in the interests of the public and also because it transports employees of munition factories and other concerns engaged in the manufacture of important supplies for the government in connection with the war with Germany. The complainant further set forth that a receiver was necessary to prevent a multiplicity of suits that might arise. The greater part of the complainant's bill was devoted to a recital of the road's finances and geographical conditions. As to finances, the bill alleged that the total outstanding funded debt as of Oct. 31, including bonds issued and assumed, amounted to $24,345,500.

As to the income of the road the complainant set forth that the net income, without deducting non-betterment and depreciation charges, for the year ended June 30, 1914, was $1,334,296; for the year ended June 30, 1915, it was $1,005,401, a decrease of 25.82 per cent from 1914; for the year ended June 30, 1916, it was $844,733, a decrease of 37.68 per cent from 1914; and for the year ended June 30, 1917, it was $527,941, a decrease of 61.05 per cent from 1914. The net income after June 30, 1917, the bill stated, was subject to a further reduction of $120,000.

It was alleged that the road from time to time had been authorized by the Public Service Commission to increase its rates of fare and to effect economies in its service with the result that its gross income had been increased since June 30, 1917, and was likely to be in the future substantially greater than during the fiscal years of 1916 and 1917. This increase had been more than offset, however, the bill set forth, by increases in wages, and by a very material advance in the prices of coal and all other materials used by the company. The bill alleged that since June, 1916, the company had paid no dividends on its common stock, while the 6 per cent cumulative first preferred stock, authorized to be issued to the par value of $530,000, could only be disposed of to the Massachusetts Electric Companies. This stock, it was alleged, was used to reduce the debt of the defendant to the Massachusetts Electric Companies.

PRESIDENT SULLIVAN EXPLAINS

A statement by P. F. Sullivan, president of the Bay State Street Railway, follows:

"The receivership of the Bay State Street Railway is made necessary by the coincidence of unusual cash requirements and a lack of borrowing capacity. The large cash requirements proceed from the high cost of operation. The lack of borrowing capacity is due to the poor credit of electric railways. Their earning power is regarded as poor security. They can neither borrow money nor sell stock and bonds.

"These conditions are not permanent. It seems to me that the public is showing a better understanding of the transportation situation and that the earning power of electric railways is likely to be established in some way so that the investor will regard it as having stability.

"When this has been done the Bay State will be a valuable property. Its reproduction cost is much in excess of its outstanding capital. Its lines in general serve a prosperous and well-settled section. Some lines, it is true, are a burden and must be lopped off unless the communities served show a greater willingness than heretofore to pay the cost of service. Some additional money must be spent in equipment and other improvements. But as a whole the property is in good shape and under normal operating conditions and with reasonable and proportionate rates of fare I expect to see the Bay State hold its own and make real progress.

"In fact, I think we are on the way up hill, and the receivership may be regarded as a breathing spell."

Abandonment of Road Approved

The Illinois Public Utilities Commission has entered an order allowing the Alton & Jacksonville Railway to dismantle its road between Alton and Jerseyville. The order becomes effective on Feb. 1, 1918. This company found the operation of its road between Alton and Jerseyville a losing venture and asked the commission for permission to cease operation and to dismantle the road. The people of various towns affected, as well as farmers living along the road, protested to the commission, but the order was entered as described.

Arkansas Northwestern Railroad, Bentonville, Ark.—The Arkansas Northwestern Railroad has been abandoned and the track taken up. The company operated 8 miles of line, 5.87 of which were leased from the St. Louis & San Francisco Railroad. Service was furnished with a gasoline motor car.

Beech Grove (Ind.) Traction Company.—Increased operating cost, without corresponding increase in net earnings, is given as the reason for the appointment by the Indianapolis Circuit Court of a receiver for the Beech Grove Traction Company. Two suits were filed against the company. One was the suit of the Marion Trust Company, Indianapolis, representing the holders of an issue of $100,000 of bonds upon which interest payments are in default since Oct. 1, 1916. The second suit was that of Christian F. Schmidt, president of the railway, who sought judgment on an overdue note of $1,000. Mr. Schmidt said that the assets of the road were about equal to the bonds outstanding and the current obligations. He states that dividends have never been paid on the $100,000 of common stock and the $50,000 of preferred stock. The road was built in 1911. The property includes about 4 miles of track operated from the railroad station in Beech Grove to the corner of Shelby Street and LeGrand Avenue, Indianapolis.

Electric Bond & Share Company, New York, N. Y.—Laurence H. Parkhurst, formerly manager of the bond department of the Old Colony Trust Company, Boston, Mass., has been elected a vice-president of the Electric Bond & Share Company.

Fort Smith Light & Traction Company, Fort Smith, Ark.—The Fort Smith Light & Traction Company will discontinue electric railway service to Arkoma. The line was constructed under a contract with the owners of the property when the townsite of Arkoma was originally laid out. The receipts have not been sufficient to pay the cost of the car rental and the labor engaged in the operation of the cars.

Fort Wayne & Northern Indiana Traction Company, Fort Wayne, Ind.—The Central Trust Company, New York, N. Y., as trustee, on Dec. 5 brought a foreclosure suit against the Fort Wayne & Northern Indiana Traction Company, due to the default on Sept. 1 in the payment of interest on the $1,059,000 of first and refunding mortgage 5 per cent bonds and the $1,164,000 of collateral trust 6 per cent notes.

Illinois Traction Company, Peoria, Ill.—The Urbana & Champaign Railway, Gas & Electric Company on Nov. 26 was authorized by the Illinois Public Utilities Commission to issue $136,000 of capital stock. Application was originally made to issue $53,000 of consolidated and refunding bonds, $51,000 of capital stock, and a second application was for $32,000 of common stock. The application to the commission for bond issues was changed on motion at the hearing to permit an issue of a like amount of stock in place of bonds. The Danville Street Railway & Light Company on the same date was authorized to issue $58,000 of consolidated and refunding bonds and $23,000 of debenture bonds. A $60,000 bond issue was authorized for the Decatur Railway & Light Company on Nov. 26. An application for authorization of $49,000 of common stock by the Danville Street Railway & Light Company remained undisposed of on Dec. 5. The Danville, Urbana & Champaign Railway has been authorized to issue $180,000 of common stock and $550,000 of preferred stock.

Louisville (Ky.) Traction Company.—A certificate of dissolution was filed in New Jersey on Nov. 28 for the Louisville Traction Company. This was in accordance with the plan referred to previously in the ELECTRIC RAILWAY JOURNAL. The company was chartered in New Jersey on July 3, 1903, with a capital stock of $14,500,000, divided into 145,000 shares of which 25,000 were preferred stock and 120,000 common stock. On Nov. 27 the stockholders voted to carry out the plan of dissolution and authorized the directors to distribute to the preferred stock holders the preferred stock of the Louisville Railway owned by the company, share for share, and to distribute to the common stock holders the common stock of the railway company, pro rata, with scrip.

Massachusetts Electric Companies, Boston, Mass.—Brief mention was made in the ELECTRIC RAILWAY JOURNAL for Dec. 1, page 1008, of the appointment of a committee to protect the interests of the holders of the preferred shares of the Massachusetts Electric Companies. A committee consisting of Gale L. Stone, F. L. Higginson, Jr., and John C. Kiley has since been appointed to act in the interests of the holders of the common stock. Deposit is now asked of the 5 per cent three-year gold notes due April 1, 1918, under an agreement dated Nov. 30.

Newport News & Hampton Railway, Gas & Electric Company, Hampton, Va.—The exchange of the outstanding $1,000,000 of 6 per cent preferred stock of the Newport News & Hampton Railway, Gas & Electric Company for $850,000 of 7 per cent cumulative preferred stock and $150,000 of common stock has gone into effect, and arrangements have been made with the present holders of the preferred stock whereby they agree to take an additional $250,000 of the 7 per cent preferred stock at par, the stock to be issued to provide funds to meet the construction requirements of the company. Of this $250,000 of new preferred stock $6,900 has already been issued, making $856,900 of 7 per cent preferred stock and $1,275,000 of common stock outstanding.

Ottawa (Ont.) Traction Company.—The Ottawa Traction Company, Ltd., has declared an extra dividend of 1 per cent in addition to the usual quarterly dividend of 1 per cent.

San Francisco-Oakland Terminal Railways.—The San Francisco-Oakland Terminal Railways has filed with the California Railroad Commission an application for authority to issue a total of $218,459 in promissory notes to banks in San Francisco and Oakland, at 6 per cent, on demand, and to pledge as collateral security its general lien mortgage bonds. These notes are in renewal of one-day notes issued on Dec. 16, 1915.

Southern Traction Company, Inc., Bowling Green, Ky.—A joint amended petition by the city and county has been filed against the Southern Traction Company asking that a receiver be appointed. The petition avers that it is the purpose and intention of defendant permanently to discontinue the service of its cars and system and to ignore the rights of the plaintiffs to have the cars run and operated. Several weeks ago the company's plant was sold to a St. Louis concern for junk. The city and county filed an injunction against the company to prevent the sale. Judge Moss in the Circuit Court granted the injunction and the case was appealed.

Springfield Railway & Light Company, Springfield, Mo.—An initial quarterly dividend of 1¾ per cent has been declared on the $750,000 of 7 per cent cumulative preferred stock of the Springfield Railway & Light Company, payable on Jan. 2 to holders of record of Dec. 14.

Topeka (Kan.) Railway.—The Kansas State Public Utilities Commission has approved the application of the Topeka Railway to issue $81,000 of first and refunding mortgage bonds. The proceeds will be used to pay off outstanding obligations and to make betterments and extensions.

United Railways, St. Louis, Mo.—John C. Roberts has resigned as a director of the United Railways.

United Traction Company, Albany, N. Y.—The report of the United Traction Company to the Public Service Commission for the Second District of New York for the quarter ended Sept. 30, 1917, shows a marked reduction in the net corporate deficit as compared to the similar period in 1916. The loss in 1916 was $39,747, but in 1917 only $14,020, a gain of $25,727. The operating revenue decreased from $616,786 in 1916 to $609,356 in 1917, but the operating expenses decreased from $531,773 to $499,972 so that the net operating revenue rose from $95,012 to $109,384. Taxes decreased slightly and non-operating income gained, with the result that the gross income in 1917 totaled $103,364 as compared to $72,244 in 1916 for the quarter mentioned.

Electric Railway Monthly Earnings

Period	Operating Revenue	Operating Expenses	Operating Income	Fixed Charges	Net Income
BERKSHIRE STREET RAILWAY, PITTSFIELD, MASS.					
1m., Oct., '17	$84,048	*$91,265	†$7,217	$28,395	†‡$32,310
1 " " '16	84,964	*72,994	11,970	27,675	†‡15,526
10 " " '17	918,957	*806,073	112,884	276,184	†‡158,901
10 " " '16	832,272	*685,433	146,839	261,567	†‡112,821
COLUMBUS RAILWAY, POWER & LIGHT COMPANY, COLUMBUS, OHIO					
1m., Oct., '17	$354,895	*$274,019	$80,876	$49,220	$31,656
1 " " '16	307,437	*187,470	119,967	42,863	77,104
12 " " '17	3,932,348	*2,751,229	1,181,119	549,561	631,558
12 " " '16	3,461,301	*2,039,510	1,421,791	512,332	909,459
COMMONWEALTH POWER, RAILWAY & LIGHT COMPANY, GRAND RAPIDS, MICH.					
1m., Oct., '17	$1,763,894	*$1,111,252	$652,642	$455,892	$196,750
1 " " '16	1,458,380	*807,437	650,943	419,085	231,858
12 " " '17	19,149,110	*11,593,883	7,555,227	5,215,012	2,340,215
12 " " '16	16,518,224	*8,878,592	7,639,632	4,998,342	2,641,290
CONNECTICUT COMPANY, NEW HAVEN, CONN.					
1m., Oct., '17	$816,041	*$727,327	$88,714	$108,402	‡$3,013
1 " " '16	812,160	*682,222	129,938	96,174	‡56,896
10 " " '17	8,396,687	*6,595,862	1,800,825	988,995	‡987,948
10 " " '16	7,998,519	*5,658,309	2,340,210	982,848	‡1,583,668
FEDERAL LIGHT & TRACTION COMPANY, NEW YORK, N. Y.					
1m., Oct., '17	$254,713	*$184,107	$70,606	$50,509	$20,097
1 " " '16	201,809	*121,866	79,943	48,708	31,235
10 " " '17	2,290,802	*1,611,674	679,128	493,218	185,910
10 " " '16	2,062,032	*1,373,167	688,865	487,233	201,632
NEW YORK & STAMFORD RAILWAY, PORT CHESTER, N. Y.					
1m., Oct., '17	$27,485	*$26,160	$1,325	$7,982	†‡$6,593
1 " " '16	24,460	*23,641	819	7,987	†‡7,108
10 " " '17	344,993	*290,633	54,360	79,836	†‡24,929
10 " " '16	309,869	*248,538	61,331	79,849	†‡18,056
NEW YORK, WESTCHESTER & BOSTON RAILWAY, NEW YORK, N. Y.					
1m., Oct., '17	$47,315	*$46,542	$773	§$5,742	†‡4 242
1 " " '16	60,133	*48,738	11,395	§5,943	‡6,710
10 " " '17	465,224	*461,901	3,323	§73,782	†‡61,218
10 " " '16	463,083	*488,680	†25,597	§79,419	†‡59,937
NORTHERN OHIO TRACTION & LIGHT COMPANY, AKRON, OHIO					
1m., Oct., '17	$545,046	$360,552	$184,494	$77,454	$107,040
1 " " '16	450,264	262,506	187,758	74,820	112,938
10 " " '17	5,281,567	3,273,285	2,008,282	778,822	1,229,460
10 " " '17	4,231,007	2,151,079	2,079,928	932,340	1,147,588
PORTLAND RAILWAY, LIGHT & POWER COMPANY, PORTLAND, ORE.					
1m., Oct., '17	$522,294	*$323,328	$198,966	$176,864	$22,102
1 " " '16	459,720	*248,407	211,313	181,280	30,033
12 " " '17	5,895,640	*3,272,373	2,623,267	2,160,703	462,564
12 " " '16	5,429,252	*3,043,952	2,385,300	2,178,247	207,053
RHODE ISLAND COMPANY, PROVIDENCE, R. I.					
1m., Oct., '17	$486,464	*$484,251	$2,213	$124,043	†‡$94,816
1 " " '16	478,522	*363,881	114,641	120,714	‡21,388
10 " " '17	5,035,745	*4,154,210	881,535	1,209,923	†‡214,560
10 " " '16	4,879,705	*3,490,276	1,389,429	1,162,614	‡343,925
TWIN CITY RAPID TRANSIT COMPANY, MINNEAPOLIS, MINN.					
1m., Oct., '17	$805,687	$592,071	$213,616	$170,118	$43,498
1 " " '16	846,915	512,896	334,019	141,883	192,136
10 " " '17	8,537,793	5,696,931	2,840,862	1,526,832	1,314,030
10 " " '16	8,441,904	5,205,673	3,236,231	1,434,878	1,801,353
UNITED LIGHT & RAILWAYS, GRAND RAPIDS, MICH.					
12m., Oct., '17	$2,044,300	*$165,904	$1,878,396	$677,177	$1,201,219
12 " " '16	1,860,816	*140,425	1,720,391	573,644	1,146,747
WESTCHESTER STREET RAILROAD, WHITE PLAINS, N. Y.					
1m., Oct., '17	$20,618	*$23,276	†$2,658	$2,553	†‡$5,180
1 " " '16	15,799	*17,483	†1,684	1,893	†‡3,554
10 " " '17	209,790	*232,301	†22,511	21,997	†‡44,221
10 " " '16	196,908	*208,932	†12,024	17,995	†‡29,759

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*Includes taxes. †Deficit. ‡Includes non-operating income.

§Excludes interest on bonds, charged income and paid by the New York, New Haven & Hartford Railroad under guarantee; also interest on notes held by the New York, New Haven & Hartford Railroad, not credited to income of that company.

Traffic and Transportation

Skip Stop Saves Fuel

Toledo Railways & Light Company Points Out That It Takes More Power to Start a Car Than to Run It One-Quarter of a Mile

The Toledo Railways & Light Company, Toledo, Ohio, has answered criticism of the skip stop by a large advertisement printed in the Toledo newspapers of Dec. 2. The advertisement brings out many new phases of the skip-stop system. It is reprinted below.

"Drastic steps are being taken by our government to save every ounce of coal.

"The company has curtailed the burning hours of electric signs by order of the Federal Fuel Board.

"*This is done to save coal.*

"In Pittsburgh one out of every five electric cars has been ordered off to save coal and thus insure electrical power for munition factories.

"In several cities—some near us in Michigan—there is no longer any heat in city cars, showing how complete have been the efforts of public utility companies to aid in fuel conservation.

"Toledo has been better off than some cities on account of her excellent railroad facilities.

"This company also wrestled with the coal situation early and has thus been enabled to meet the normal electrical demands at all times.

"*But we must make every possible coal saving that efficient operation can suggest.*

"We are not alarmists.

"We are simply looking the situation squarely in the face and taking steps to do our best to keep business even 'Better than Usual.'

How the Skip Stop Saves Fuel

"An important step we have taken in the country's conservation program is to inaugurate the skip-stop system.

"The greatest amount of electrical power is used in starting cars, especially during winter months when rails are slippery and when cars are unusually loaded at rush hours.

"*It takes more electric power to start a car than it does to run it a quarter of a mile.*

"The skip-stop system eliminates a lot of useless stops, thus saving a great deal of electrical energy, which represents coal.

"During the rush hour it enables a car to handle many more people on account of a swifter schedule, thus conserving coal at the 'peaks.'

"We expect by making these savings on all our lines to reduce our use of coal and at the same time greatly enhance the comfort and convenience of our patrons.

"Under the skip stop, the rider saves considerable time on every trip and is saved the annoyance of the continual starting and stopping.

"*In other words, it represents to a certain degree the difference between express and local service.*

"If you go to Detroit, do you take a local or a limited car?

"While it means a few more steps, it is on the whole for the comfort and convenience of all.

"The system of 'Staggered Stops' which we have inaugurated means a stop, one way or the other, at practically every street corner.

"Wherever the skip-stop system has been tried it has proved a big forward stride in the interests of good service.

"Cleveland patrons, after a trial for several years, are so satisfied that nothing could tempt them to revert to old methods.

"At the start, until schedules can be rearranged and until patrons readjust old habits, the system cannot be expected to work with the smoothness that comes after a short time.

"A great many of our patrons on lines where it has only been introduced for a short time are loud in their praise.

"We feel certain that with the co-operation and patience of our patrons we can work out a similar situation as to all our lines.

"*In doing this, we know that eventually we will not only greatly improve car service in Toledo, but will be doing our part in our country's program of coal conservation.*

"This is a serious problem now brought squarely to us and to every person in Toledo.

"We must save every possible pound of coal and we must have the cordial co-operation of all our patrons in order to do it."

The advertisement was in the form of an open letter to patrons of the company from Frank R. Coates, president.

Report of Springfield Traffic

John P. Fox Suggests One-Man Cars, One-Man Trailers and the Skip Stop

John P. Fox, retained in the interest of cities and towns in which the Springfield (Mass.) Street Railway operates, has filed with the Public Service Commission an exhaustive report on the conditions attending the transportation service furnished by the company and his conclusions as to the unfairness of the proposed increase in fares asked by the company. Mr. Fox thinks that the plan proposed by the company, to which reference has been made previously in the ELECTRIC RAILWAY JOURNAL, would prove discriminatory. On the question of methods of securing needed increase of revenue for the company the report says:

"If it has been proved that the proposed fare system is unjust, unwise and undesirable, the next thing is to consider other ways in which the company can get an increase of revenue sufficient to meet any real needs. There are a number of other ways possible for increasing revenue.

"1. A charge might be made for all free transfers, 1 cent as in Cleveland, or 2 cents as asked in New York.

"2. Fare zones might be shortened in length.

"3. A real zone system might be introduced, not one with a 5-cent fare for each zone, but with increases of 1 or 2 cents for each zone.

"4. The unit of fare might be raised, and 6 cents charged for each zone as existing at present.

"5. Economies of operation might be introduced, some of them having been suggested by Prof. Richey in his printed report, such as the operation of trailers, cutting out a certain amount of unprofitable car mileage and speeding up the cars by making fewer stops, and stopping and starting more rapidly.

"6. Increasing the traffic by inducing more people to ride without increasing the operating expenses."

Mr. Fox finds that while a well-equipped and well-managed electric railway should have at least $4 of investment for $1 of revenue, the Springfield company has been operating on a total paid-in capitalization of $7,250,000 and a total permanent investment of $8,000,000. Thus the investment instead of being $4 for $1 of revenue has been about $3 on the basis of paid-in capitalization and only $3.50 on the basis of total permanent investment.

Mr. Fox says that for a long time the smallness of the capital stock enabled the company to pay 8 per cent dividends, but that "if conditions were normal and the company knew how to operate as economically as many other companies in the country, it might not have had any trouble in continuing to pay a good return on the investment with a 5-cent fare."

Among the economies suggested by Mr. Fox are the following:

One-man car operation on several of the lines, especially the local Westfield and Palmer lines. The annual saving under this plan on these lines is set at more than $25,500.

One-man operation and a different running schedule on the Huntington line. It is found that these would result in an annual saving of from $3,120 to $3,750.

Change in handling the Westinghouse traffic. The use of vacant land near the works for a prepayment area is suggested. If this were done there is a possibility that the Westinghouse extras might all be handled on one-man cars, at least inbound at night.

The use of single-truck trailer cars. These, it is estimated, would save $20,000 a year.

Decision in Indianapolis Fare Case

Indiana Commission, After Considering Arguments Presented and the Fact That the Company Had Not Surrendered Its Franchise, Decides It Is Without Jurisdiction

The Public Service Commission of Indiana, after hearing arguments on Dec. 12 and 13, handed down a decision on the afternoon of Dec. 13 that it had no jurisdiction in the petition of the Indianapolis Traction & Terminal Company for a uniform 5-cent fare and the elimination of reduced rate tickets.

The hearing on the application of the company commenced on the morning of Dec. 12 and was assigned to Charles A. Edwards, member of the commission. Because of the importance of the case E. I. Lewis, chairman, and Edwin I. Corr sat with Commissioner Edwards. The City Council of Indianapolis was represented at the hearing by Woodbury Masson, attorney; the Indianapolis Real Estate Board by Mark H. Miller; the Indianapolis Chamber of Commerce by James H. Noel, and the Indianapolis Traction & Terminal Company by Ferdinand Winter and Will H. Latta.

The forenoon was taken up with arguments by Messrs. Miller, Masson and Noel. They all contended that the Public Service Commission should dismiss the petition for increased fares on the ground that it had no jurisdiction, inasmuch as the Indiana Legislature in 1899 had delegated power to the city of Indianapolis to make a franchise contract specifying the maximum rates of fare. They contended that the commission and even the State Legislature itself would have no power to change such a contract.

HISTORY OF RAILWAY LEGISLATION REVIEWED

Messrs. Miller and Masson reviewed in detail the history of the local street railway legislation from 1861 and contended that the act of 1899 granting authority to the city to make a contract was so drawn as to make repeal impossible because of the vested rights that would be affected. They said the railway understood the law and accepted any hazard attending the business venture. Having done so the company should not now be trying for a release from the provisions of the grant. They asserted that the commission had no jurisdiction because the company had not surrendered the franchise for an indeterminate permit and cited Sec. 7 of the public utility law, which provides that a utility which has a contract fixing maximum rates shall not increase its rates beyond the maximum fixed by contract.

CHAMBER OF COMMERCE HAS WATCHFUL INTEREST

James H. Noel, purporting to represent the Chamber of Commerce, which body, however, has taken no official action in the matter, stated that the Chamber of Commerce proposed to keep a watchful interest in the case because of its relations to the commerce and industry of Indianapolis and to maintain the reputation of the city as one which keeps its contracts. He disagreed with Mr. Masson and said that the power to regulate rates rested in the State. If the State delegated power and a city exercises that power then it amounted to a contract with the State. He reviewed the action of the Legislature in 1899 and said that the street railway situation at the time of the franchise grant was a desperate one because of the recent fare law and the uncertain court decisions. These made it impossible at that time to induce the investment of capital.

COMPANY NOT SEEKING TO ESCAPE CONTRACTUAL RELATIONS

Ferdinand Winter for the company answered the arguments during the afternoon session. He stated that the Traction & Terminal Company was only seeking to have the contract modified because of the unusual conditions due to the war and was not trying to escape its contractual obligations. The contract was really entered into between the State of Indiana and the utility through the city of Indianapolis as agent for the State. He contended that the act creating the Public Service Commission gave it power to grant relief to any utility in the event of an emergency such as now existed. If the Legislature had intended to exempt the Indianapolis situation it would have made such provision in the various articles of the act giving the commission power over all utilities and any and all rates.

Mr. Winter pointed out that if the State of Indiana by the enabling act had abrogated its jurisdiction during the period of the contract the functions of the Public Service Commission ceased to exist. It was not an impairment of a contract when the parties to it got together to change the contract. In this case the city of Indianapolis in this contract was merely the agent for the State and the courts had held that fact many times. Mr. Winter asserted that the franchise of the company or any other public utility belonged to the State; that the question of rates was primarily an affair of the State, but that it might authorize a city to fix such rates or might appoint a commission to determine rates.

WHAT THE COMMISSION RULED

On the morning of Dec. 13 the commissioners ordered an adjournment while they conferred on the question of jurisdiction. That afternoon Commissioner Edwards announced that after considering the arguments that had been presented and the fact that the company had not surendered its franchise, the commission was of the opinion that it did not possess jurisdiction to act in the matter.

Increase in Fares Asked by Illinois Line

The Galesburg & Kewanee Electric Railway, Kewanee, Ill., has filed a petition with the Public Utilities Commission of Illinois asking permission to increase its city cash fare from 5 cents to 6 cents in the cities of Kewanee and Galva, Ill., and also to make an increase in the city ticket fare from the previous rate of twenty-five tickets for $1 to eighteen tickets for $1. The company further asks an increase in the interurban zone fare from the previous rate of 5 cents to 7 cents and also an increase in the rate for round-trip tickets. These tariffs, as filed by the company, were suspended by the commission until Dec. 29. Hearings on the matter were held before the commission on Nov. 14 and Nov. 26, at which time the company showed that the rates for labor and materials have increased 50 per cent over those that prevailed at the time the road was opened for business more than fourteen years ago. It was also shown that the rate of return earned by the company all of these years was inadequate, that the company not only had not paid any dividends to its stockholders, but that after paying bond interest it did not have enough left out of earnings to provide a reasonable fund for depreciation.

Cleveland Fare Definitely Announced

John J. Stanley, president of the Cleveland (Ohio) Railway, on Dec. 11, notified the street railway committee of the City Council that the company would put into effect the next higher rate of fare on the morning of Dec. 15. This is known in the Tayler franchise as Rate D and provides for a cash fare of 4 cents and three tickets for 10 cents, with a charge of 1 cent for transfer to be rebated.

COMPANY THINKS NEW RATE INSUFFICIENT

This followed deferred action by the committee on the company's request to be allowed to put into effect Rate C which is the same as D, except that the transfer charge is not rebated. Mr. Stanley said that the first increase will not yield a sufficient amount to keep the interest fund above $300,000, as required.

In connection with this notice Mr. Stanley stated that the company was considering an increase of the Collinwood fare to straight 5 cents, instead of the rate that is used in other portions of the city. Fielder Sanders, street railway commissioner, is of the opinion that the company has no authority to make a change in the Collinwood fare.

THREE FARE CHANGES SINCE 1910

There have been three changes in the rate on the Cleveland Railway since the Tayler franchise went into effect on March 1, 1910. The interest fund, which serves as the fare barometer, was started with an appropriation of $500,000 and a rule was adopted that when this fund reached $700,000, the fare should be reduced, and when it fell below $300,000, it should be increased.

Aurora, Elgin & Chicago Seeks Fare Raise

Chicago Suburban Line Applies to the Illinois Commission for Permission to Increase Fares

The Aurora, Elgin & Chicago Railroad, Wheaton, Ill., has filed a new local passenger tariff with the Public Utilities Commission of Illinois asking for increased fares. In brief, providing the sanction of the State board is obtained, the fare between Aurora and Chicago will be increased 5 cents; the fare between Aurora and Batavia increased 5 cents, and the city fares in Aurora and Elgin will be 5 cents straight, with all six-for-a-quarter tickets eliminated. The changes are as follows:

DETAILS OF CHANGES

On the Chicago division the fares are figured at 2 cents per mile between all points from Laramie Avenue, Chicago, west.

From points west of Laramie Avenue, Chicago, to Marshfield or Fifth Avenue, Chicago, the fare has been increased to 2 cents per mile to Laramie Avenue plus 5 cents.

The regular one-way fare from Aurora and Elgin to Chicago under the old tariff is 65 cents and under the new tariff will be 70 cents.

The round-trip fare between these points under the old tariff is $1.20, and under the new tariff it will be $1.40.

Fares from and to other stations on the Chicago division are figured on the above basis and at some points increases are made.

On the Fox River division, between Aurora and Yorkville, the regular fare under the old tariff was 20 cents. Under the new tariff it will be 25 cents.

The fare between Aurora and Oswego under the old tariff was 10 cents and under the new tariff it will be 12 cents.

On the line between Aurora and Elgin the fares have been figured at 2 cents per mile. On this basis the fare from Aurora to North Aurora, Batavia, Geneva, St. Charles and Elgin will be increased 5 cents.

The regular one-way fare between Elgin and Dundee or Carpentersville under the present tariff is 10 cents and under the new tariff it will be 12 cents.

The fifty-ride sixty-day tickets on the Fox River division under the new tariff will be withdrawn from sale between all points where the fare is 5 cents and will be withdrawn from sale between all other points except to children attending school.

The reduction in regular fare on fifty-four-ride monthly commutation tickets on the Fox River division will be 30 per cent instead of 40 per cent.

In Elgin no transfers will be issued between city and interurban cars.

On the city lines the new tariff provides for a straight 5-cent fare. The six for 25-cent tickets in Aurora and the seven for 25-cent tickets in Elgin will be withdrawn from sale.

VICE-PRESIDENT FABER EXPLAINS

E. C. Faber, vice-president and general manager of the company, made a statement in which he said:

"It is a well-known fact that, while practically every commodity used in every-day life has greatly increased in price—and this includes everything that this company uses —the public utility companies' rates are always last to be increased.

"The electric railways throughout the country have been increasing their rates and we have held off doing so as long as we reasonably could, but the time has come when we cannot stand the pressure any longer.

"SICK MAN" OF BUSINESS

"The electric railway industry is the 'sick man' of business. There is no alternative. We must have increased revenue to meet the increased cost of operation and maintenance or 'go broke,' and the inevitable result of such a situation would be that the public would suffer, as poorer and poorer service is a natural consequence.

"We have given a great deal of thought and study to the revision of our rates, and the new tariff as filed we believe is as fair and equitable to the traveling public as it is possible to make it.

"We know that the patrons of this company prefer satisfactory service at a reasonable increase in fare to an inevitable curtailment of the present service at the present rates of fare.

"We do not expect that the relief sought will be sufficient to pay an adequate return on the investment in this company represented by tracks, cars, power house, etc., but the relief is asked for with the expectation that, with the utmost economy, the company will be able to provide satisfactory schedules and keep the property in such a state of repair as to enable it to maintain fairly efficient service.

"Briefly stated, the situation may be summed up in this way: First, the nickel has been buying more and better car service every year since the electric railways were first operated, and, second, the nickel buys for the company less than it ever did before for its operation and maintenance."

Service Complaint in St. Louis

United Railways Said Not to Have Lived Up to Commission's Car-Capacity Order

Stephen H. Butler, chairman of the special committee of the Central Trades & Labor Union, and three other complainants have filed charges with the Public Service Commission of Missouri to the effect that the United Railways is violating orders of the commission prohibiting the overcrowding of cars during the rush hours, and requesting that penalties aggregating several thousand dollars be collected from the company.

The commission's order which, it is charged, was violated requires the United Railways to furnish seventy-one seats for every 100 passengers carried in each fifteen-minute period during the rush hours, when the headway between cars is one minute; seventy-two seats for each 100 passengers carried in any fifteen-minute period in the rush hours when the interval between cars is two minutes; seventy-three seats for each 100 passengers in these periods when the headway is three minutes, and a corresponding addition to the number of seats as the space between cars increases, up to six minutes.

This order was made by the commission on May 4, 1915, in disposing of a complaint of the West End Business Men's Association and other organizations, that the United Railways was not providing a sufficient number of cars to accommodate traffic. The order applies to week days, excluding Saturdays, and to the time between 5 and 7 p. m.

Commission's Fare Powers Questioned

The question of whether the Public Utilities Commission of Ohio has the power to increase rates of fare or otherwise change the terms of a franchise granted before the law was enacted under which the commission operates was brought up on Nov. 26 by the opponents of an increase in the rates of fare between Youngstown and Warren asked by the Mahoning & Shenango Railway & Light Company.

The company says that it is receiving from 1 cent to 1½ cents a mile on this line and that it is operating at a loss. Representatives of the towns through which the road passes argue that if the application is granted the rates will be increased from 50 to 75 per cent over the present charges.

At a hearing on the application John T. Harrington, attorney representing the company, said that the local authorities who granted the franchise were subordinate to the State and really acted as agents of the State in their action and that the commission, therefore, has the power to repudiate the grant, notwithstanding the fact that it was made before the State law was passed creating the commission.

W. F. MacQueen, city solicitor, of Niles, M. B. Leslie of Hubbard and W. W. Pierson of Girard, and Commissioner F. E. Rose of Trumbull County appeared at the hearing to oppose the application. They received ten days in which to file briefs, after which the company will have the same length of time to prepare an answer.

Loading Station in Industrial District

International Railway, Called Upon to Handle 20,000 Men in One Small District, Will Build a Loading Platform

Construction work has been started by the International Railway, Buffalo, N. Y., on a new passenger loading station in Elmwood Avenue, on property adjoining the plant of the Pierce-Arrow Motor Car Company for the convenience of the employees of that company and of those of other large industries in the North Elmwood Avenue section. More than 20,000 men are employed in large war industries in the Elmwood-Hertel-Military Road section of the city. Special cars will be used for these employees every night, and they will be routed over lines where the traffic is not so heavy. The double-track extension of the Elmwood Avenue line between Hertel Avenue and the north city line has been practically completed, so that the thousands of employees in large industries north of Hertel Avenue can be better accommodated. Among the new industries in this section is the $5,000,000 plant of the Curtiss Aeroplane & Motor Corporation, by which company almost 7000 men and women are employed.

War Investigation

California Railroad Commission Inquiring Into Facilities and Problems of California Steam and Electric Lines

To make the railroads and shipping of California as useful as possible to the government during the war, their heads, as well as federal and state officials, were asked to lay the details of their war problems before Railroad Commissioners Edwin O. Edgerton and Harvey D. Loveland on Dec. 14. The investigation will extend into the service and present condition of the steam railroads, electric interurban lines and water carriers. Commissioners Edgerton and Loveland sent to the managers of the roads a questionnaire on the condition of roadbed and track, equipment, freight and passenger service, the labor situation, the matter of embargoes, and capital and operating expenditures. The steam roads were asked thirty-two questions. The electric interurban lines were asked if they were equipped to handle additional local freight business between points reached on their lines. The water carriers were asked by the railroad commission to what extent they are equipped to relieve the steam railroad lines from hauling competitive freight.

Texas Interurbans Under Commission

Companies Required to File All Passenger, Express and Freight Tariffs

The Railroad Commission of Texas has issued an order placing all interurban railways operating in Texas under its jurisdiction. The order requires the companies to file with the commission within ten days all passenger, freight and express tariffs covering a period from Oct. 1, 1917, to the present time. The commission proposes to regulate in the future all freight and express rates in operation on the interurbans. It will inquire into recent advances in rates by the companies. The order issued by the commission is as follows:

"It is hereby ordered by the Railroad Commission of Texas that all corporations, companies or persons operating interurban railways, as well as all express companies or other corporations, associations, partnerships or persons, engaged in the transportation of freight or express over lines of interurban railway in this State, be and they are hereby ordered and required to file with this commission, on or before ten days from this date, Nov. 19, at its office in the Capitol at Austin, copies of all tariffs, schedules, classifications, rates, rules and regulations in force on Nov. 20, and affecting the transportation by them of passengers, freight and express between points in Texas.

"It is further ordered by the commission that, from and after this date, copies of all such tariffs, schedules, classifications, rates, rules and regulations as may be hereafter issued to govern in the transportation of passengers, freight and express over interurban lines in this State, be filed with this commission prior to the taking effect of same.

"It is further ordered that all such tariffs, classifications, rates, rules and regulations now in force and governing the transportation of passengers, freight and express over interurban lines in this State, remain in force and effect until changed or canceled by order or under the authority of this commission.

"This order shall take effect on Nov. 20."

The Railroad Commission, following up the order which it issued assuming jurisdiction over all interurban and city railways in Texas, has issued an order requiring all the interurban lines and the express companies engaged in the transportation of freight or express over interurban lines to file with the commission within ten days from Nov. 30 true copies of contracts in writing now existing and in force between the railways and the express companies.

Bus Line Quits Without Notice

Ferry-Bus Service at Seattle Proves Unprofitable for the Bus

Financial difficulties resulted in the abrupt discontinuance on Nov. 21 of the West Seattle ferry bus service. On that date the three buses which connect with the West Seattle ferry and serve the Alki Point and California Avenue district were seized by F. W. Keene on a conditional bill of sale issued by the company in the city of Seattle which deals in automobiles.

A contract was entered into between the Ferry Line Auto Bus Company, which operated the buses, and the Port Commission of Seattle in October, 1915, which provided that reciprocal transfers from the ferry to the bus line would be issued, and that 3 cents of every 5-cent fare would be paid to the bus company. The bus line has been operating under this contract by buying a number of commutation tickets from the Port Commission for 2 cents, which they sold to the patrons of the line for 5 cents. No provision was made in the contract to protect either party through failure in case one of the parties did not furnish service. The Ferry Line Company states that the failure of the Port Commission to observe its schedule has discouraged West Seattle patrons from patronizing the buses and the ferry with which the line connected.

Owl Cars Discontinued in Portland.—The Portland Railway, Light & Power Company, Portland, Ore., has discontinued its owl cars on the Richmond line, owing to lack of patronage.

One-Man Cars in Oakland.—Announcement has been made by officials of the San Francisco-Oakland Terminal Railways, Oakland, Cal., that one-man cars will be installed on some of the lines of the company in Oakland.

Notice of Fare Increase in Pennsylvania.—The Allentown & Reading Traction Company, Allentown, Pa., has filed with the Public Service Commission notice of an increase of fare from 5 to 6 cents except between Reading and Rosedale, to be effective Jan. 1.

Early Evening Service May Be Reduced.—Mayor George Karb, of Columbus, Ohio, has asked the City Council, as a means of conserving fuel, to order the Columbus Railway, Power & Light Company to reduce by 50 per cent the number of cars operated after 7 p. m.

Increase in Fare Between Ocean City and Atlantic City.—The Board of Public Utility Commissioners of New Jersey has granted permission to the Atlantic City & Shore Railroad to raise the round-trip fare between Ocean City and Atlantic City from 50 to 60 cents, this being double the present one-way fare.

School Tickets in Sherman.—The Texas Electric Railway has announced that it will grant one-half fare for school children over its local lines in Sherman, Tex., on condition that such school children present proper certificate from their teacher and purchase a book of tickets for such use. The same practice is employed in Dallas and other cities.

Action in Utah Fare Case Postponed.—The Public Utilities Commission of Utah has postponed until Dec. 30 action on the petition of the Utah Light & Traction Company, Salt Lake City, Utah, for permission to increase its fares in suburban districts, to discontinue the sale of books of fifty fares for $2 and to charge 1 cent for transfers. The company desired to put the proposed schedule into effect on Nov. 30.

Skip-Stop Plan Suggested for Washington.—It is expected that careful investigation will be made of the proposal to have cars stop at alternate corners in Washington, D. C., and for the rerouting of cars to meet service demands better. The Public Utilities Commission already is investigating the advisability of allowing cars, when closely spaced during rush hours, to discharge and take on passengers simultaneously and proceed over the crossings in tandem formation.

New York Fare Hearings Again Postponed.—The applications of various electric railways in New York City for advances in rates of fare were scheduled to come before the Public Service Commission of the First District for hearings on Dec. 10. The hearings, however, were postponed until Jan. 7. Although these cases were previously held up for some time at the request of the companies to permit full preparation, the current postponements have been a matter of commission initiative. It is understood that the commission is waiting for two members to be appointed to fill the places of Commissioners Hayward and Hodge, who are absent on war duty.

Mr. Beeler to Make Washington Investigation.—The Public Utilities Commission of the District of Columbia has arranged with John A. Beeler, New York, N. Y., to investigate the electric railway situation in the city of Washington with the view of making recommendations for lessening the congestion which has assumed alarming proportions recently on account of the tremendous influx of people called there by the war operations. Mr. Beeler has just completed his report for the Public Service Commission of Massachusetts on the Boston Elevated Railway situation, and will use in his Washington investigation the same force which assisted him in the Boston investigation.

Women Conductors on Brooklyn Lines. — In addition to the women subway guards which the Brooklyn (N. Y.) Rapid Transit Company has had in service during the last few weeks, the company now contemplates the employment of women as conductors on its surface lines. These will be assigned first to the center-entrance, pay-as-you-enter cars operating on the Flatbush Avenue line. After proving their fitness for such work on these cars their services may be extended to the cars of the less improved type. The women will first receive training in a school for a few days, followed by trial runs on the cars. A uniform is being decided upon and the company anticipates having about twenty conductresses who have passed their preliminary instruction and will be ready for service early in the week of Dec. 17.

Jitney Controversy in Atlantic City.—Property holders on Pacific Avenue have sent two petitions to the City Commission of Atlantic City, N. J., for the removal of jitney buses from Pacific Avenue at once. They assert that the traffic is a menace to their comfort and an ever-increasing danger to public safety and that it has depreciated property values materially and affected rentals. At the same time Mayor Bacharach has introduced a bill prepared by counsel for the Jitney Association providing for the licensing of 200 jitneymen, 100 to run on alternating weeks on Atlantic Avenue, the city's chief business thoroughfare, from which they were excluded last May. It is expected that the Atlantic City & Shore Railroad, which operates on Atlantic Avenue, will oppose this bill. The jitney bus drivers, who are now required to keep to Pacific Avenue, say they will have to go out of business unless Atlantic Avenue is again opened up to them. Atlantic Avenue and Pacific Avenue parallel each other. The ordinance to restore the jitneys to Atlantic Avenue has been passed on first reading by the City Commission. One of the provisions is for alternate operation on Atlantic Avenue and Pacific Avenue.

Personal Mention

J. J. Molyneaux has been appointed treasurer and general auditor of the properties of the Northern States Power Company, Chicago, Ill.

L. E. Denney, who has been freight agent for the Petaluma & Santa Rosa Railway, Petaluma, Cal., for the last ten years, has resigned.

W. S. Hart, formerly secretary, treasurer and general manager of the Three Rivers (Que.) Traction Company, has been appointed managing director of the company.

Erwin W. Gardner, formerly chief electrician in the shops of the Fort Wayne & Northern Indiana Traction Company at Fort Wayne, Ind., has been appointed assistant foreman of the shops.

James Wilson, formerly assistant secretary and treasurer of the Three Rivers (Que.) Traction Company, has been appointed secretary and treasurer of the company to succeed W. S. Hart.

H. R. Frost, formerly treasurer and general auditor of the Northern States Power Company, Chicago, Ill., has been appointed assistant general auditor of H. M. Byllesby & Company, with headquarters at Oklahoma City.

F. M. Black resigned as a member of the Public Utilities Commission of Alberta, Can., on his appointment to a position under the Food Controller. It is reported that no successor will be appointed to Mr. Black at present.

G. T. Twyford, who has been electrical engineer of the Pittsburgh, Harmony, Butler & New Castle Railway, Pittsburgh, Pa., for the last four years, has been appointed electrical engineer of the Hagerstown & Frederick Railway, Hagerstown, Md.

Charles P. Murphy, who has been with the Kankakee & Urbana Traction Company as agent at Urbana, Ill., and as freight auditor and accountant since May 1, 1913, has been appointed chief clerk of the company to succeed C. C. Burford, who has resigned from the company to devote himself to his own personal interests.

Carl Rigdon, who has been superintendent of light and power and more recently superintendent of construction work of the Chattanooga Railway & Light Company and the Tennessee Power Company, Chattanooga, Tenn., has resigned to enter other work. It is understood that the office of superintendent of light and power will be abolished and the work will be divided among other officials of the two companies.

D. W. Pontius, traffic manager of the Pacific Electric Railway, Los Angeles, Cal., has been appointed general manager of the San Diego & Arizona Railway, with headquarters in San Diego, Cal. Mr. Pontius began railroad work twenty-five years ago in Ohio as a supervisor of track for the Pennsylvania System. He has since been employed successively as telegraph operator, train dispatcher, agent, train master, district freight and passenger agent and traffic manager, by the Chicago Great Western Railway, Northern Pacific Railroad, Oregon Railway & Navigation Company, Southern Pacific Railway and the Pacific Electric Railway.

C. C. Burford has resigned as chief clerk of the Kankakee & Urbana Traction Company, Urbana, Ill., with which he had been connected in a clerical and accounting capacity since Oct. 1, 1913. After leaving the University of Illinois and before entering electric railway work Mr. Burford was associated with Busey's Bank, Urbana, Ill., now Busey's State Bank, for five years, serving in the commercial and savings departments. The Busey family was then and is now interested in the interurban railway. Mr. Burford retires from railway work to give his entire attention to personal matters and to conduct an independent news bureau at Urbana. Mr. Burford has done work for newspapers and magazines, including the ELECTRIC RAILWAY JOURNAL, for a number of years.

M. F. M. Werth has been appointed superintendent of power of the Detroit (Mich.) United Railway. Mr. Werth, who was made assistant superintendent of power in June, 1916, has been acting superintendent since the promotion of E. J. Burdick to be assistant general manager in July, 1916. Mr. Werth is a native of Richmond, Va., and has had wide experience in the electric railway field. He was graduated from Virginia Military Institute, electrical engineering course, and began his railway career with the Mahoning & Shenango Railway & Light Company, Youngstown, Ohio. Later he was associated with the British Columbia Electric Railway, operating a network of 350 miles of city and interurban railway in British Columbia. The Detroit United Railway operates more than 450 miles of city, suburban and interurban railway at Detroit.

M. F. M. WERTH

W. Douse, formerly connected with the purchasing office of the Hydro-Electric Power Commission of Ontario, has been appointed acting purchasing agent of the Toronto & York Radial Railway, Toronto, Ont., and will undertake the duties of G. K. Hyde, purchasing agent, who has been granted six months leave of absence on account of ill health.

Fred Bade has been appointed general foreman of the Fort Wayne shops of the Fort Wayne & Northern Indiana Traction Company, Fort Wayne, Ind. Mr. Bade has been with this company for the last fifteen years. A year ago he was made assistant foreman. His present appointment came as a result of the resignation of Otis R. Hill, general foreman of the shops, who was admitted to the second officers' training camp at Fort Benjamin Harrison, Ind., last August.

A. F. Kane has resigned as supervisor of way and structure for the Hudson & Manhattan Railroad, New York, N. Y., operating the tunnels under the Hudson River, to accept a position with the Denver & Rio Grande Railroad, Alamosa, Col., as roadmaster. Mr. Kane began his railroad career at thirteen years of age as an apprentice in the blacksmith and toolmaking shops of the New York, Chicago & St. Louis Railroad. He later became bridge carpenter, then master carpenter, and finally roadmaster of the company. Mr. Kane next held similar positions with another steam road in the West. He then took charge of a gravel washer for the Lake Shore & Michigan Southern Railroad at Rupel, Ind., getting out material for ballasting track. Subsequently he became master carpenter of the West Side Elevated Railroad, Chicago, Ill., and went from that company to the Hudson & Manhattan Railroad, where he served more than seven years in charge of buildings and later was in charge of way and structures.

A. F. KANE

J. J. Heim of the board of directors of the Kansas City (Mo.) Interurban Freight Terminal Company, is president of the Joplin & Pittsburgh Railway, which he built, and is the principal owner of the Kansas City, Kaw Valley & Western Railway, which he also built, and of which Karl D. Klemm is president. More than twenty years ago Mr. Heim built the East Side Railway in Kansas City at his own expense. The road extended from the north side business district of Kansas City to the East Bottoms district. An amusement park, served by the electric railway, was erected shortly afterward, near the Heim brewery. The power plant erected for the East Side electric line was dismantled after the property was sold to the Metropolitan Street Railway. Mr. Heim retained an interest in the consolidated company.

E. T. Eckland has been appointed superintendent of transportation of the Lincoln (Neb.) Traction Company, succeeding B. W. Hilliard, who resigned to engage in private business. Mr. Eckland entered electric railway work with the Denver (Col.) Trainway in August, 1895, as a repairman in the mechanical department. He remained in that position until January, 1901, when he entered the train service of the central division. He was appointed inspector in 1910. In April, 1916, he was appointed supervisor of the South Division, and on Jan. 1, 1917, was promoted to division superintendent of the same division. Mr. Eckland is thirty-five years old, a man of pleasing personality and was exceptionally popular with the trainmen in Denver.

B. J. Denman, vice-president and general manager of the Tri-City Railway & Light Company, Davenport, Iowa, has been elected president of the company to succeed J. F. Porter, who several months ago became president of the Kansas City Light & Power Company. Mr. Denman has been connected with the company at Davenport since 1913. Previous to that he was chief engineer of the power plants of the Detroit (Mich.) Edison Company. He was graduated from the University of Michigan and from 1892 to 1895 he was connected with the Toledo (Ohio) Consolidated Street Railway in various capacities. He was next appointed electrician for the Toledo & Maumee Valley Railway in charge of the repair shops. During 1890 and 1900 he was instructor in Toledo University and in 1900 and 1901 was associated with W. C. Clark under the firm name of Clark & Denman, consulting engineers. From 1902 to 1905 Mr. Denman was electrical engineer of the Toledo, Bowling Green & Southern Traction Company. Before his appointment as chief engineer of power plants of the Detroit Edison Company in 1912 Mr. Denman was with the company in commercial engineering work, power house construction and operation and special engineering and appraisal work. During 1906 and 1907 he acted as assistant professor of mechanical engineering in the University of Michigan, and in 1908 and 1909 he was non-resident lecturer in the electrical engineering department of the university.

B. J. DENMAN

Obituary

Henry Hyde Whitman, assistant counsel to the Public Service Commission for the First District of New York, is dead. He was formerly a member of the law firm of Butler, Stillman & Hubbard. Mr. Whitman was born at Lewiston, Me., fifty-six years ago. He was graduated from Harvard University and from the Columbia Law School.

Thomas A. Cashin, superintendent of the Municipal Railway, San Francisco, Cal., died at his home in that city on Dec. 5, after several months' illness. Mr. Cashin was born in San Francisco thirty-eight years ago. He was appointed superintendent of the Municipal Railway on Oct. 1, 1912, before the construction of the first line was completed. The success of the system is attributed largely to his efficient management. Previous to this appointment to the Municipal Railway Mr. Cashin served as assistant engineer of way and structures for the United Railroads, and later was superintendent of the Fresno (Cal.) Traction Company.

Construction News

Construction News Notes are classified under each heading alphabetically by States.

An asterisk (*) indicates a project not previously reported.

FRANCHISES

Augusta, Ga.—The City Council of Augusta has revoked the franchise granted the Augusta-Aiken Railway & Electric Company to lay a track on Druid Park Avenue, between Walton Way and Gwinnett Street, to connect the Summerville and Monte Sano car lines. The franchise was granted about there months ago on the condition that the track be laid within thirty days. Construction has not been begun by the company.

Cumberland, Md.—The Cumberland Electric Railway has asked the City Council of Cumberland for a twenty-five-year extension of its franchise. The present franchise has thirteen years to run.

Lorain, Ohio.—Attorneys for the Lake Shore Electric Railway and the Lorain Street Railroad, a subsidiary, have rewritten the two franchise ordinances recently granted by the City Council of Lorain, embodying changes acceptable to them.

TRACK AND ROADWAY

Fort Smith Light & Traction Company, Fort Smith, Ark.—It is reported that this company's line from Fort Smith to Arkoma will be discontinued because of losses sustained by the company in its operation. It is probable that the line will be abandoned.

Fresno (Cal.) Interurban Railway.—This company reports that next year it expects to build 7 miles of new line from Sunmaid to Centerville, through a new orange district.

Los Angeles & San Diego Beach Railway, San Diego, Cal.—It is reported that the LaJolla line of the Los Angeles & San Diego Beach Railway will be electrified.

City & Suburban Railway, Brunswick, Ga.—In order to afford accommodations to the many people who are to be employed at the large shipbuilding plant of the United States Maritime Corporation, the City & Suburban Railway has decided to extend the car line to that plant, which will also include the plants of the Glynn Canning Company, and place the end of the line within a short distance of the large sawmill settlement of the Savannah River Lumber Company.

Valdosta (Ga.) Street Railway.—This company has begun the construction of a belt-line loop in Valdosta.

Chicago (Ill.) Railways.—The West Chicago Park Commissioners have consented to the extension of the West Division car line through Humboldt Park.

Sioux City (Iowa) Service Company.—Announcement has been made by E. L. Kirk, general manager of the Sioux City Service Company, that, owing to the difficulty in getting supplies and labor, all extensions, improvements and repairs on the company's lines will be delayed until after the war.

Topeka (Kan.) Railway.—The Public Utilities Commission of Kansas has approved the application of the Topeka Railway to issue $81,000 of first and refunding mortgage bonds, part of which will be used to make betterments and extensions to its lines in Topeka.

Waterville, Fairfield & Oakland Railway, Waterville, Me.—This company will build one-half mile of track in Fairfield.

Cumberland (Md.) Electric Railway.—This company proposes to construct an extension to the Kelly-Springfield Tire Company's plant.

Boston (Mass.) Elevated Railway.—Another section of the Dorchester tunnel will be opened to the public on Dec. 15, adding much to the convenience of those traveling to and from South Boston and Dorchester. The new section extends from the South Station under Fort Point Channel to a point beyond where Broadway extension crosses Dorchester Avenue. It is expected that the tunnel will be completed for its entire length and opened for travel next year.

Duluth (Minn.) Street Railway.—Rails have been laid by the Duluth Street Railway on its extension to New Duluth, and ballasting is now being done on the line. The line will be placed in operation about Jan. 1.

Bridgeton & Millville Traction Company, Bridgeton, N. J.—A block signal system is being installed by the Bridgeton & Millville Traction Company on all of its lines.

Trenton & Mercer County Traction Corporation, Trenton, N. J.—This company is rebuilding its tracks on South Broad Street, from Liberty Street to the city line. When this is completed the City Commission will lay out a parkway between the tracks.

International Railway, Buffalo, N. Y.—The new single-track line of the International Railway between the city line at Riverside Park and the Wickwire Steel Company's plant on the Niagara River near the town of Tonawanda has been completed and placed in operation. The line is 1½ miles long and serves the new industrial district along the Niagara frontier between Buffalo and Tonawanda. A new power substation was built to supply power to the line. Efforts are now being made by the municipal authorities and commercial organizations of Tonawanda to have the International extend this new line into the city of Tonawanda. The company has a franchise to build an extension to the line.

Syracuse & Northern Electric Railway, Syracuse, N. Y.—The directors of the Syracuse & Northern Electric Railway at a recent meeting authorized the sale of 4 miles of railroad track. The track which will be taken up comprises one of two tracks of the company's line from Watertown Junction to South Bay. The rails are to be torn up and sold, leaving a single-track line. The sale of the rail is expected to net the company about $30,000.

Goldsboro (N. C.) Electric Railway.—A report from the Goldsboro Electric Railway states that during 1918 it expects to construct 1 mile of new track and reconstruct 3 miles of track.

Grand Forks (N. D.) Street Railway.—About 1 mile of new track will be built by the Grand Forks Street Railway next year.

Pennsylvania & Ohio Railway, Ashtabula, Ohio.—This company will rebuild 1 mile of track in Conneaut.

Chillicothe, Ohio.—Work has been begun by the War Department on the construction of an electric railway from Chillicothe to Camp Sherman. [Dec. 1, '17.]

Coatesville (Pa.) Trolley Company.—Track-laying has been begun by the Coatesville Trolley Company at the south city line of Coatesville, on South First Avenue, and is now progressing toward Boxtown, and will be pushed on to Modena. It is planned to have cars running on the new line before next spring. A route has also been surveyed northward to Rock Run and Honeybrook. Paul S. Stansbury, president. [Sept. 15, '17.]

Dover-Rossville Transit Company, Dover, Pa.—The State Highway Department has issued a permit to the Dover-Rossville Transit Company to erect poles along route 124 from Rossville to Dover. It proposes to inaugurate a trackless trolley, but before it can begin the operation of cars it must satisfy the department on several points. It must show that its cars will not have a gross weight of more than 24,000 lb., machine and load, or that they will not be more than 90 in. in width. It must prove that the operation will not be dangerous to other users of the highway. The company states that the poles are to be used to support electric power lines for public use, including the propulsion of motor vehicles. [Nov. 17, 1917.]

Johnstown-Somerset Traction Company, Johnstown, Pa.—Officials of the Johnstown-Somerset Traction Company are prepared to push the construction of its proposed line from Johnstown to Rockwood as rapidly as possible through the winter months. The company is having difficulty in securing railroad ties for the line. Kent Miller, Somerset, secretary. [June 16, '17.]

Philadelphia & West Chester Traction Company, Upper Darby, Pa.—It is reported that the Philadelphia & West Chester Traction Company will build a high-speed line to Chester from Media, via Morton, and running close to the Baldwin Locomotive Works at Eddystone. The line will take care of passenger service to and from Chester, Eddystone, Philadelphia and other points.

Columbia Railway, Gas & Electric Company, Columbia, S. C.—This company's line to Camp Jackson is being extended to the center of the camp between sections F and G, and will continue to within a few yards of division headquarters, then turn to the left and join the main track at the Jackson circle, near the camp post office. The line will be double-track.

Knoxville (Tenn.) Interurban Railway.—It is reported that plans of the Knoxville Interurban Railway for the construction of an electric railway from Knoxville to Maryville have lapsed and will not be revived until after the war. The company obtained a charter in October, 1916, and was granted a franchise by Maryville and Blount Counties. Prices and shortages of material and equipment are given as the reason for deferring the action.

Dallas (Tex.) Railway.—The improvements outlined by R. Meriwether, general manager, to be carried out by the Dallas Railway under the new service-at-cost franchise were approved by the City Commission at a special session on Nov. 28. It is proposed eventually to carry out work under the program to a total of $1,000,000. For the immediate future the expenditure of $400,000 is contemplated. Three new lines will be established and two that are now in operation will be discontinued. The plans for the program of betterments were reviewed at some length in the ELECTRIC RAILWAY JOURNAL of Nov. 17, page 914.

Tacoma Railway & Power Company, Tacoma, Wash.—It is reported that the Tacoma Railway & Power Company plans to extend its line into Camp Lewis to help in relieving the traffic congestion.

Charleston-Dunbar Traction Company, Charleston, W. Va.—Announcement has been made by Fred P. Grosscup, president of the Charleston-Dunbar Traction Company, that the line will be extended to Sattes, the new town to be constructed by the E. I. DuPont de Nemours Powder Company, 6 miles below Dunbar, on the Kanwaha River.

Charleston (W. Va.) Interurban Railroad.—In answer to complaints against the Charleston Interurban Railroad, the Public Service Commission of West Virginia has entered an order in which it finds the street car service being given in Washington Street between Duffy Street and the west end of the Kanawha City bridge to be inadequate to meet the convenience and necessities of the public. The commission therefore directs that the company shall on or before June 1, 1918, provide such tracks, cars and equipment as may be necessary to give its patrons tributary to that portion of the Washington Street line a twenty-minute round-trip service in addition to the service now given, to enable such patrons to connect with the cars now serving what is known as the outer loop. The commission sets forth that it allows the time until June 1 for the completing of the improvements on account of the inability of the company to secure the labor and materials to provide the track and equipment necessary for the improvements required.

Milwaukee Electric Railway & Light Company, Milwaukee, Wis.—The city of Milwaukee has begun a mandamus action against the Milwaukee Electric Railway & Light Company to compel it to extend the Mitchell Street car tracks 1 mile west. It is said in the mandamus action that public necessity requires the extension of this line and that the Common Council has directed that legal action be taken.

SHOPS AND BUILDINGS

Chicago, Milwaukee & St. Paul Railway, Chicago, Ill.—It is reported that the shops of the Chicago, Milwaukee & St. Paul Railway at St. Paul will be enlarged.

Northern Ohio Traction & Light Company, Akron, Ohio.—Plans have been made by the Northern Ohio Traction & Light Company for the construction of a freight terminal in Akron. No work is contemplated at present on account of the high costs of material and labor. The plans call for the erection of four buildings and trackage. These buildings will be constructed one or two at a time as the growth of the business requires. A building for the use of the line department as a storeroom and a garage will also be constructed eventually adjacent to the freight yard. A side track off the main entrance track to the yard and a steam road connection close by will afford facilities for receiving supplies in carload lots directly at the storeroom.

Philadelphia, Pa.—Bids were opened on Dec. 4 by the Department of City Transit of Philadelphia for contract No. 539, covering plumbing installation on station buildings at Orthodox-Margaret streets and at Ruan-Church streets, and for contract No. 540 for electrical installations in station buildings at Orthodox-Margaret streets and Ruan-Church streets. The low bidder for contract No. 539 was S. Faith Company, Inc., Philadelphia, at $5,000, and for contract No. 540, J. F. Buchanan & Company, Philadelphia, at $5,682.

Texas Electric Railway, Dallas, Tex.—This company has purchased a site on East Lamar Street, near the Washington Iron Works, Sherman, and will begin immediately the construction of a carhouse for interurban cars. The new structure will cost about $100,000.

POWER HOUSES AND SUBSTATIONS

Georgia Railway & Power Company, Atlanta, Ga.—The city of Decatur has awarded a contract to the Georgia Railway & Power Company for the complete electrification of its water works. New electrically-operated triplex pumps and auxiliary equipment will be installed.

Gary (Ind.) Street Railway.—A permit has been taken out by the Gary Street Railway, successor to the Gary & Interurban Railroad, for the erection of a brick substation on Jackson Street, near Eleventh Avenue, to cost $8,000. The building, which is practically completed, will be used as a transformer station for all the city lines of the company.

International Railway, Buffalo, N. Y.—This company has placed in operation a new 8000-hp. generator at its old Niagara Street power house. For several months the company has been assembling the turbine and this addition to the company's power plant facilities will be of great aid during the peak-load hours.

Durham (N. C.) Traction Company.—During the past year the Durham Traction Company has spent about $105,000 in improvements to its plant in Durham, most of the work now being completed. A new modern steel and brick addition has been made, built with a view of extending it over the old plant in the future. A new 2000-kw. turbine is being installed. A new Sterling 512-hp. boiler has been installed on the left side of a battery. The right side boiler will be installed as soon as material can be secured, thus giving the plant 1024 hp. A new stack 175 ft. high has been added.

Johnstown & Somerset Railway, Somerset, Pa.—A report from the Johnstown & Somerset Railway states that the company will probably place orders next month for equipment for one 300-kw. substation and 10 miles of overhead line.

Manila Electric Railway & Light Corporation, Manila, P. I.—C. N. Duffy, general manager Manila Electric Railway & Light Company, is quoted in the Manila papers as saying that owing to demands for power the company's power station must be enlarged. Additional equipment now being installed will give an increased capacity of 10 per cent, but further increases are necessary.

Charleston Consolidated Railway & Lighting Company, Charleston, S. C.—A new rotary converter substation is being erected by the Charleston Consolidated Railway & Lighting Company on Clement's Ferry Road, between Five-Mile House Curve and Oaks Curve. The structure will be one story high. It will be made of brick, with concrete foundations and will be fireproof throughout. The station will have a capacity of 700 hp. and will supply current to the suburban line. It is planned later to make this an automatic station throughout.

Manufactures and Markets

Discussions of Market and Trade Conditions for the Manufacturer, Salesman and Purchasing Agent

Rolling Stock Purchases Market Quotations Business Announcements

Making Shells Out of Trolley Wire and Rails

Factors That Must Be Kept in Mind by Railway Properties in Placing Orders for Supplies and Equipment

By R. J. Pike
Purchasing Agent Mahoning & Shenango Railway & Light Company, Youngstown, Ohio

To the railway man "making shells out of trolley wire and rails" is a very serious subject, and this is practically what is being done at the present time. Raw products which ordinarily would be turned into the articles for which we have daily use in electric railway work are now being turned into munitions and other equally necessary articles for war purposes, to the virtual exclusion of their manufacture into those things which we need to carry on our business.

For every one of us the question of economy has ceased to be one of mere money. Where once we might well measure replacements, repairs or renewals of track, or cars, or lines by the ultimate economy effected, now we must measure the consumption of materials in the light of the possibility, or impossibility, of obtaining more of them.

Effect of Government Control on Prices and Deliveries

A short time ago a requisition was received for 5 miles of No. 0000 trolley wire. At that time, because of the expected price fixed by the government, we contemplated buying only 2 miles of the desired quantity which, we estimated, would, with that which we had in stock, take care of our needs until Jan. 1. In the meantime the government set a price of 23½ cents per pound to the government, the Allies and the public.

We placed our order at a higher price than that quoted by another manufacturer to get ninety days better delivery and advised the manufacturer of this fact, stating that, unless the delivery as promised could be made, he should advise us by return mail. We promptly received the following notice from the manufacturer:

"We have been told to-day that the government may commandeer all copper. We have bought copper for our next three months' requirements, but may not be able to get it, therefore we are accepting your order based on our ability to secure copper, and if we do not get it we reserve the right to cancel."

Upon receipt of this notice and because of our further investigation of conditions, we immediately placed an order for the other 3 miles requisitioned and will consider ourselves lucky if we receive shipment on this order before the close of the war.

From our investigation we learned that the government is now in the market for delivery in the next three months for three times as much copper as there is in the country at the present time.

Maximum Service Should Be Secured

To us this condition of affairs can have but one meaning, and that is that every mile of trolley wire now in the air has reached an almost priceless value. The waste of even a tiny bit of it in repairing a break, or the replacement of a stretch, however short, before it has given its last possible hour of service, carries with it potentialities of long interruptions to some part of our service, or even to the impossibility of continuing some part of our ordinary operations.

Within this year copper has sold as high as 36 cents a pound, and the market price would now be higher still had not the action of the government in fixing a basic price been anticipated. And it might be well to state here that the public is not now buying copper at the government's price of 23½ cents.

A similar situation exists with regard to steel. On Sept. 24 President Wilson approved a scale of steel prices. These prices went into effect immediately and obtain until Jan. 1, 1918.

The following is a comparison of recent prices with agreed prices on a few items:

	Recent Price	Agreed Price	Present Reduction Per Cent
Pig iron	$58.00	$33.00	43
Steel bars	5.50	2.90	47.3
Steel shapes	6.00	3.00	50
Steel plates	11.00	3.25	70.5
Connellsville coke	16.00	6.00	62.5

We purchased steel rails less than two years ago at $31.50. The present figure is $102, and while small quantities could recently be purchased for comparatively short delivery, large quantities are quoted for delivery in eighteen months to two years.

In January we purchased steel wheels which were promised for delivery in ten months and were shipped on Sept. 29.

In May we purchased axles for delivery in eight to ten months.

We recently purchased forged steel gears and found that we could not get delivery inside of twelve months and were obliged to accept cast steel heat-treated gears, and only because of the manufacturer's inability to supply forged gears as contracted for we were able to get the castings at the contract price and the cast gears cannot be manufactured inside of twelve weeks. The delay in delivery on gears is because manufacturers are forging steel blocks which are used in the bases of large shells.

Conservation of Materials and Supplies

Aside from the business considerations which require officials and employees in all branches to practise the strictest economy in the use of materials during the present period of unprecedented prices, patriotic motives should influence each of us to employ the methods which will be most helpful to conserve materials and supplies and prevent depletion of stocks which it will be difficult to replenish during the continuance of the war.

In no way can we do more to add to the efficiency of operation than by conserving materials. Material is now the largest factor of expense of our company. During the war we will be forced to do without many materials which we cannot obtain, and our supply of all articles will be greatly restricted.

Duplicate requisitions should not be made. No one thing contributes so largely to unneeded stocks of material. If a requisition is with the stores department for an item and delivery is not made promptly, after a reasonable time, the storekeeper or the purchasing agent should be given the number of your requisition and asked to hurry the material.

The purchasing department endeavors to keep the departments advised of delivery date, and because the material is not delivered as promptly as promised is no indication that the purchasing agent has overlooked it but is probably caused by inability of the manufacturer to obtain castings or other necessary material, or perhaps because of freight congestion or embargoes.

All requisitions should be checked over at the time they are signed to see that the quantity is conservative and that no material whatever is requisitioned which is not needed even to the point of great inconvenience but not, of course, to the point of discontinued operation. Cancellation of requisitions and orders should be requested when changes in the working program or other reasons which will prevent the materials being used are made.

Don't issue new tools except upon return of broken and worn-out tools. Don't allow nuts, bolts and washers, nails and screws to remain on the floor or the ground where they have been dropped while work was in progress, but gather them up after the job is completed and return them to stock. Show on the requisition what material is to be used for and don't always say "for stock," as with more information it might be possible to substitute something else. Don't hold scrap bolts, tinfoil, paint and oil barrels, reels or any other scrap material but turn it into the stores department or request its sale on a requisition.

Wire Market in Sluggish Condition

But 60 to 75 Per Cent of General Copper Requirements Remain After Taking Care of Government and Munition Plants

Transactions in every description of wire—bare, rubber-covered, weatherproof, etc.—have been exceedingly slow, both price and deliveries being obstacles which the jobber, dealer and consumer find difficult to overcome. Stocks are low in first hands, and going down the line the same condition prevails. Some exceptions exist, as might be expected, and these concerns, while content to laud their own shrewdness and forehandedness, are in no hurry to part with their possessions unless a stiff premium price is forthcoming. It is the belief that sales of crude copper are supposed to observe the governmental price; and though deals have been made on a different basis the seller and buyer are in no wise inclined to discuss the matter.

If the trade is looking forward to January for a lower price in copper, and consequently a like revision in wire, the delusion may as well be dismissed, according to the opinion of the best informed who keep in close touch with the primary market. It is said that when the government and the munition manufacturers are supplied with the full amount of copper they need, the quantity left appears to be sufficient to supply 60 to 75 per cent of general requirements. Deliveries to manufacturers and commercial consumers are understood to be three or four weeks behind schedule. At the moment it seems possible that enough of the metal can be provided to supply the demand of the industrial consumers in full.

All contracts now drawn for January and later deliveries are subject to government revision in price; and in consequence there is nothing to retard a buyer from placing his orders for future business. Contracts for future deliveries to consumers carry this clause:

"In consideration of the above price (5 per cent over the official price of 23.50 cents per pound, namely 24.67½ cents) and of the conditions imposed by the War Industries Board in fixing the same, buyer agrees and represents that the copper sold hereby is for buyer's own use in his plant in the course of his regular manufacturing business. By reason of government priorities, shipments at time specified are subject to seller's ability to make same after supplying demands of the United States and its Allies, and complying with priority or distribution orders issued under government authority. Shipments so deferred will be made at the earliest opportunity."

The War Industries Board called a meeting of copper interests for Dec. 14, the announcement saying:

"At the time the agreement on the prices now prevailing was made it was understood that in the case of copper the price determined upon would be subject to possible revision at the expiration of four months. The conference announcement is for the purpose of carrying out this understanding."

Consumers have been placing orders for January, February and March delivery, but they do not look for any change in the price they have contracted for; that is 23.50 cents in car lots. But should a lower price be announced after the conference a rebate will be looked for by the buyers. Three New York jobbing houses are offering to take retail orders for electrolytic for prompt, December and January deliveries at 24.67½ cents, and other jobbers in this market state they expect in the near future to be in a position, through deliveries from producers, to sell at the same price in jobbing lots.

Public Utilities Will Get Coal

Fuel Administrator Puts Them on Priority List for Preferential Shipments During Current Month

On Dec. 2 Dr. Garfield, United States Fuel Administrator, issued several requests to coal producers of which some five thousand will be affected. These requests were designed to insure the fulfilling of the requirements of the users specified, and while not in the form of direct orders from the Fuel Administration, the producers will have to co-operate to meet these requests.

The following request was directed to all operators in Ohio, Michigan, Kentucky, Illinois, Indiana, Alabama, Tennessee, Colorado and Oklahoma:

"Subject to compliance with orders heretofore issued by the Fuel Administration for preference in shipments for certain specified purposes, the Fuel Administration requests that you give preference in shipments for the next thirty days on government orders, railway fuel, domestic requirements, public utilities and munition plants.

"It is necessary in the present situation to give preference in shipments as requested, and we solicit and thank you in advance for your co-operation in this direction.

"We will appreciate it if you will advise the Fuel Administration of any free tonnage you have available which we may call on you to ship for emergency requirements."

In addition all operators in Pennsylvania, West Virginia and Virginia were requested in a similar form to give preference in shipments among others to utilities for the next thirty days.

The request covers practically all of the coal production of the country, outside of the Rocky Mountain coal districts. The Rocky Mountain output is largely consumed in the localities where it is produced.

EFFECT ON TRACTION PROPERTIES

An order by Priority Administrator Lovett on Dec. 7 directing preferential shipments be given to food, fuel and military supplies places these commodities in a priority sequence. The first is steam fuel for railroads for current use; second, food; third, military supplies; fourth, coal for by-product coking plants, and the fifth includes all others to be given priority. The order for the fifth class reads as follows, in so far as it pertains to traction properties:

"5. Preference and priority in movement only to coal, coke and raw materials for current use, but not for storage, consigned direct (and not subject to reconsignment), to public utilities, including street and interurban railways, electric power and lighting plants, gas plants, water and sewer works."

Large Bookings in Steel Ties

Immediate Deliveries That Have Obtained in the Current Year Are Expected to Continue During 1918

Although generally speaking equipment sales for electric railway construction work are not showing any strong tendencies, the demand for steel ties, a comparatively recent product, is still growing. A statement from what is probably the most active company at present engaged in the development of the steel tie business is to the effect that November was the largest month in the history of the company in booking tie tonnage. During the first five days of the present month this company booked 13,000 ties for traction companies in Ohio and Colorado.

Deliveries during the past year have been made according to order, materials and factory facilities permitting shipments being made in from one to two weeks. This same condition as to deliveries is expected to obtain during the coming year.

One of the greatest reasons given by the manufacturers for the continued growth in steel tie bookings is the small labor requirements on installation. With the difficulty that exists at the present time in obtaining section hands this saving in labor requirements presents a very forceful sales argument.

ROLLING STOCK

Miami (Fla.) Traction Company contemplates purchasing four new storage-battery cars in 1918.

Seattle & Rainier Valley Railway, Seattle, Wash., is planning to remodel six old cars for one-man operation.

Alexandria (La.) Municipal Railway expects either to build or to purchase six single-truck car bodies during the coming year.

Montgomery (Pa.) Transit Company expects to purchase in 1918 two interurban steel cars similar to three new cars placed in service last August.

Plymouth & Sandwich Street Railway, Plymouth, Mass., plans to introduce one-man car operation, and will purchase two or three one-man safety cars during the coming year.

Dubuque (Ia.) Electric Company will probably purchase a number of light-weight safety cars, if successful in securing a repeal of an existing ordinance prohibiting one-man car operation.

Johnstown & Somerset Railway, Somerset, Pa., expects to purchase two double-truck, combination passenger and baggage cars and one double-truck freight car, some time during the coming year.

Waterloo, Cedar Falls & Northern Railway, Waterloo, Iowa, is expected to order in the near future the twenty fully-equipped one-man cars provided for in the new ordinance granted to the company at the election in Waterloo on Dec. 5.

TRADE NOTES

William S. Boyd, formerly assistant in the purchasing department of the Crucible Steel Company of America, Pittsburgh, Pa., is now purchasing agent of the Page Steel & Wire Company, Monessen, Pa.

Western Electric Company, New York, N. Y., reports that G. A. Schneider, formerly of its San Francisco sales organization, has been appointed manager of its Buffalo office, succeeding J. W. Tabb, who has been transferred to the New York office.

W. O. Wade has resigned as chief engineer and sales engineer of the Railway Improvement Company, New York, N. Y., to become a partner in Wigmore, Hall & Company, Los Angeles, Cal. This supply company represents the Railway Improvement Company on the Pacific Coast for various specialties of the latter, including Rico coasting recorders.

Dorrite Insulation Company, Inc., Jersey City, N. J., has been incorporated with a capital stock of $200,000. Harry A. Dorr is vice-president; Robert D. Radcliffe, Jr., treasurer, and R. D. Adams secretary. A large two-story brick building is now being equipped. The factory will be in operation about Feb. 1, 1918. The company proposes to manufacture "Dorrite," an insulating material which may be molded, stamped or pressed into all special or commercial sizes and shapes, for signal, third-rail and all insulating electrical uses.

R. N. Ehrhart, chief engineer of the condenser department of the Westinghouse Electric & Manufacturing Company, East Pittsburgh, Pa., has resigned to take up his duties as president and consulting engineer of the Sedar Coal Company. He has also been retained as consulting engineer by several engineering firms and by his old employers, the Westinghouse Company. Mr. Ehrhart will engage in consulting work for power plant equipment with special reference to turbine and condenser installations. His address is 217 Vine Street, Edgewood, Pittsburgh, Pa.

Arthur D. Little, Inc., Cambridge, Mass., has opened a new chemical research and testing laboratory on Charles River Road near Kendall Square. The plant consists of a main building 150 ft. long and 50 ft. wide, three stories in height, with commodious basement. On the first floor are the administration offices and quarters for a chemical museum, the library and research laboratories occupying the second floor. The third floor is devoted to analyses and tests, with a large and airy lunch room for the staff and the basement contains a complete pulp and paper mill with facilities for general industrial testing on a large scale. The Little organization is international in its scope and is engaged in work extending from the battlefields of Europe to the Far East. Electric railways have frequently called upon it for aid in solving supply and equipment problems. The new plant is said to be the largest commercial laboratory of its kind in the country.

H. T. Dyett, president of the Rome (N. Y.) Wire Company, has accepted appointment as a member of the Underwriters' Laboratories' Industry Conference for rubber-covered wires and cords. Mr. Dyett was nominated as one of the three manufacturers' representatives on the conference at a recent meeting of the wire and cable section of the Associated Manufacturers of Electrical Supplies. He succeeds the late John C. Bridgman of the Hazard Manufacturing Company. The other manufacturers' representatives are Leroy Clark, president of the Safety Insulated Wire Company; and Everett Morss, president of the Simplex Wire & Cable Company.

NEW ADVERTISING LITERATURE

Diamond Expansion Bolt Company, New York, N. Y.: A leaflet descriptive of its Diamond-strand connectors used with specially heavy three-bolt guy clamps.

Railway Track Work Company, Philadelphia, Pa.: Bulletin No. 1. "A Drop of 1000 Feet" describes and illustrates the company's reciprocating track grinder for repair work.

Locke Insulator Manufacturing Company, Rochester, N. Y.: "The Insulator Book," supplement No. 2, describes the specific types of insulators, the products of this company, accompanied by other detailed information and illustrations. The trade is invited to send for a copy.

Condit Electrical Manufacturing Company, Boston, Mass.: "Useful Information," just published by the company, is a book, bound in black and gold, with flexible cover, comprising 164 pages of conveniently arranged tables and information pertaining to the application of electrical protective equipment.

Norton Company, Worcester, Mass.: Booklet on "Tool Room Grinding," describing and illustrating the company's various devices for handling and sharpening cutters and reamers, drills, taps, lathe and planes, tools and dies, together with "some good points to remember." A copy may be had by applying.

NEW YORK METAL MARKET PRICES

	Dec. 5	Dec. 12
Prime Lake, cents per lb	23½	23½
Electrolytic, cents per lb	23½	23½
Copper wire, base, cents per lb	30	29
Lead, cents per lb	6½	6½
Nickel, cents per lb	50	50
Spelter, cents per lb	8	7.77½
Tin, Straits, cents per lb	85	86
Aluminum, 98 to 99 per cent, cents per lb	36	36

OLD METAL PRICES—NEW YORK

	Dec. 5	Dec. 12
Heavy copper, cents per lb	22	22
Light copper, cents per lb	19½	19½
Red brass, cents per lb	17½	17½
Yellow brass, cents per lb	14½	14¼
Lead, heavy, cents per lb	5½	5¾
Zinc, cents per lb	5¾	5¾
Steel car axles, Chicago, per net ton	$42.00	$42.00
Old carwheels, Chicago, per gross ton	$31.00	$31.00
Steel rails (scrap), Chicago, per gross ton	$34.50	$34.50
Steel rails (relaying), Chicago, per gross ton	$55.00	$55.00
Machine shop turnings, Chicago, per net ton	$17.50	$17.50

RAILWAY MATERIALS

	Dec. 5	Dec. 12
Rubber-covered wire base, New York, cents per lb.	34	34
Rails, heavy, Bessemer, Pittsburgh	$38.00	*$38.00
Rails, heavy, O. H., Pittsburgh, per gross ton	$40.00	*$40.00
Wire nails, Pittsburgh, per 100 lb	$4.00	$3.50
Railroad spikes, 9/16 in., Pittsburgh, per 100 lb.	$5.50	$5.50
Steel bars, Pittsburgh, per 100 lb	$5.00	$5.00
Sheet iron, black (24 gage), Pittsburgh, per 100 lb.	$5.80	$5.80
Sheet iron, galvanized (24 gage), Pittsburgh, per 100 lb.	$4.85	$4.85
Galvanized barbed wire, Pittsburgh, cents per lb.	$4.35	$4.35
Galvanized wire, ordinary, Pittsburgh, cents per lb.	$2.50	$3.95
Cement (carload lots), New York, per bbl	$2.22	$2.22
Cement (carload lots), Chicago, per bbl	$2.31	$2.31
Cement (carload lots), Seattle, per bbl	$2.65	$2.65
Linseed oil (raw, 5 bbl. lots), New York, per gal.	$1.21	$1.21
Linseed oil (boiled, 5 bbl. lots), New York, per gal.	$1.22	$1.22
White lead (100 lb. keg), New York, cents per gal.	11	10
Turpentine (bbl. lots), New York, cents per gal.	50½	48½

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*No quotations available for lack of market.

Electric Railway Journal

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The Need of a Greater Sense of Individual Responsibility

"THIS matter of making ends meet next year is as much your job as it is mine." These in substance were the words used recently by the president of a great public utility corporation to a gathering of 1500 of his employees. His purpose was to give each of his auditors a sense of individual responsibility for the success of the corporation by which they were employed. If the industry in general would believe and act upon this principle, utility problems would be easier to solve. During the past three years wages have increased enormously. But has the efficiency of labor increased in the same ratio? Every evidence is that it has not. Nevertheless, every man or woman who is gaining a livelihood from the electric railway industry owes it loyal service, and never more so than now when it is so difficult to give the public satisfactory transportation and at the same time pay for the use of the money which makes transportation possible. If there ever was a day for the "time-server," this isn't it. Those of us whom duty does not call to the firing line simply must keep things going at home in spite of shortage of men, materials and money, even if it means longer hours of work and greater efficiency of output during the time we are at work. Transportation is a necessity in war time even more than under normal conditions, and a man may be a patriot on the front platform of a car or in supervising transportation, as well as in the trenches. He can also be a slacker in either place at home if he does not individually do all he can to assist the government. What is needed in every public utility to-day is a greater sense of individual responsibility on the part of each man to perform his duty, whether he occupies the presidential chair or works on the platform or in the repair pit.

A Great Opportunity for the Electric Railway in Freight Transportation

IT IS HIGH TIME that the electric railways awakened to the great opportunity which lies ready at their hand for relieving the congestion of freight traffic on the steam railroads.

They have an impressive object lesson in the vigor and vim which the highway and motor truck interests are manifesting in preparing for big things in transportation. By way of illustration it is necessary only to cite the plan for bringing motor-truck trains, loaded, under their own power from Detroit to the Atlantic Coast. Again, supplies for Interborough Rapid Transit construction work have lately been carried from Pittsburgh to the job by motor truck.

The opportunity must be embraced by doing at least these things:

1. Every traffic department must exert itself to find out how it can get and handle freight business.

2. Every rolling stock department must put all available equipment into shape for handling the business that the traffic department gets.

3. Every manager must utilize the War Board, the national and sectional electric railway associations and any other agencies which may be provided, for the purpose of co-ordinating the efforts of his company with those of other companies.

4. Everybody must insist that these co-operative agencies do all that they are capable of doing, "and then some."

The Company Section's Opportunity in War Time

COMING out of a recent company section meeting at which the president of the company had expressed himself freely and forcefully on the difficulties of operating the property under present conditions, a thoughtful railway official said to the writer, "These company sections are worth while on this property even if it is only to furnish the auspices for getting men together to hear a talk like that." Other reasons for such sections are given by Britton I. Budd, in a letter published on Dec. 8, and in one by Frank R. Coates, printed this week. Hardly a week passes that some evidence of the useful part that is being played by the company sections is not recorded somewhere in the JOURNAL. They are preaching and practising patriotism, loyalty and economy, the trilogy of virtues of the hour. They are furnishing the opportunity for co-operation and mutual understanding between the men and those more directly responsible to the public and the stockholders for results. It is unfortunate that the clouds of war settled down upon us before more sections could be organized. This, however, puts greater responsibility upon the eleven now in action, and in justice to them it must be said that through the publicity given to their efforts, the effect of their work is not confined to their several localities. They represent also proportionately more than their number would indicate, as the properties on which they are organized control about 6½ per cent of the mileage and more than 9 per cent of the rolling stock of the industry. At this season the newly elected officers are formulating plans for the year's work. Never have those charged with these responsibilities and honored with this confidence had greater opportunity for leading their sections in aggressive, definite and stimulating work. While we believe that it would have been better to elect officers in the spring so that they might have planned farther ahead, there is still time to get big results before hot weather returns.

Opposing Six-Cent Fares by a Campaign of Letter Writing

THE Mayors' Conference knows a thing or two about the value of publicity. But it is just as certain that there is a thing or two it does not know. The Mayors' Conference is that association of mayors and corporation counsel which has furnished the principal opposition to the increased fare campaign in New York State outside of the Metropolitan section.

The electric railways have furnished to the Second District commission a large mass of specific evidence bearing on the case—testimony of manufacturers and dealers as to the hard market facts of costs of labor, cars, overhead supplies, copper, electrical apparatus, oil, steel, coal and the like. They have made a complete exhibit of the financial condition not only of the thirty odd companies that are petitioning for increased fares but of all the companies in the district. Nine of these companies have presented in detail the special facts relating to their own conditions.

The Mayors' Conference has heard all this testimony, but it has not put in one line of testimony in rebuttal. The reason is ample—these facts cannot be rebutted. Therefore it has fallen back on the cry "over-capitalization." But—before bringing up this point for judicial determination—the mayors have tried to arouse the public by mere assertions. They have even written an open letter to the commissioners, warning them that rates should not be based upon capitalization. For ignorance of what present-day utility laws require in the matter of rate-making, this warning would take the prize.

We have no objection to the displaying of such a lack of knowledge, but we do deplore the animus that prompted the following statement:

"For years it has been a matter of common understanding that such difficulties as the electric railways may have been laboring under were largely attributable to over-capitalization. * * * And it has been charged and has been fairly apparent that surplus, reserves, replacements, efficiency of management—all or many of them—have been sacrificed for, or at least subordinated unto, interest and dividends on what is nothing more or less than water in the capitalization."

The Mayors' Conference figured correctly—this open letter, given by it to all the papers, was printed all over the State and generally under very large headlines such as: *"Watered Stock Attacked by Mayors."* This result, with its effect upon the unthinking public, was doubtless the object sought. Such a letter could be only an impertinence to the commission, and the commission did not even have the opportunity to be the one to make it public, if it saw fit.

Doubtless some electric railways have been over-capitalized. In all fairness, however, the way to expose that fact is not by a campaign of open letter writing but by the submission of specific evidence to the commission when a case is on trial. The contrast between the kinds of publicity resorted to by the companies and the Mayors' Conference—one, the publicity of official records and sworn testimony; the other, that of unofficial and unsupported allegations—is most noteworthy.

What Do the Mayors Want—Dead Electric Railways?

INDEED, the whole campaign that has been and is being followed by the Mayors' Conference is destructive in character. It really seems as if nothing will satisfy them except the wrecking and the junking of the transportation lines in their local communities.

In their letter of admonition to the Public Service Commission the mayors suggested that the board withhold the granting of a higher fare, which was said to be undeserved because of a condition of over-capitalization, until reorganizations of the companies shall be voluntarily effected. And Mayor Koon of Auburn, N. Y., has issued a public statement reiterating the charge that the companies are simply seeking dividends on watered stock. All of this is utter misrepresentation, in total disregard of the efforts of the utilities and the commission to handle the rate problem constructively.

The wishes of the companies have been plainly stated to the New York commission. To use the words of Mr. Choate, acting as their chairman, they ask only "a fair return on a fair valuation." Mr. Choate informed the commission that the valuation was ready and at its command. Every case for increased fares put in has stated the value of the property used in the service, and no request for any stated percentage of dividends on any given capitalization has been made in any case. The Mayors' Conference is fighting a bugaboo of its own making.

The mayors do not seem to appreciate that the interest of their communities—business men, workers, everyone—does not lie in throwing companies into receivership. As Commissioner Emmet said in his concurring opinion in the Huntington case, "under the abnormal conditions of to-day many a small electric railway system in New York State is facing ruin, and if ruin overtakes these companies the public will suffer quite as much in bad service as the owners of the enterprises will in loss of money." The prime consideration, therefore, is service, and the basic function of the Public Service Commission is to see that this is preserved. The proposal of the mayors to refuse aid because of fancied over-capitalization is as absurd as the results would be injurious to the public.

And the railways are not at all exaggerating the seriousness of their troubles, as Mayor Koon has charged. We respectfully refer him to the fact of the recent receivership—since it petitioned for increased fares—of the Hornell Traction Company. We refer him to last week's receivership of the Bay State Street Railway, operating more miles of track, with one exception, than any other electric railway in America. We draw special attention to the fact that the company has been operating a large part of its lines on a 6-cent fare. We call attention to the barely escaped scrapping of the Providence & Fall River line, and the actual dismantling of others. We call attention to the cessation of dividends by the New York State Railways, the Boston Elevated Railway, the Springfield (Mass.) Street Railway and numerous others whose securities, held by savings banks and other investment institutions, are now paying nothing.

It is not dividends that the companies in New York and elsewhere are requesting. All they want is a fair return on property used in the public service, so that they will not be forced to stop their operations entirely and scrap their cars. Mayors and other city officials ought to get this fact into their heads. A dead electric railway is about the worst advertisement a city can have.

Viewing Transportation in a Big Way

IT HAS been said that this war is a war of machinery, and so it is. But it is more than that, it is also a war of transportation. Success of the armies at the front and of the industries in this country depends upon the promptness with which the men and the materials are carried where they are wanted and at the time that they are wanted. If there had been adequate transportation, the present fuel and food situations would have been much less acute. This means that we who are engaged in transportation as a business must speed up if we are going to keep up our end of the war operations. We need, above all, a broad vision of our functions, our resources and our possibilities. Next we must make ourselves felt in a positive way so that we shall be called upon to do everything that we are in a position to do.

We believe that all effective transportation agencies in this country have their place; that steam railroads, waterways, highways and electric railways must all be utilized to the full if the transportation requirements of this country are to be met. There is a definite work for each to do. Unfortunately, there is no omniscient presiding genius who is in a position, or rather who is qualified, to assign definitely to each transportation agency the detailed duties which it should assume. As our country is organized it is necessary for each, knowing its own capabilities and limitations, vigorously to go after the business which it knows it should have.

At present the electric railways are not leading the procession by any means. There may be some good reasons for this, but if so they must be removed at once or the function which the electric lines should be performing will be taken over by the steam roads and the motor trucks operating on improved highways.

While urging vigorous action in this matter, we do not wish to be misunderstood as to motive. It is no game of grab that we are advising but rather what we believe to be the highest patriotism. Take an analogy closer home. Here is a man of marked executive ability who is anxious to get into active military service. Is he unpatriotic if he tries to engage in that class of work where his peculiar talents will make him most useful to his country and succeeds in so doing? Most certainly he is not, no matter what captious critics may remark.

This is just the case of the electric railways. They are anxious to do in this emergency only that kind of transportation which they are particularly fitted to perform, namely, the short-haul quick-service business. And this, it so happens, is where the steam railroads need the greatest assistance.

The electric roads have this in their favor in providing this additional transportation. But little additional expenditure is required, and in many cases not any, to enable them to carry a very much larger amount of freight than they are hauling at present. There is no such necessity for new roads or new cars as with motor trucks. The work now is principally to get the traffic, although in some cases it will be necessary to provide the additional equipment and also to get the right to haul the freight. This duty is clearly up to the railways themselves.

This is no time for half-way, half-hearted measures. The advocates of the motor truck for short-haul business are active. They believe in their apparatus and are convincing others of it and are making it easy for large shippers to use this class of conveyance. Admittedly they have a large field, but it is not the same as that of the electric railways. The steam railroads have indicated that help from the electric roads will be very welcome, so no opposition from them should be met. Every electric railway which is in a position to haul freight owes it to itself and to the industry to get active in this matter. The American and sectional associations, as well as the War Board and its director at Washington, have also a great responsibility in this matter. They should leave no opportunity neglected, no stone unturned, to see that the electric roads make a success of this opportunity which they now have to serve the nation.

Last Call for 1917 Statistics

The annual tables of track, car and other statistics compiled by the "Electric Railway Journal," which have come to mean so much to the industry, will appear in the "Better Service" issue of this paper, that for Jan. 5, 1918. A few roads have not yet sent in their returns, but there is still time to have them included in the tabulation. The Jan. 5 issue, by the way, will contain as one of its feature articles a most extensive analysis of the fundamentals of economical electric railway operation.

Arousing Public Interest in Crossing Construction Work

Denver Company Published Series of Advertisements Simultaneously with Installation of Important Downtown Crossing to Forfend Criticism and Make People Realize the Tremendous Amount of Work and Investment Involved—Also to Call Attention to the Special Means Employed to Expedite the Work

THE Denver (Col.) Tramway had occasion recently to replace a track intersection at Fifteenth and Curtis Streets, one of the principal corners in the downtown district. Realizing the disruption of traffic that would inevitably accompany the work, the tramway officials set out to interest the people in the job through a series of advertisements in the daily papers.

As expressed by J. C. Davidson, publicity manager, there were several motives which prompted the company to take this step. He says:

"We tried with this batch of publicity to make people appreciate where the tramway money goes and the value there is under the surface of the tramway tracks. We also tried to forfend the criticisms of passengers and pedestrians who were inconvenienced by the rerouting of lines and by the construction work, and to prevent accidents and cussing on the part of the motorists who were forced to exercise a good deal of care on Fifteenth Street and stay off Curtis Street entirely. Of course, underlying the whole plan was the object of making people realize the tremendously increased cost of tramway materials and labor."

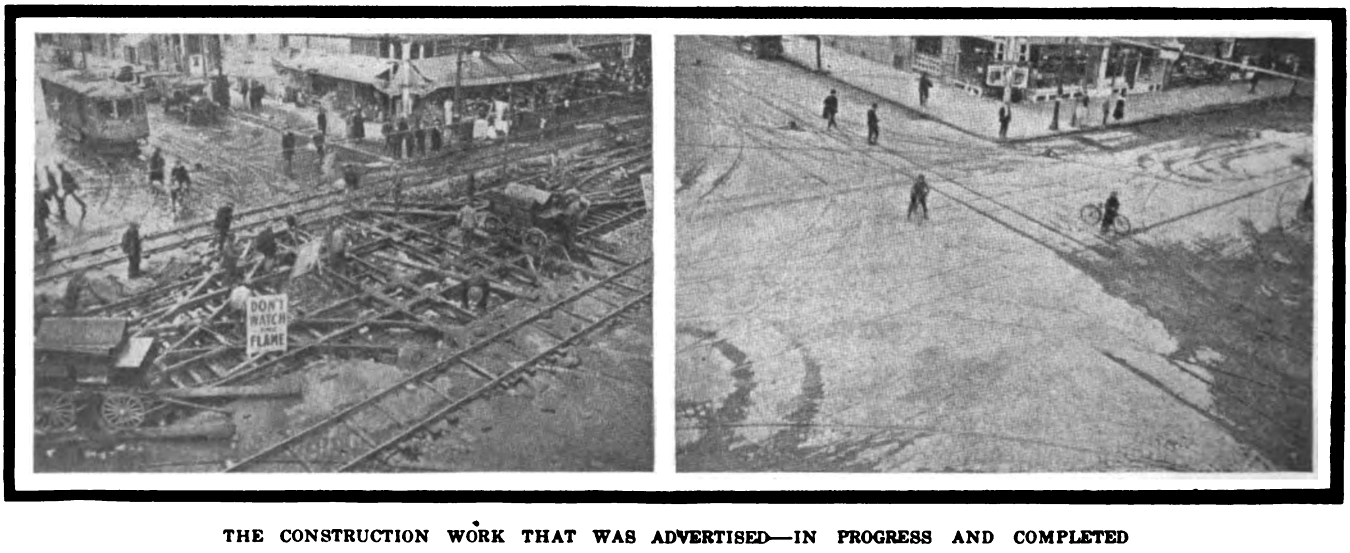
HOW THE STORY OF A CROSSING WAS TOLD

The advertisements, entitled "The Story of a Street Railway Crossing," were numbered in sequence up to fourteen and published while the construction work was in progress. They occupied spaces varying from about one-third of a column to one-half of a page. Some are reproduced on the next page.

The first advertisement announced that "To-morrow Morning at One o'Clock" the tramway would begin the construction of the new crossing. It was pointed out that this was the biggest and most intricate job of special work that the tramway had ever undertaken, and that the story would give the public an inside glimpse of the tramway workings that it had never had before. Then followed a brief description of what would be the first order of work in preparation for the job, telling how the line crews would string wires for the temporary track and also for ten 200-watt nitrogen lamps around the intersection, the latter to give the workmen ample light to work during the night and thus complete the job in the shortest possible time.

Lights were also to be strung on Fifteenth Street so that passengers, motorists and trainmen would have plenty of light to cope with the unfamiliar operation at this point. In asking the co-operation of the public the company said: "We hope that we will have no accidents of any kind, and we are doing everything in our power to prevent them. But we are going to need the co-operation of our passengers and all vehicle drivers. We ask our passengers to be careful in alighting and boarding the cars at Fifteenth and Curtis because of the uncertain footing. We ask motorists to approach Fifteenth and Curtis with extreme care and very slowly. Curtis Street at Fifteenth will be closed to traffic. A space just wide enough for the passing of vehicles in single file will be left along Fifteenth between Arapahoe and Champa, but there will not be any too much room and the motorists will unquestionably find that they can save time by avoiding Fifteenth and Curtis and going around the block." The first advertisement also contained a notice of the temporary rerouting of three car lines.

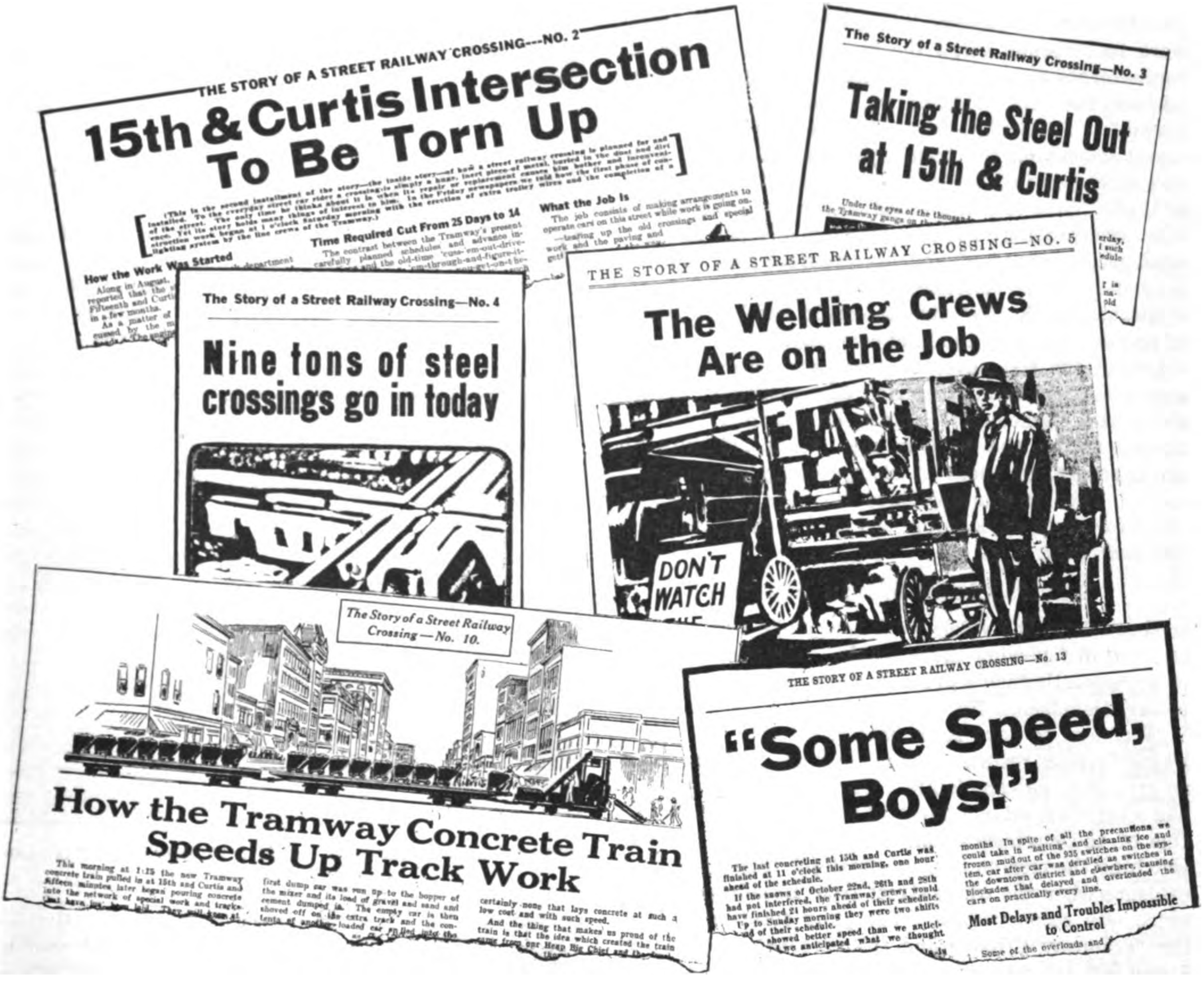
The second advertisement told how the engineering



THE CONSTRUCTION WORK THAT WAS ADVERTISED—IN PROGRESS AND COMPLETED department had planned to handle the work, how special schemes had been devised to cut the installation time from twenty-five to fourteen days, how the planning bureau had prearranged the arrival of materials so that it would not be necessary to store them on the street, how every foreman knew in advance what his part of the work was and when it must be done, and how the work of three gangs of sixteen men was to be co-ordinated. A personal touch was given by including the pictures and functions of the various tramway men connected with the work. At the bottom of the advertisement was published a tabulated schedule showing the time allotted for each operation during the first four days of the work. The schedule was said to be made for top speed.

The third advertisement described the use of the oxy-acetylene flame in cutting the old steel and the hard work of taking out the old concrete to get ready for the new construction. It also carried this significant paragraph:

"When you go past Fifteenth and Curtis to-day or to-morrow, stop and try to realize that every foot of the new special crossing costs the Tramway $100. The cost equals every cent of revenue from 400,000 of our passengers. Yet this is only a few hundred feet out of a total of 253 miles of track on the tramway system."


THE STORY OF A STREET RAILWAY CROSSING---NO. 2
15th & Curtis Intersection To Be Torn Up
How the Work Was Started
Time Required Cut From 25 Days to 14
What the Job Is
The Story of a Street Railway Crossing—No. 3
Taking the Steel Out at 15th & Curtis
The Story of a Street Railway Crossing—No. 4
Nine tons of steel crossings go in today
THE STORY OF A STREET RAILWAY CROSSING—NO. 5
The Welding Crews Are on the Job
DON'T WATCH
The Story of a Street Railway Crossing—No. 10.
How the Tramway Concrete Train Speeds Up Track Work
THE STORY OF A STREET RAILWAY CROSSING—No. 13
"Some Speed, Boys!"
Most Delays and Troubles Impossible to Control

HOW THE ADVERTISEMENTS KEPT THE PUBLIC INTERESTED IN THE COURSE OF CONSTRUCTION

In the fourth advertisement there was published a photograph of the mass of steel required in a special-work crossing. The following paragraph is quoted to show how interest was aroused in the details of the work as it progressed:

"Few people realize how much construction there is under the surface of the street. We are going down 2 ft.! The crushed rock ballast forms the bed on which we are laying not rails, but steel foundations for the rails. There will be no wooden ties used on this job. Nothing but steel and concrete—no wood, no spikes and only a few bolts. To-morrow we'll show you how the entire intersection is electrically welded together into one piece."

The fifth advertisement pictured the electric welder on the job, with an insert photograph of the arc-welding foreman. A prominent feature of this illustration was a "Don't Watch the Flame" sign in the foreground, a matter which the company wished to emphasize. The text discussed briefly the results accomplished with the electric welder, and it explained why only one track at a time was pulled up, in order that the crane car might be used without tying up one of the temporary tracks at the side of the street. A paragraph pointing out the advanced cost and time-saving methods in use follows:

"The Fifteenth and Curtis work shows probably the most efficient use of mechanical appliances that Denver will have an opportunity to see for a long time. A few years ago most of these jobs were done by slow hand methods, but the tramway's engineering department now uses such improved machinery as compressed-air tie tampers, concrete-cutting machines, track grinders, electric-arc welders, electric cranes, gas appliances for cutting steel rails and a hundred other smaller time-savers and expense-reducers. And soon you will have an opportunity to see the masterpiece of which the engineering department is so very proud—the tramway's new concrete train."

The next advertisement was historical in nature, dealing with the several layers of earlier construction work to be found below the crossing. Subsequent advertisements covered various phases of the work, bringing out how the workmen were keeping ahead of the schedule. Particular emphasis was laid in the tenth advertisement on the tramway's concrete train, which was described in Electric Railway Journal for Oct. 6, 1917. This, it was pointed out, formed the basis of what was probably the fastest, most efficient and most economical method of pouring concrete that had ever been devised for electric railway work. Some pride was taken in the fact that the train had been thought of and developed by the local company.

One of the last advertisements pointed out that the concreting had been completed that morning one hour ahead of the schedule. Some space was then devoted to complimenting the various men connected with the work, several of those in charge being mentioned by name. Then it was explained why the concrete must "set" for seven days before any cars could operate over the new track.

Results Obtained From Publicity

Throughout the whole work the public was much interested in following the schedule. The general results of the advertisements are best summed up in the words of Mr. Davidson. He says:

"We seem to have accomplished those of our objects which furnish results in tangible form. We have had no criticism, no complaints. On the contrary, we have had a large crowd of interested watchers day and night. One of the engineers said that more people had been watching the men on this one small job than had been in evidence when the whole street from Broadway to Lawrence was reconstructed. The gang foremen called it the 'Tramway Circus,' and the personal touch we injected into the advertising seems to have interested our own men in their own work more than ever before."

Railway Returns for 1916

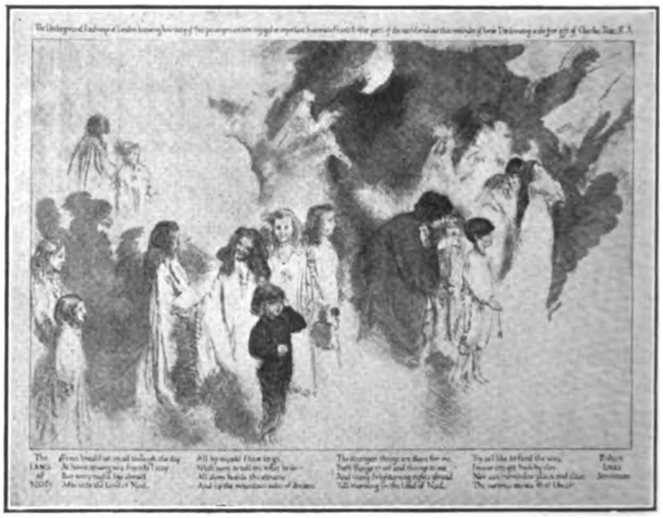
The Bureau of Railway Economics, Washington, D. C., has just issued its third annual summary of steam railroad returns as compiled from reports to the Interstate Commerce Commission. The compilation is for the year ended Dec. 31, 1916, and is confined to carriers with annual operating revenues in excess of $1,000,000. This class includes approximately 89 per cent of the entire mileage of the country and 97 per cent of the operating revenues. No account is taken of intercorporate duplications, but it is believed that the gross figures are of sufficient value to warrant such a preliminary tabulation.

The railway operating revenues for the whole United States amounted in 1916 to $3,592,591,023, an increase of $530,969,372. Railway operating expenses at $2,354,548,724 showed an increase of $301,183,800, and accrued taxes at $156,875,396, an increase of $19,476,743. The gross income totaled $1,353,454,172, a gain of $251,088,394, but an increase in deductions from income reduced the gain in net income, at $645,529,205, to $189,143,052. The net income was disposed of as follows: Dividend appropriations, $187,884,557, an increase of $11,284,757; income appropriated for investment in physical property, $62,507,009, an increase of $30,764,805; other income appropriations, $35,122,052, an increase of $22,217,218; balance to credit of profit and loss, $360,015,587, an increase of $124,876,272.

Art Traffic Posters

London Underground Railways Reproduce the Work of Famous Modern Artists

The character of traffic posters used by the Underground Electric Railways Company, Ltd., of London, has always been of the highest grade. Recently a new series has been issued for use at the entrances to its underground stations representing the gifts of a number of the most prominent artists in the British Empire. The subjects selected are peaceful scenes, usually to illustrate some choice bit of poetry. Thus, the one reproduced illustrates and gives the words of Robert Louis Stevenson's "The Land of Nod." The only reference to the company and to the war is in the line at the top, which reads:



ONE OF THE NEW SERIES OF TRAFFIC POSTERS OF THE LONDON UNDERGROUND RAILWAYS

> The Underground Railways of London, knowing how many of their passengers are now engaged on important business in France and other parts of the world, send out this reminder of home. The drawing is the free gift of Charles Sims, R. A.

Other recent posters illustrate A. L. Salmon's "At Dawn and Dark"; Thomas Campbell's "Song to the Evening Star," and Samuel Rogers' "A Wish."

The original size of the drawings on the posters is 20 in. x 30 in. The posters are beautifully reproduced in colors which unfortunately are lost in the process of reproduction.

How the War Tax Is Collected

Several Schemes Have Been Worked Out by the Electric Railways for Checking the Collection of the Tax Paid on Cash Fares

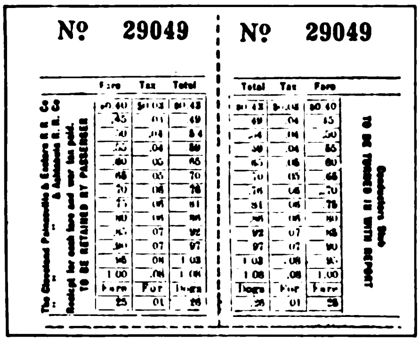
THE collection of the special war taxes required of the railways by the Oct. 3, 1917, law has necessitated the planning of no particular arrangements, except perhaps for that portion of the 8 per cent passenger fare tax which it has been necessary for the conductors to obtain on cash fares paid on the car. The collection of the tax on tickets purchased from station agents, and likewise that on special cars, on milk and cream shipments and on extra baggage and commutation fares, has for the most part been simple, since these collections have been made by the station agents, where definite records are obtainable for each transaction. Most companies have provided the conductors with some form of tabulation showing the amount of tax which should be collected for each fare amount so that they would be relieved of the necessity of computing 8 per cent of the fare each time. The conductors have also been assisted by various publicity matter informing the riding public of its obligations. The schemes of reporting the conductors' tax collections and of providing a check on these for the auditing department are quite varied, as is evidenced by a canvass of the practices on some twenty roads. Some of these plans are given herewith:

The Cleveland, Painesville & Eastern Railroad, Willoughby, Ohio, follows the practice of having the conductor record cash fares on the Ohmer register and punch a small duplex receipt, Fig. 1, one-half of which is given to the passenger as a receipt for his tax payment and the other half is turned in with the conductor's report to the auditor. The conductor has simply to punch this receipt once to indicate both the fare and the tax paid.

The Chicago, North Shore & Milwaukee Railroad, Chicago, Ill., issues a duplicate cash fare receipt which is punched so that the amount includes the rate of fare plus the war tax. The portion of the receipt which is given to the passenger reads that the receipt includes the 8 per cent war tax.

On the Chicago, South Bend & Northern Indiana Railway, South Bend, Ind., the conductors ring up on the Ohmer register the amount of the cash fare plus the tax. At the same time that this is done, a tally mark is placed on a card supplied to each conductor, opposite the corresponding rate of fare printed on the card. One of these tally cards is turned in with each trip sheet, thus forming the conductor's record and the auditor's check on the amount due the government. No receipt is given to the passenger for either the cash fare or the tax payment. These tally cards are made up in pads of fifty, measuring 3½ in. wide by 5½ in. long and are easily carried by the conductors. A sample is shown in Fig. 2.

The Ohio Electric Railway, Springfield, Ohio, records the cash fare collections on Ohmer registers and lists the tax collections as individual items on the form, Fig. 3, supplied to the conductors. The cash collections recorded in this manner can be partially checked against


Nº 29049 Nº 29049

The Cleveland Painesville & Eastern R. R. & Ashtabula R. R.

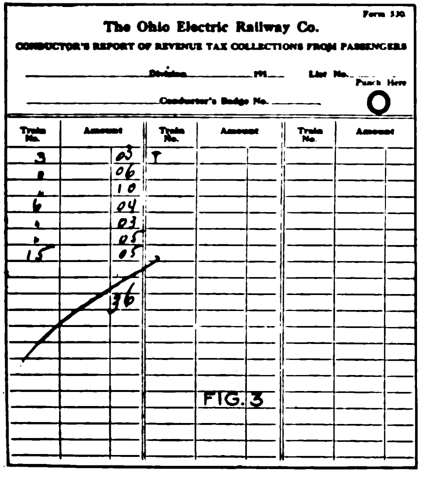
Receipt for cash fare and war tax paid. TO BE RETAINED BY PASSENGER

Fare	Tax	Total
$0.40	$0.03	$0.43
.45	.04	.49
.50	.04	.54
.55	.04	.59
.60	.05	.65
.65	.05	.70
.70	.06	.76
.75	.06	.81
.80	.06	.86
.85	.07	.92
.90	.07	.97
.95	.08	1.03
1.00	.08	1.08
Fare	For	Dogs
25	01	26

Total	Tax	Fare
$0.43	$0.03	$0.40
.49	.04	.45
.54	.04	.50
.59	.04	.55
.65	.05	.60
.70	.05	.65
.76	.06	.70
.81	.06	.75
.86	.06	.80
.92	.07	.85
.97	.07	.90
1.03	.08	.95
1.08	.08	1.00
Dogs	For	Fare
.26	01	25

Conductors Stub TO BE TURNED IN WITH REPORT

FIG. 1


Form 330

The Ohio Electric Railway Co.

CONDUCTOR'S REPORT OF REVENUE TAX COLLECTIONS FROM PASSENGERS

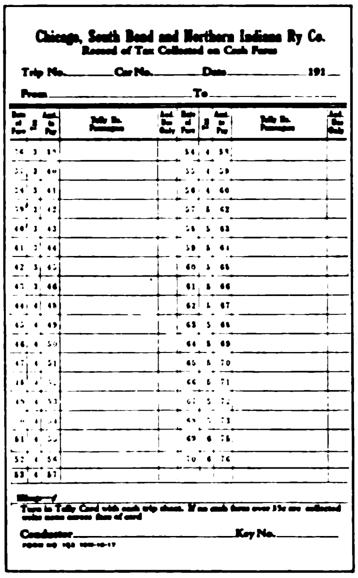
Division 191 List No.

Punch Here

Conductor's Badge No.

Train No.	Amount	Train No.	Amount	Train No.	Amount
3	03				
"	06				
"	10				
6	04				
"	03				
"	05				
15	05				
	36				

FIG. 3


Chicago, South Bend and Northern Indiana Ry Co.
Record of Tax Collected on Cash Fares

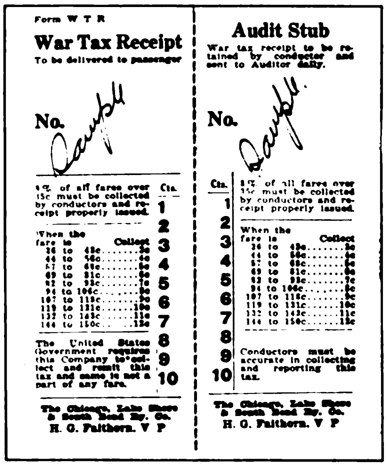
Trip No. Car No. Date 191

From To

Turn in Tally Card with each trip sheet. If no cash fares over 35c are collected write name across face of card

Conductor Key No.

FIG. 2


Form W T R

War Tax Receipt
To be delivered to passenger

No. Sample

8% of all fares over 35c must be collected by conductors and receipt properly issued.

When the fare is	Collect
36 to 43c	3c
44 to 56c	4c
57 to 68c	5c
69 to 81c	6c
82 to 93c	7c
94 to 106c	8c
107 to 118c	9c
119 to 131c	10c
132 to 143c	11c
144 to 150c	12c

Cts. 1 2 3 4 5 6 7 8 9 10

The United States Government requires this Company to collect and remit this tax and same is not a part of any fare.

The Chicago, Lake Shore & South Bend Ry. Co.
H. G. Faithorn. V P

Audit Stub
War tax receipt to be retained by conductor and sent to Auditor daily.

No. Sample.

Cts. 1 2 3 4 5 6 7 8 9 10

8% of all fares over 35c must be collected by conductors and receipt properly issued.

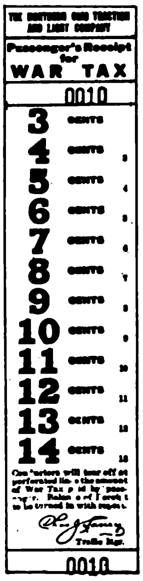
When the fare is	Collect
36 to 43c	3c
44 to 56c	4c
57 to 68c	5c
69 to 81c	6c
82 to 93c	7c
94 to 106c	8c
107 to 118c	9c
119 to 131c	10c
132 to 143c	11c
144 to 150c	12c

Conductors must be accurate in collecting and reporting this tax.

The Chicago, Lake Shore & South Bend Ry. Co.
H. G. Faithorn. V P

FIG 5

VARIOUS WAR TAX RECEIPTS FOR PASSENGER FARES


THE NORTHERN OHIO TRACTION AND LIGHT COMPANY

Passenger's Receipt for WAR TAX

0010

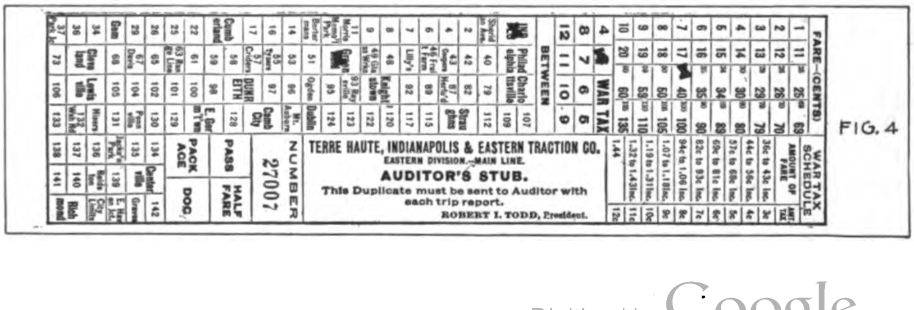
3 CENTS
4 CENTS
5 CENTS
6 CENTS
7 CENTS
8 CENTS
9 CENTS
10 CENTS
11 CENTS
12 CENTS
13 CENTS
14 CENTS

Conductors will tear off at perforated line the amount of War Tax paid by passenger. Balance of ticket to be turned in with report.

Traffic Mgr.

0010

FIG 6


TERRE HAUTE, INDIANAPOLIS & EASTERN TRACTION CO.
EASTERN DIVISION.—MAIN LINE.
AUDITOR'S STUB.
This Duplicate must be sent to Auditor with each trip report.
ROBERT I. TODD, President.

WAR TAX SCHEDULE

FARE—(CENTS)

BETWEEN

WAR TAX

PASS

HALF FARE

PACKAGE

DOG

NUMBER 27007

FIG. 4

the register reading sheets, although it is not possible to verify all of them in this manner. No receipt for the collections is given to passengers.

On the Detroit (Mich.) United Railway cash fare collections made by conductors are receipted for with duplex tickets, indicating the amount of fare and the stations between which it is paid. Two forms of agents' tickets are in use, one of which shows the amount of fare paid and the other does not. Neither the agent nor the conductor includes the amount of the tax in punching the fare on these tickets, but the agent is required to indicate the tax paid either in pencil or ink on the agent's stub sent to the auditor, while the conductor makes his indication by a punch mark in numerals which appear on the end margin of the receipt and formerly were used to indicate the train number. The auditor of passenger receipts checks the conductor's returns by examining all cash fare receipts over 35 cents in value to make sure that the tax has been collected and accounted for. No receipts are given to passengers for the tax payments.

The duplex cash fare receipt used on the Illinois Traction System does not include the tax payment in its printed form. However, the conductor is required to write the amount of the war tax collected on the portion of the receipt issued to the passenger. The auditor checks each receipt for an amount subject to tax to see that the proper amount of tax has been collected and remitted. The trainmen's report shows a separate item for the amount of tax collected. Cases where a conductor has not collected enough tax are rare, but in such cases the deficit is made up by the company and the correct figure reported to the government. If a conductor collects 1 or 2 cents more than he should, the full amount is allowed to the government as collected.

The Terre Haute, Indianapolis & Eastern Traction Company, Indianapolis, Ind., is making use of duplex cash fare receipts which are printed to include the war tax as well as the railway fare (Fig. 4). The conductors punch the towns between which the fare is paid, the amount of the fare and the amount of the war tax. With the use of these receipts it is, of course, a simple matter for the auditor to go through the receipts, summing up the individual tax collections and checking the total with the conductor's turn-in. On one division of this company the use of the Bonham fare recorder provides an accurate and simple means of checking the fare and tax returns, as described on page 1044 of the Dec. 8, 1917, issue of this paper.

The Chicago, Lake Shore & South Bend Railway, Michigan City, Ind., makes use of a special duplex war tax receipt and audit stub in addition to the cash fare receipt. On each half of the war tax receipt (Fig. 5) is printed the tax schedule, with a column of figures along the perforated edge at which the receipt is folded. A single punch mark opposite the proper figure indicates to both the passenger and the auditor the amount of tax collected.

The Fort Wayne & Northern Indiana Traction Company is making use of the MacDonald cash fare system, the conductors tearing off the receipt so that the amount indicated on the receipt includes the cash fare and the tax. The conductors make a separate notation of the tax collections, and these are checked against the receipt stubs turned in.

The Northern Ohio Traction & Light Company is ringing up the cash fare on the Ohmer register and then tearing off a slip with perforations between figures in a vertical column (Fig. 6) at the proper place so that the lowest figure on the portion handed the passenger indicates the amount of tax he has paid. The portion torn off at the bottom is turned in to the auditing department, where the small figures at the right are summed up to get the total tax and to check against the conductor's turn-in. No punching is required and the proper tearing of the slips has been found to require very little time. A serial number is printed on the slips for checking purposes.

A most interesting method of collecting the tax is that adopted by the Texas Electric Railway, Dallas, Tex. On Nov. 1, 1917, this company published a new tariff raising its passenger rates from 2½ cents to 2¾ cents per mile. From this additional revenue it will pay the 8 per cent war tax. This blanket scheme of collecting the war tax will likely exceed the 8 per cent requirement, but it was explained in the publication of the tariff that the additional revenue received from this source would be applied on the increased expense of operation.

None of the companies canvassed reported any particular difficulty from passengers attempting to split their fares into amounts below 36 cents in order to avoid paying the war tax. The conductors in general have been patriotic in watching for this sort of thing and have been instructed to collect the full tax from the beginning of the ride to the point of destination upon the collection of the last installment of fare, regardless of how the fare was paid. Where payment of the tax has been refused, the conductors have been directed to explain that it was a government matter and to request the name and address of the individual so that report could be made to federal authorities. However, extremely few cases of this kind have been reported.

Trial Trips of Giant Electric Locomotives

The electrification of the Silesian mountain railways has been practically completed and numerous trial trips have been made with the new electric locomotives, which are reported to exceed in size and pulling power anything tried in Germany so far. Built by Bergmann (Berlin), they take their current from overhead trolley lines, supplied by the hydraulic power station near the Mittelstein. Eight driving wheels and six smaller running wheels carry the load. These locomotives are used to draw express trains, weighing 400 metric tons, exclusive of the two large steam locomotives which are pulled along, over a rise of 1 in 50.

The "Journal" as a Holiday Gift

For the convenience of managers of electric railways and others who desire to use the ELECTRIC RAILWAY JOURNAL as a holiday gift, the publishers have prepared an appropriate card to be mailed to the recipient with the Christmas number. This number will be complimentary, the subscription being entered as paid up to Jan. 1, 1919.

Denver Tramway Adopts Novel Transfer

The New Transfer Is Specific in Its Conditions of Usage, Yet Simple to Punch and to Read—The Reverse Side Is Used for the Information of the Passenger

By HARRY C. KENDALL
Efficiency and Traffic Engineer Denver (Col.) Tramway

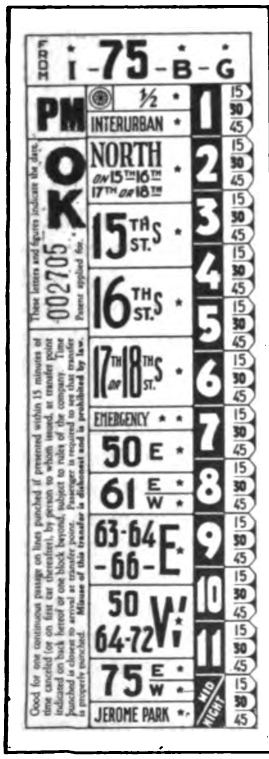
BEFORE the advent of the pay-as-you-enter system of fare collection the transfer problem was difficult enough, with the arguments that arose as to whether the time, date, line, etc., were correctly punched, and the misunderstandings as to what lines the transfer entitled the passenger to ride on and at what points it might be used. Too often pressure from some source would result in a special rule which made a transfer punched to line *A* good on line *B*, whereas a transfer punched for line *B* would not be good on line *A*. Such arbitrary and inconsistent rules, as well as the fact that transfers became too complicated to be quickly punched and inspected, naturally led to continual trouble.

Then came the pay-as-you-enter cars, and the grief was multiplied a hundredfold. Issuing conductors had no time to punch, nor receiving conductors to inspect, the month, day, a. m. or p. m. hour, minute and line. Various expedients were resorted to to lighten the work required of conductors. Several of the larger companies adopted the dated transfer, on which the date in full is printed conspicuously on the face of the transfer. This dated transfer has the objection of high cost, partly on account of the direct extra cost of printing, but more particularly because the wastage is necessarily very great, since the requirements cannot be accurately forecasted.

To reduce this waste several companies print the day of the month on the transfer in large letters, and punch the month in the office or allow the conductor to punch it. This method of indicating the date reduces the waste somewhat as compared with the full dated transfer, but it is far inferior, because conductors will, as a rule, note only the day and not bother to see that the proper month is punched.

The endeavor to simplify the transfer has led also to the adoption, by some companies, of what is often incorrectly called the "universal transfer," by which is usually meant a "direction transfer," *i. e.*, one on which the destination is indicated by punching the direction only. The transfer itself is certainly simplified by this expedient, but the transfer rules are made very complex because it is impossible to adhere rigidly to the direction idea without unreasonably curtailing the transfer privilege. The use of such transfers simply "passes the buck" to the receiving conductor, for he is then expected to remember a lot of rules and to know instantly when such a transfer is presented to him whether it should be accepted on his line.

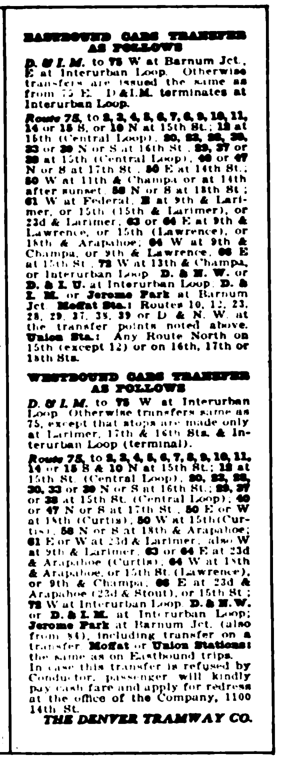
The direction transfer, I believe, is based on wrong


I
75
B
G
PM
½
INTERURBAN
NORTH
ON 15TH 16TH
17TH OR 18TH
15TH ST.S
16TH ST.S
17TH OR 18TH ST.S
EMERGENCY
50 E
61 E W
63-64-66-E
50 64-72 W
75 E W
JEROME PARK
O
K
1
2
3
4
5
6
7
8
9
10
11
MID NIGHT
15
30
45

These letters and figures indicate the date.
002705
Patent applied for.

Good for one continuous passage on lines punched if presented within 15 minutes of time canceled (or on first car thereafter), by person to whom issued, at transfer point indicated on back hereof or one block beyond, subject to rules of the company. Time punched is closest to arrival at transfer point. Passenger is required to see that transfer is properly punched. Misuse of this transfer is dishonest and is prohibited by law.

Fig. 1



EASTBOUND CARS TRANSFER AS FOLLOWS

D. & I. M. to **75** W at Barnum Jct., E at Interurban Loop. Otherwise transfers are issued the same as from 75 E. **D. & I. M.** terminates at Interurban Loop.

Route 75, to **2, 3, 4, 5, 6, 7, 8, 9, 10, 11, 14** or **15** S, or **10** N at 15th St.; **12** at 16th (Central Loop). **20, 23, 28, 30, 33** or **39** N or S at 16th St.; **29, 37** or **38** at 15th (Central Loop). **40** or **47** N or S at 17th St.; **50** E at 14th St.; **50** W at 11th & Champa or at 14th after sunset. **58** N or S at 18th St.; **61** W at Federal, **E** at 9th & Larimer, or 15th (15th & Larimer), or 23d & Larimer; **63** or **64** E at 9th & Lawrence, or 15th (Lawrence), or 18th & Arapahoe; **64** W at 9th & Champa, or 9th & Lawrence. **66** E at 15th St.; **72** W at 13th & Champa, or Interurban Loop. **D. & N. W.** or **D. & I. U.** at Interurban Loop; **D. & I. M.** or **Jerome Park** at Barnum Jct. **Moffat Sta.:** Routes 10, 12, 23, 28, 29, 37, 38, 39 or D. & N. W. at the transfer points noted above. **Union Sta.:** Any Route North on 15th (except 12) or on 16th, 17th or 18th Sts.

WESTBOUND CARS TRANSFER AS FOLLOWS

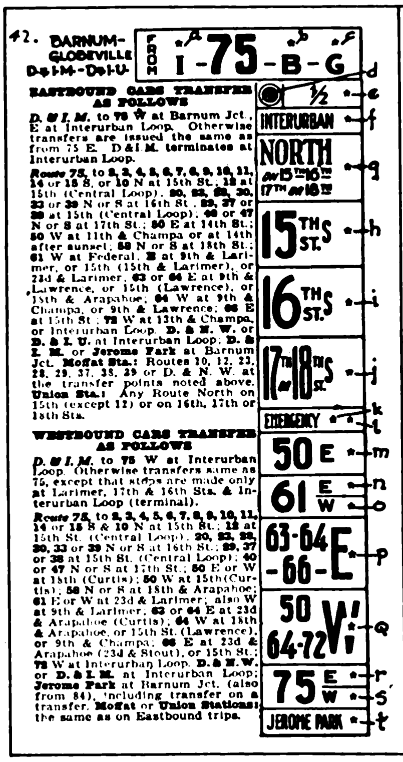
D. & I. M. to **75** W at Interurban Loop. Otherwise transfers same as 75, except that stops are made only at Larimer, 17th & 16th Sts. & Interurban Loop (terminal).

Route 75, to **2, 3, 4, 5, 6, 7, 8, 9, 10, 11, 14** or **15** S & **10** N at 15th St.; **12** at 15th St. (Central Loop). **20, 23, 28, 30, 33** or **39** N or S at 16th St.; **29, 37** or **38** at 15th St. (Central Loop); **40** or **47** N or S at 17th St., **50** E or W at 18th (Curtis); **50** W at 15th (Curtis). **58** N or S at 18th & Arapahoe; **61** E or W at 23d & Larimer; also W at 9th & Larimer; **63** or **64** E at 23d & Arapahoe (Curtis); **64** W at 18th & Arapahoe, or 15th St. (Lawrence), or 9th & Champa; **66** E at 23d & Arapahoe (23d & Stout), or 15th St.; **72** W at Interurban Loop. **D. & N. W.** or **D. & I. M.** at Interurban Loop; **Jerome Park** at Barnum Jct. (also from 84), including transfer on a transfer. **Moffat** or **Union Stations:** the same as on Eastbound trips.

In case this transfer is refused by Conductor, passenger will kindly pay cash fare and apply for redress at the office of the Company, 1100 14th St.

THE DENVER TRAMWAY CO.

Fig. 2


42.
BARNUM-GLOBEVILLE
D&I-M-D&I-U
FROM
I
75
B
G
½
INTERURBAN
NORTH
ON 15TH 16TH
17TH OR 18TH
15TH ST.S
16TH ST.S
17TH OR 18TH ST.S
EMERGENCY
50 E
61 E W
63-64-66-E
50 64-72 W
75 E W
JEROME PARK
a
b
c
d
e
f
g
h
i
j
k
l
m
n
o
p
q
r
s
t

EASTBOUND CARS TRANSFER AS FOLLOWS

D. & I. M. to **75** W at Barnum Jct., E at Interurban Loop. Otherwise transfers are issued the same as from 75 E. **D. & I. M.** terminates at Interurban Loop.

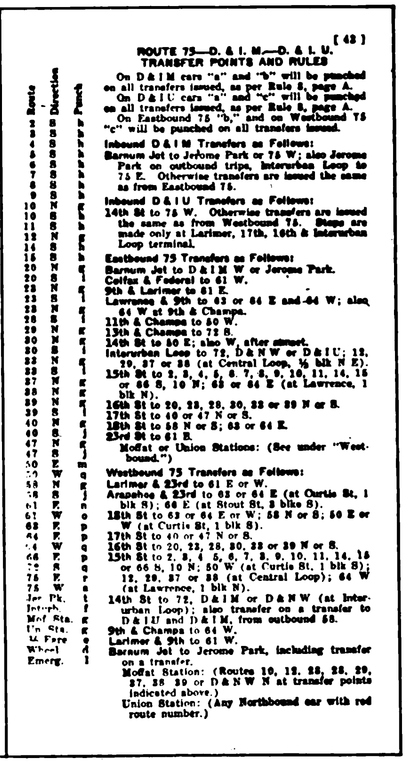
Route 75, to **2, 3, 4, 5, 6, 7, 8, 9, 10, 11, 14** or **15** S, or **10** N at 15th St.; **12** at 16th (Central Loop). **20, 23, 28, 30, 33** or **39** N or S at 16th St.; **29, 37** or **38** at 15th (Central Loop). **40** or **47** N or S at 17th St.; **50** E at 14th St.; **50** W at 11th & Champa or at 14th after sunset. **58** N or S at 18th St.; **61** W at Federal, **E** at 9th & Larimer, or 15th (15th & Larimer), or 23d & Larimer; **63** or **64** E at 9th & Lawrence, or 15th (Lawrence), or 18th & Arapahoe; **64** W at 9th & Champa, or 9th & Lawrence. **66** E at 15th St.; **72** W at 13th & Champa, or Interurban Loop. **D. & N. W.** or **D. & I. U.** at Interurban Loop; **D. & I. M.** or **Jerome Park** at Barnum Jct. **Moffat Sta.:** Routes 10, 12, 23, 28, 29, 37, 38, 39 or D. & N. W. at the transfer points noted above. **Union Sta.:** Any Route North on 15th (except 12) or on 16th, 17th or 18th Sts.

WESTBOUND CARS TRANSFER AS FOLLOWS

D. & I. M. to **75** W at Interurban Loop. Otherwise transfers same as 75, except that stops are made only at Larimer, 17th & 16th Sts. & Interurban Loop (terminal).

Route 75, to **2, 3, 4, 5, 6, 7, 8, 9, 10, 11, 14** or **15** S & **10** N at 15th St.; **12** at 15th St. (Central Loop). **20, 23, 28, 30, 33** or **39** N or S at 16th St.; **29, 37** or **38** at 15th St. (Central Loop); **40** or **47** N or S at 17th St.; **50** E or W at 18th (Curtis); **50** W at 15th (Curtis). **58** N or S at 18th & Arapahoe; **61** E or W at 23d & Larimer; also W at 9th & Larimer; **63** or **64** E at 23d & Arapahoe (Curtis); **64** W at 18th & Arapahoe, or 15th St. (Lawrence), or 9th & Champa; **66** E at 23d & Arapahoe (23d & Stout), or 15th St.; **72** W at Interurban Loop. **D. & N. W.** or **D. & I. M.** at Interurban Loop; **Jerome Park** at Barnum Jct. (also from 84), including transfer on a transfer. **Moffat** or **Union Stations:** the same as on Eastbound trips.

Fig. 3



[42]

ROUTE 75—D. & I. M.—D. & I. U.
TRANSFER POINTS AND RULES

Route	Direction	Punch
2	S	h
3	S	h
4	S	h
5	S	h
6	S	h
7	S	h
8	S	h
9	S	h
10	N	g
10	S	h
11	S	h
12	N	g
14	S	h
15	S	h
20	N	g
20	S	i
23	N	g
23	S	i
28	N	g
28	S	i
29	N	k
30	N	g
30	S	i
33	N	g
33	S	i
37	N	k
38	N	k
39	N	g
39	S	i
40	N	g
40	S	j
47	N	g
47	S	j
50	E	m
50	W	q
58	N	g
58	S	j
61	E	n
61	W	o
63	E	p
64	E	p
64	W	q
66	E	p
72	S	q
75	E	r
75	W	s
Jer. Pk.		t
Interb.		f
Mof. Sta.		g
Un. Sta.		g
½ Fare		e
Wheel		d
Emerg.		l

On D & I M cars "a" and "b" will be punched on all transfers issued, as per Rule 8, page A.

On D & I U cars "a" and "c" will be punched on all transfers issued, as per Rule 8, page A.

On Eastbound 75 "b," and on Westbound 75 "c" will be punched on all transfers issued.

Inbound D & I M Transfers as Follows:
Barnum Jct to Jerome Park or 75 W; also Jerome Park on outbound trips, Interurban Loop to 75 E. Otherwise transfers are issued the same as from Eastbound 75.

Inbound D & I U Transfers as Follows:
14th St to 75 W. Otherwise transfers are issued the same as from Westbound 75. Stops are made only at Larimer, 17th, 16th & Interurban Loop terminal.

Eastbound 75 Transfers as Follows:
Barnum Jct to D & I M W or Jerome Park.
Colfax & Federal to 61 W.
9th & Larimer to 61 E.
Lawrence & 9th to 63 or 64 E and 64 W; also 64 W at 9th & Champa.
11th & Champa to 50 W.
13th & Champa to 72 S.
14th St to 50 E; also W, after sunset.
Interurban Loop to 72, D & N W or D & I U; 12, 29, 37 or 38 (at Central Loop, ½ blk N E).
15th St to 2, 3, 4, 5, 6, 7, 8, 9, 10, 11, 14, 15 or 66 S, 10 N; 63 or 64 E (at Lawrence, 1 blk N).
16th St to 20, 23, 28, 30, 33 or 39 N or S.
17th St to 40 or 47 N or S.
18th St to 58 N or S; 63 or 64 E.
23rd St to 61 E.
Moffat or Union Stations: (See under "Westbound.")

Westbound 75 Transfers as Follows:
Larimer & 23rd to 61 E or W.
Arapahoe & 23rd to 63 or 64 E (at Curtis St, 1 blk S); 66 E (at Stout St, 3 blks S).
18th St to 63 or 64 E or W; 58 N or S; 50 E or W (at Curtis St, 1 blk S).
17th St to 40 or 47 N or S.
16th St to 20, 23, 28, 30, 33 or 39 N or S.
15th St to 2, 3, 4, 5, 6, 7, 8, 9, 10, 11, 14, 15 or 66 S, 10 N; 50 W (at Curtis St, 1 blk S); 12, 29, 37 or 38 (at Central Loop); 64 W (at Lawrence, 1 blk N).
14th St to 72, D & I M or D & N W (at Interurban Loop); also transfer on a transfer to D & I U and D & I M, from outbound 58.
9th & Champa to 64 W.
Larimer & 9th to 61 W.
Barnum Jct to Jerome Park, including transfer on a transfer.
Moffat Station: (Routes 10, 12, 23, 28, 29, 37, 38, 39 or D & N W N at transfer points indicated above.)
Union Station: (Any Northbound car with red route number.)

Fig. 4

FIGS. 1 AND 2—FRONT AND BACK OF NEW DENVER TRANSFER. ONE OF THE NOVEL FEATURES IS THAT THE DATE IS INDICATED BY LETTERS. FIGS. 3 AND 4—PAGES FROM THE RULE BOOK WHICH TELL HOW THE TRANSFERS ARE USED principles; first, because it opens up wide avenues for abuse in trading of transfers; second, because it either curtails the transfer privilege or else permits looping back; third, because the passenger, when he gets the transfer, does not know just how he is permitted to use it, and fourth, because the receiving conductor has all he can do to inspect transfers without cudgeling his brain to remember whether a transfer from such and such a line punched "East" is good on his car at the particular point presented. In my opinion, a transfer should show plainly the exact conditions of its use, on what lines, in what direction, at what place and at what time it is valid. It should be easy and quick to punch and still easier to inspect.

These are the points we have kept in mind in designing our new transfer. On this work we have endeavoreed to focus the thought of everyone in the company who is directly concerned. Not only officials, but several of our trainmen, have contributed, some of the most valuable suggestions coming from F. W. Werner, who for many years punched and received transfers himself. The result, we modestly believe, is the best transfer in the world.

FEATURES OF NEW DENVER TRANSFER

Separate pads of transfers are printed for a. m. and p. m. use. Fig. 1 shows the face of one of the p. m. transfers. Fig. 2 shows the back of this transfer. There are thirteen different transfers for our thirty-six lines. These are arranged in seven groups, and a distinct color is used for each group. This color scheme aids the receiving conductor in quickly spotting transfers presented at the wrong transfer point. The particular transfer reproduced is used on the Barnum-Globeville line, a through route, which carries route number 75; and also on two interurban lines, the Denver & Intermountain Railroad, running from the center of the city out over the Barnum line, and the Denver & Interurban Railroad, running out over the Globeville line.

Figs. 3 and 4 are reproductions of pages 42 and 43 of our new book of transfer rules. These two pages give detailed instructions concerning the transfer illustrated herewith. It will be noted that the left-hand page (42) is a reproduction of the back of the transfer and of those parts of the front which indicate the issuing line and the destination. On the right-hand page the triple column at the left refers to the front of the transfer shown on the opposite page and tells which space is to be punched when a transfer is issued to any route and in any direction. These directions are almost superfluous, except for the instruction of green men, as the face of the transfer is self-explanatory to anyone familiar with the routings of the various lines.

Referring to Fig. 1 the line from which the transfer is issued is indicated by punching out the star above I, B or G at the top of the transfer, as described at the top of page 43 of the rule book. At the moment of issuing the transfer only two punch marks need be made—the destination and the time.

The most novel feature of the new transfer is the method of indicating the date by an arbitrary combination of two letters. This date symbol is more easily discerned by the receiving conductor than even the full printed date and has the great advantage of eliminating the wastage which is unavoidable with the dated transfer. Transfers are made up in pads of fifty, and all unused pads are returned to stock and used at some future date. The large number of combinations possible with the letters of the alphabet, using only two at a time, and the fact that the combinations are not known in advance, will deter dishonest passengers or conductors from keeping unused transfers with the intention of using them when the same combination appears again. The saving in wastage alone will amount to several cents on every thousand transfers.

The letter combination is obviously far superior to printing the day of the month in conspicuous type and punching the month, as practised by several companies, because with such transfers, as mentioned before, very little attention is paid to the month, and the dishonest person, knowing that exactly one month later transfers bearing the same number will be used again, might be tempted to save transfers for fraudulent use on that day.

As an additional safeguard against the transfers being saved by passengers, or held out by conductors for use on a later date, the transfers have printed beside the date combination and the serial number the words, "These figures and letters indicate the date." The auditing department will systematically check redeemed transfers by serial numbers to detect any fraudulent use, and as the conductors are aware of this, we anticipate no trouble whatever in this respect. Abuse naturally would be less than with any other dating scheme, except that of printing the full date on the transfer.

The time feature on the transfer is an original design which we believe is superior in ease of punching and inspection to anything heretofore used. It requires only one punch mark to indicate the hour and quarter hour, since the position of the punch mark on the hour figure designates the quarter hour period opposite. The transfer is compact, measuring only 2 in. x 6 in., and all punching is near the right-hand edge, thus expediting careful inspection. A black background is used for the hours on the p. m. transfer readily to distinguish it from the a. m. transfer. These figures on the p. m. transfer are made heavy because it is easier to see a punch mark in the white figure than on the black background. The letters a. m. or p. m. and the date combination are printed in red on the morning transfers and in black on the afternoon transfers further to distinguish between them. This involves no extra cost, as these letters are printed by the use of a separate roll on the press.

The arrangement of spaces for punching the destination is such that all punching may be done from the right-hand side of the transfer and, with few exceptions, before detaching it from the pad. The more important transfer routes are indicated by the wide spaces toward the upper end of the transfer, while the spaces which are rarely punched, or are punched only at the outer ends of the lines when the conductor has plenty of time, are located toward the perforated end of the transfer.

The question of looping back on a single fare was thoroughly investigated and the new transfers are designed to prevent this practice without unduly restricting the transfer privilege.

On the back of the transfer is complete information concerning transfer points. This is intended for the use of the passenger and accordingly is arranged numerically by route numbers. For example, if a passenger wishes to transfer to Route 58, he looks on the back of the transfer, finds 58 in its numerical order and reads "58 N. or S. at 18th St." As the geographical order of transfer points is more convenient for the instruction of new conductors, such an arrangement is provided in the instruction book on transfers. (See Fig. 3).

Saving $400,000 a Year on the Bay State

Mr. Goff Explains Measures of Economy, Such as Rerouting of Cars, Reduction of Stops, and Consolidation of Carhouses, Shop Facilities and Accounting Offices

PRESENT and proposed measures of economy looking toward an annual saving of $400,000 for the Bay State Street Railway, were outlined by Robert S. Goff, vice-president, at a recent hearing before the Massachusetts Public Service Commission on the company's application for a zone system of interurban fares. Mr. Goff said that about $175,000 has been saved by rerouting of cars and shortening of layovers, mainly on the northern lines, and that further changes on the system may be expected to realize $100,000 more in transportation cost economies.

The speeding up of cars, the discontinuance of duplicated service, and improved acceleration and braking under the direction of three representatives of the General Electric Company, have all been undertaken with success. Lynn, Salem, Lawrence, Lowell and Haverhill lines and through ones in their territory have been rerouted. In the whole Bay State territory 26 per cent of the white poles have been cut out, with some reduction in the number of car stops in actual service. The reduction in white poles has led to the rendering of better service and to the elimination of some of the setbacks necessary in the Boston district in order to maintain a reasonable headway under drawbridge and other handicaps. All new cars are now assigned by the time-table and statistics department, with resulting decreased investment in spare parts, standardization of maintenance and improvement of service.

The company, Mr. Goff stated, cannot buy any more one-man cars because of its lack of funds. Within a year the cost of such cars has risen from $4,000 to about $6,000. Studies are being made, under the direction of Vice-president R. B. Stearns, to reduce the weight and energy consumption of the one-man car rebuilt by the company, without affecting its safety or operating features adversely. The converted car weighs about 50 per cent more than the purchased unit, and its consumption of energy is disproportionately greater.

Mr. Goff also said that the company could not raise the $400,000 necessary to build large repair shops at Reading on the north of Boston and also at a point south of the city. Plans are afoot, however, to close eight or ten carhouses. It is estimated that at least $100,000 will be saved by the consolidation of carhouse and shop facilities. The saving comes in in superintendence and in standardizing the car, as well as in putting the maintenance on a car-mile basis where a certain man will have specialized work to perform, with mass repairs and the elimination of the production losses associated with small carhouses.

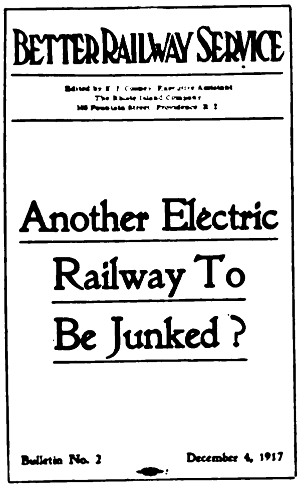
In the matter of accounting and general office work the company expects to effect a consolidation of accounting offices and establish one general office on either side of Boston during the present month, with a material reduction in expense. Changes have been made in outside superintendence which are expected to yield a saving of at least $10,000 a year and to improve the service by having men of better caliber in charge of operation in the larger cities.

Total present and prospective economies from all sources are estimated at $400,000 a year, based in large degree upon the findings set forth in the report of B. J. Arnold to the commission. Mr. Goff referred briefly to a report by John A. Beeler upon possible improvement of operation between Lynn and Boston. His main recommendation was that the Bay State company establish a terminal in Chelsea for all northern inward and outward lines, handling the business from Chelsea to Boston by three-car trains, if necessary, and perhaps building a subway or viaduct. The estimated cost of the Chelsea terminal was about $200,000.

Help Them to Live

A STARVING man does not want flowers for his funeral; he wants food. Post-mortem evidences of appreciation may be perfectly fitting, but they do not make up for prior neglect. These facts are being brought home to some communities that have allowed—or, worse yet, caused—their electric railway facilities to pass into the junkman's hands. When it has been too late, they have begun to realize the value of the local transportation service.

Instances of this sort, however, may be of use in inducing other communities not to be so foolish. That is the hope of E. J. Cooney, executive assistant Rhode Island Company, who is relating to the public in his bulletin, "Better Railway Service," the tale of two Massachusetts lines that have just been sold to wreckers. This, he remarks, is a rather ominous sign, and it foreshadows events of a similar nature that are bound to occur in other parts of New England in the near future unless relief is granted. May the public in New England and elsewhere learn the lesson in time!



BETTER RAILWAY SERVICE

Another Electric Railway To Be Junked?

Bulletin No. 2 December 4, 1917

RHODE ISLAND COMPANY BULLETIN DESIGNED TO EDUCATE PUBLIC

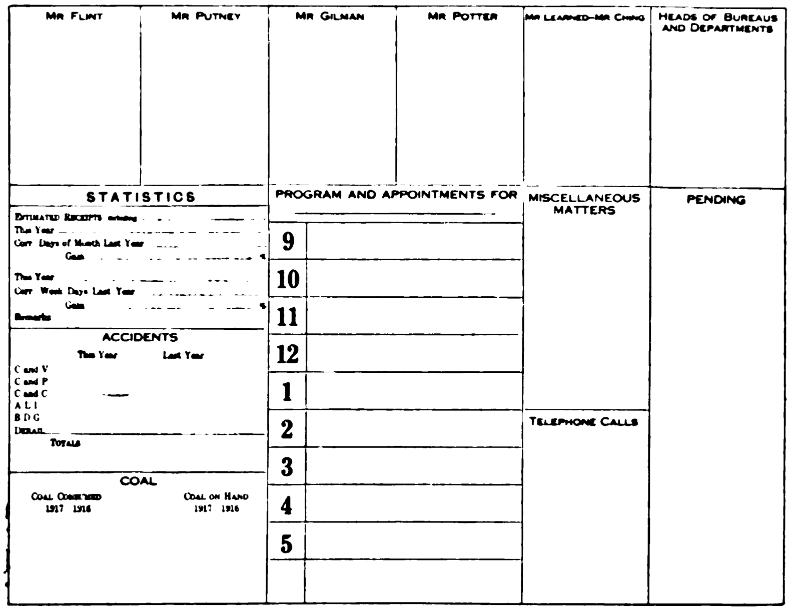
The British Columbia Electric Railway, Vancouver, has resumed its technical classes for the instruction of employees. The classes, as heretofore, are in charge of J. G. Lester.

Dispatching the Work of the Busy Executive

A Plan Which Is Operated Successfully in the Office of the President of the Boston Elevated Railway

THE duties of an executive officer on an electric railway property are so numerous and varied that some kind of system which can be operated by his assistants must be in use if his time is to be spent effectively and his energy conserved for the most important duties.

In this connection a representative of the ELECTRIC RAILWAY JOURNAL, in calling recently on Matthew C. Brush, president Boston Elevated Railway, was interested in a plan which Mr. Brush said is proving very effective for his purpose. Each morning his secretary fills in a form similar to that reproduced herewith and places it under a plate of glass at one end of a long table. Mr. Brush sits at the head of this table for conferences with callers, both individually and in groups. He then has directly before him in condensed form any of the data which are likely to be referred to in these conferences. When there is no definite appointment scheduled he takes up in order the items which happen to be pending so that there is very little time lost. The form as reproduced is printed on a sheet 18 in. x 22 in. in size. While in the experimental period it was blueprinted from a tracing.



MR FLINT

MR PUTNEY

MR GILMAN

MR POTTER

MR LEARNED—MR CHING

HEADS OF BUREAUS AND DEPARTMENTS

STATISTICS

Estimated Receipts including

This Year

Corr. Days of Month Last Year

Gain

This Year

Corr. Week Days Last Year

Gain

Remarks

ACCIDENTS

This Year Last Year

C and V

C and P

C and C

A L I

B D G

Derail.

Totals

COAL

Coal Consumed 1917 1916

Coal on Hand 1917 1916

PROGRAM AND APPOINTMENTS FOR

9

10

11

12

1

2

3

4

5

MISCELLANEOUS MATTERS

TELEPHONE CALLS

PENDING

APPOINTMENT AND CONDENSED RECORD FORM USED IN RAILWAY PRESIDENT'S OFFICE

In studying the blank form it will be noted that certain sections are assigned to individuals by name whereas only one section is allowed for bureaus and heads of departments. This arrangement was worked out experimentally to provide the greatest space where entries were most likely to be made. The men whose names appear in these spaces have general or special duties likely to require daily conferences with the president. The heads of nearly all the departments require definite appointments only occasionally, although they are expected to drop in on the president informally whenever they desire his advice or have anything of special interest to report.

An unusual feature of Mr. Brush's office routine is the presence of his secretary at all conferences held during the day or evening. The secretary is expected to correct him if he makes any errors in statement and to attend carefully to any discussion that may be going on. A condensed record of all interviews is maintained, furnishing a convenient diary for reference and supplementing the records furnished by the appointment sheets.

The whole organization of the Boston Elevated is somewhat unique in that here is no general manager, the heads of all departments reporting directly to the president. In each department there is an assistant who acts in place of his chief when necessary, being in such cases brought into direct contact with the president. Mr. Brush's idea is that this plan of organization brings him more closely into contact with the departments than would otherwise be possible, and also strengthens the bond between himself and his subordinates. Under this arrangement department heads probably have more than the usual autonomy, but they are kept in contact with the work of other departments through weekly conferences held around the president's table.

These conferences are the clearing house for all kinds of information regarding the property. For example, at a meeting held recently the topic was the new type of car of which 100 will soon be placed in operation. After inspection of a sample car the heads of the department were asked to comment upon the design from their respective standpoints. The brunt of the discussion was naturally carried by John Lindall, superintendent of rolling stock and shops, whose duty it was either to satisfy critics or to accept their suggestions. At this meeting the president also took occasion to give the Council, as this group is called, the latest accident statistics and to congratulate the departments upon the splendid record just made. The reasons for the reduction of accidents were analyzed and plans were laid for continuing the safety work.

While each electric railway must have its own way of conducting its affairs, depending largely on the preferences of the executive in charge, it is essential that the officials most closely associated with the public should have ample time for studying the big problems of the industry and for meeting the representative of the public. The plan described above appears to be effective for this purpose.

The Treasury Department has issued from Washington two bulletins describing the United States war-savings certificates and thrift stamps and telling how these may be secured for sale by those who desire to act as agents for the government. These bulletins are known as Treasury Department Circulars No. 94 and No. 95 (War-Savings Circulars No. 1 and No. 2). Agents of the first class may obtain, at the current price, certificates up to $1,000 from post-offices, banks and other agents. Agents of the second class—those holding more than $1,000 of certificates—may deposit collateral.

Meeting the Critical Coal Situation

Notes from Different Sources Reflecting the Effects of the Shortage and the Efforts Being Made to Meet It

[*The coal shortage has become so acute and such vigorous measures are being taken to overcome it that it has seemed desirable for the benefit of those who are following developments closely to assemble in one part of the paper some of the most important items of news which are pouring in from all parts of the country.*—EDS.]

New England Service Cut

Strenuous Measures Have Been Necessary in New England to Meet the Acute Coal Shortage in That District

AT ONE TIME this week it looked as if the existing coal shortage would compel the Massachusetts Northeastern properties, operating 200 miles of track in New Hampshire, Maine and Massachusetts, to suspend night service after 8 p. m. and make other radical curtailment in their service. President David A. Belden was able, however, late in the week to obtain some coal by government order from the Portsmouth Navy Yard, thus temporarily preventing the partial shutdown of service. The roads which would have been affected are the Massachusetts Northern, the Exeter, Hampton & Amesbury, the Dover, Somersworth & Rochester and the Portsmouth & York electric railways. Cuts were made, however, by the Bay State Street Railway and the Boston Elevated.

Wallace B. Donham, receiver for the Bay State Street Railway, and P. F. Sullivan, president, briefly discussed the coal situation in press interviews early in the week, and stated that entire stoppage of service would become necessary in the early future if coal could not be secured at the Quincy Point station. About 200 tons per day are burned in this plant, which operates nearly all of the Bay State company's service south of Boston. Important traffic to and from war service plants is served by the Quincy Point station. At present the Bay State company has made no plans to eliminate night service, but emergency schedules cutting down the car-mileage about 8 per cent went into effect Thursday morning. On Wednesday night there was every prospect that unless coal could be obtained within a few hours the entire service south of Boston dependent on this tidewater plant would have to be shut down. Barely enough coal remained in the bunkers for twenty-four hours' service plus the amount required to bank the fires and keep the boilers from freezing. On Thursday morning dasher signs announcing the service cut due to coal shortage were carried on all cars, with fliers in the cars and announcements in the daily press explaining the situation. The company planned, in case coal arrived Thursday, to disturb the early morning, last night and rush-hour service as little as possible. Ordinarily seven days' statutory notice of a service curtailment is required, but in the present case the emergency came so suddenly that it was necessary to cut through the regulation.

The Boston Elevated Railway planned to put into effect this Saturday morning a service cut of about 3 per cent, or 4000 car-miles per day. The changes take the form of eliminating surface car service which duplicates rapid transit service, and doing away with overlapping surface line routes. A conference was held at the company's offices Tuesday upon receipt of advices of Fuel Administrator James J. Storrow emphasizing the seriousness of the coal situation in New England. This conference was attended by inspectors of the Public Service Commission of Massachusetts, and at the meeting careful consideration was given to the surface operation of the Boston system in order to lift out mileage which would result in a decreased consumption of coal and yet not seriously impair facilities provided. Edward Dana, manager of surface transportation, informed the Public Service Commission by letter Wednesday afternoon that changes would be effected on seventeen lines. These changes consisted of entire cutting out of some lines, increases in headway, short routing, shuttle service and increased facilities for transfer between short-routed and connecting or through cars. Formal approval of the commission is not required in advance of service changes, but the company has kept the board fully informed of its conditions.

President M. C. Brush has asked the public to use the rapid transit lines wherever possible instead of the surface cars. The company has a fair supply of coal on hand at present. Its coal consumption is now about 7000 tons per week, which under normal conditions is handled by the collier *Everett*, chartered by the road for weekly service between Boston and Hampton Roads. This vessel has been tied up for eight days at Hampton Roads waiting for a berth, congestion being very severe at tidewater. The company's coal contracts cover the 1915-1920 period at an average price of $2.775 per ton, compared with the present tidewater price, based on the government's fixed price at the mine of $4.25 per ton. Concerns with which the company has had coal contracts have been unable to meet their agreements owing to the commandeering of coal by the government. About 30 per cent of the Boston Elevated coal supply, therefore, has been purchased in the open market, and the company has paid as high as $9.50 per ton alongside in Boston. The loss of service of the *Everett* due to delays represents $17,500 per week, and it is not unlikely that the government will commandeer the vessel in the near future. If this is done the road will have to fall back upon some of the steamers from the Great Lakes which have been brought to the Atlantic coast.

The following statement has been issued by Mr. Brush:

> The company has received two communications from James J. Storrow, New England Fuel Administrator, under dates of Dec. 10 and 15, in both of which, due to the very serious situation with respect to fuel supply for New Eng-

land, he urges the earnest co-operation on the part of the public, the company and its employees to do everything within their power to economize in every conceivable way in the use of fuel. The company has posted copies of each of these letters on every bulletin board in all its shops and carhouses; further, it has posted on 150 of its advertising boards copies of these letters.

Among other things, Mr. Storrow urges, entirely aside from the advisability of cutting down heat as much as is possible and coasting by motormen as much as they can with due regard for proper service, to "reduce schedules when it can be done without interfering with transporting people to and from work and without serious inconvenience to the public."

The company is keenly aware of the very serious situation and it is entirely possible that unless the utmost efforts are made to conserve fuel, immediate conditions may arise which will seriously affect the transportation in Greater Boston. It is not intended to arbitrarily and without proper consideration modify present schedules or service, but it is intended to co-operate with the Public Service Commission with a view toward preventing, so far as possible, duplication of service or unnecessary service from the standpoint of meeting this situation. The company further is earnestly in hopes that due to the fact that this fuel shortage is primarily caused by the war situation and that the value of fuel for transatlantic service both for men and supplies should be worthy of serious consideration by all Americans, its patrons will co-operate with it and be patient in modifications which may be inconvenient but at the same time necessary.

It is anticipated in any modifications of schedules and service to be particularly careful to endeavor to maintain a service necessary for the transportation of employees engaged in government service.

In carrying out its plan for reduction of service it seems to the company that even though it is recognized that in some cases marked inconvenience is going to be caused, effort must be made to substantially reduce street car service and carry, as far as possible, patrons thus inconvenienced on rapid transit lines.

One of the very important sources of success in the effort to conserve coal will lie in the hands of the employees of the company to whom we have earnestly appealed for co-operation and help in this very serious situation which calls for the utmost patriotic effort on the part of everyone. We are absolutely confident from the spirit of co-operation shown by the association that they will assist us and the public in this very important matter.

With a view to assisting the association officials in bringing this seriously home to all employees the company has mailed a copy of each of Mr. Storrow's letters to each of its employees at their home address.

Coal Situation in Ohio Was Critical Last Week

Several Electric Railways in the State Had a "Close Call" with Regard to Power Supply

FOR a time last week the shortage of coal created an alarming condition in Ohio among street and interurban railways. This is perhaps the first time in the history of the business that such difficulties have been encountered. Consigned coal stood on railroad sidings in many places, but this could not be diverted to the railways without authority from the Federal Fuel Administration, and even then the railroads were unable to move it rapidly enough to take care of the situation. An arrangement was finally completed by the State and federal authorities for the use of about 2200 cars of coal that had been consigned to lake shippers. This was being moved as rapidly as possibly, but it is a very small amount to meet the needs of both the steam and domestic consumers all over the State.

At Dayton on Dec. 11 both the city and interurban service on the Ohio Electric Railway ceased at 7 o'clock in the evening, and the intention was to furnish only a very limited service thereafter until a supply of coal could be secured. The same condition prevailed at Hamilton. General Manager C. D. Nicholl communicated with the authorities in Washington in the hope of securing a priority order that would release coal for the plants at Hamilton and Medway. The Dayton, Covington & Piqua line at that time was depending upon the arrival of a single car of coal. Of all the interurban roads entering Dayton only the Dayton & Troy had a sufficient supply to last any length of time.

In Cleveland at the end of the week street railway service was threatened because the Cleveland Electric Illuminating Company, from which the Cleveland Railway receives most of its power, had only a two-day supply of coal. Already it had withdrawn its service from a large number of industrial plants, said to be 1800, in order to maintain its lighting service and to furnish the railway with power. Coal had been promised and was said to be on the way but the company held out no encouragement until it could be certain of the situation.

A supply of coal was received by the Cleveland Electric Illuminating Company on Dec. 16 and the danger of the Cleveland Railway's having to suspend or curtail operations has been eliminated for the present, although the amount of fuel received will last but a few days. By the time it is exhausted, it is hoped that regularity in shipment may be resumed.

At Columbus the Columbus Railway, Power & Light Company was on the point of shutting off the power from many industrial concerns on Dec. 11 when it received a supply sufficient to insure comparative safety. However, it will probably reduce its evening service 50 per cent, on the recommendation of Mayor George J. Karb, adopt the skip-stop system in the residence districts and will put into operation the rerouting plan approved by the City Council recently to conserve power and the coal supply.

The Cincinnati Traction Company had only enough coal at its Depot Street power plant on Dec. 14 to last that day and the next, and conditions at the Pendleton Street Station were not much better. These two plants supply the power for the entire street railway service of the city. Vice-President Walter A. Draper stated that the company had in transit 133 cars of coal which had been purchased on contract and sixty-five cars purchased in the open market. If that coal arrived on time, he said, the road would be safe for a short time. The two plants consume about ten cars per day. Mr. Draper appealed to Street Railway Commissioner C. W. Culkins for aid. Mr. Draper attributed the shortage to the inability of the railroads to secure empty cars.

The coal producers have formulated a pooling plan for a number of points in the State and it will be put into operation within a short time. It is believed that this will increase the efficiency of the railroad equipment 25 to 30 per cent and result in a much greater movement of coal. Switching at the terminals will be reduced to a minimum under this plan and all coal will be hauled by the most direct route. As a rule, cities and communities will be supplied from the nearest point of origin, and cars, as far as possible, will be kept on their own roads.

For a time last week the Northern Ohio Traction & Light Co. had a very small supply of coal, but it received a few cars which will probably tide it over until shipments can be resumed in the regular way.

Preventable Waste of Coal in the United States*

Many Boiler Plants Operate at Less Than 60 Per Cent Efficiency—Two Possible Methods to Reduce the Consumption of Coal

AN ORGANIZED effort to bring about efficiency in the production and distribution of coal is being made, but no parallel measures have been adopted to bring about a normal and practicable efficiency in its use. The hundreds of large plants which are consuming fuel wastefully are directly and needlessly causing a large fraction of the existing car shortage. They are overloading the already strained capacity of the railroads and rendering slower and more difficult the transportation of food and other vital commodities.

For obvious reasons the boiler plant offers the most lucrative field for producing economies with a minimum of alteration in physical equipment. Under present conditions a plant which carelessly operates at an efficiency of 40 to 50 per cent receives from the government the same consideration in the delivery of coal as the one whose efficiency is 70 to 75 per cent. This is unfair and wasteful. The government hands over say 200,000 tons of coal a year to a plant owner, but asks for no accounting as regards its consumption, nor any questions as to the amount of steam it is made to produce. There is, nevertheless, an equivalent amount of steam this fuel is capable of generating and it can and should be made to produce that quantity.

In general, there are at least two kinds of operation worthy of consideration. One might be termed the autocratic method. This would involve the use of authority to compel coal consumers to execute such measures of economy as the proper authorities might prescribe for any given case, limits being set as to expense to the user. Such limits might be in terms of a percentage of his present yearly coal bill. Alterations should be directed chiefly to purely operating improvements. Many objections would probably be made by consumers against this plan, but once in effect the majority would no doubt realize its pecuniary advantage to themselves.

The other plan would be largely an educational one, in which patriotism and efficiency would furnish the motive forces required. The requisite information in regard to this plan must reach the owners and managers of industries and there must be simple instruction sheets for the engineers and firemen. The vital importance of daily accurate records of coal and water must be taught and information given regarding practical appliances for automatic measurements of both.

This work could be very greatly aided by a staff of experts who would visit the plants, make investigations and recommendations and keep in touch with the progress of economies. They should also deliver lectures or talks, planned so as to reach directly not only managers and owners of the industries, but also chief engineers and firemen of the boiler plants. This feature of the plan itself would, undoubtedly, result in great good.

It is estimated that approximately 67 per cent of the coal mined, or about 469,000,000 tons, is burned for steam-making purposes on land. The saving or wasting of one-quarter of this coal, more than 117,000,000 tons, depends upon the efficiency with which we operate our boiler furnaces. If we actually saved by proper methods only 50,000,000 tons per year, this economy would result in freeing for other important service the use of 1,000,000 50-ton freight cars per year. The direct saving to our industries would be $250,000,000 worth of coal per year, if figured at $5 per ton. This saving would be 10.65 per cent of the coal now burned for steam production.

INCREASES IN COMBINED EFFICIENCIES OF BOILER AND FURNACE NECESSARY TO EFFECT A 10.7 PER CENT SAVING IN COAL

Old Efficiency, Per Cent	New Efficiency, Per Cent	Old Efficiency, Per Cent	New Efficiency, Per Cent
44.67	50	62.54	70
49.14	55	67.00	75
53.60	60	71.47	80
58.07	65		

The accompanying table shows to what point the efficiency of a plant must be raised to obtain the saving of 10.65 per cent upon which these economies are based. Hundreds of boiler plants operate at no greater than 58.07 per cent efficiency, and it is a comparatively simple matter to bring them up to an efficiency of 70 per cent or higher. The latter would result in a saving of more than 17 per cent of the coal. Thus, the large improvements possible in the less efficient plants would tend to balance, or more than balance, the smaller economies to be obtained in those which are better operated.

If we do not limit our field of action to coal used merely for steam generation, but extend it to include a consideration of the economy with which the steam itself is utilized and applied, there is no doubt that the above saving could be doubled, so that we might save 2,000,000 50-ton carloads of coal per year.

Our steam plants are under the immediate management of chief operating engineers. The examination requirements for licenses in this profession call for practically no knowledge of steam and fuel economics. These examinations deal chiefly with matters of safety, repair and maintenance of equipment, and neglect almost entirely the subject of coal economy. This is a very serious defect in our present system and is directly responsible for large preventable waste of fuel.

The work involved in a general program such as suggested will undoubtedly be undertaken. Its success or failure will depend chiefly upon the kind of men who may be selected for its planning and execution.

Letter on Fuel Conservation Used as Advertisement

The Connecticut Company, New Haven, Conn., has used as an advertisement in the Hartford *Courant* the letter sent by the Fuel Administration in Washington to the State Fuel Administrators throughout the United States on the conservation of coal, and the suggestions of the Electric Railway War Board. The following is the company's statement with which the advertisement concludes:

"During the past two years the company has spent more than $1,000,000 in modernizing its boiler plants and power stations, in order that there might be an assurance of ample power supply and a more economical use of fuel.

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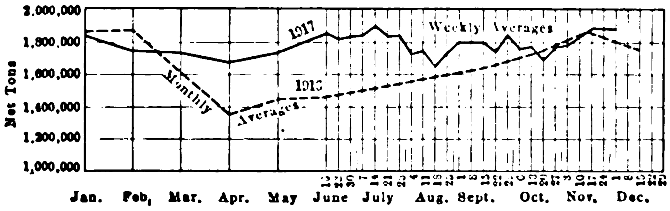
*Abstract of a paper by David Moffat Myers presented at the meeting of the American Society of Mechanical Engineers held in New York, Dec. 4 to 7, 1917.

"The company will welcome any suggestions that may aid in a full compliance with the request of the Fuel Administration and trusts that its patrons will assist in the successful carrying out of plans that may be inaugurated after full consideration of all the details by the State Fuel Administration and the Public Utilities Commission."

Data on Bituminous Coal Production

The United States Geological Survey has issued the statistics reproduced in the accompanying diagram of bituminous coal production in the entire country. The production is now running about 11,250,000 tons per week, last week's low figure of 10,250,000 being due to Thanksgiving Day. Slightly more than 5½ per cent of the production is coked at the mines.



ESTIMATED AVERAGE TOTAL PRODUCTION OF BITUMINOUS COAL PER WORKING DAY—INCLUDING COAL COKED

The shipments of coal, in carloads, originating on the principal coal-carrying railroads for a few weeks past were as follows:

Shipments	Week Ended					
	Oct. 27	Nov. 3	Nov. 10	Nov. 17	Nov. 24	Dec. 1
Bituminous, 114 roads	189,589	192,419	199,205	201,787	199,385(a)	182,387(a)
Anthracite, nine roads	42,338	31,314	40,459	42,024	42,936(a)	37,533(a)
Beehive coke, four roads	12,900	12,234	11,799	12,784	13,178(a)	12,025(a)

(a) Subject to revision.

Cutting Down Suburban Service

The United States Geological Survey has issued brought to its attention the possibility of saving a considerable quantity of coal in the larger cities by cutting down the suburban steam-railroad passenger service during the non-rush hours.

On many lines a number of trains are now operated at non-rush hours which require only three or four cars for the small traffic handled. Many of these trains are run merely to afford a maximum of convenience through frequency of service. Competent railroad men have informed the Fuel Administration that, on the average, two of these non-rush hour trains could well be made to do the work of three by increasing the headway and adding one or two cars to the trains run.

One important railroad as an experiment recently decreased its non-rush hour service without serious inconvenience to the public. This company has just announced a further withdrawal of about 10 per cent of its suburban trains, whereby it will be able to release more than 1000 tons of coal per month.

The Fuel Administration suggests, therefore, that the railroads generally do what they can in this respect, and that the suburban towns, through community action, acquiesce where no great hardship is involved.

A Good Chance for Publicity

Electric Railways Are Keeping the Public Posted on the Effects of the Coal Shortage

ELECTRIC railways generally are taking every opportunity to keep the public informed as to the present and possible effects of the coal shortage on their service. In the issue of *Public Service*, issued by the Pine Bluff (Ark.) Company, for Dec. 16 the following statement is made: "We expect to operate our power house and maintain full capacity of light, power and street railway service just as long as we can secure coal. We are doing all possible to continue your service and know that if we are successful you are really receiving a service that you have every reason to be thankful for and appreciate. We have had a man in the Arkansas coal fields for weeks buying all coal possible. This man has been going from mine to mine and now has over twenty cars bought, but has been unable to get coal cars to move more than a few loads. We have called upon St. Louis, Memphis, Jonesboro and every other place possible to secure coal and have at this time about fifteen cars of coal moving toward Pine Bluff. The railroads barely have enough coal to move the trains, industries have shut down in a great many cities, including Pine Bluff, but we hope for continuous operation of your service. We, the Pine Bluff Company, and you, the public, are obligated to the Missouri Pacific Railway, the Cotton Belt Railway, the Union Seed & Fertilizer Company, the Pine Bluff Cotton Oil Company for coal they have diverted to us, and these concerns should be remembered for assisting us in giving you a large part of your service to date."

On Dec. 15 the Kansas City Railways issued an 18-page booklet giving full information regarding the fuel situation. It is introduced with this statement: "The officials of the Kansas City Railways Company feel that the facts now affecting car service in the Kansas cities should be made known. Everything possible is being done to give service. If the service during the rush hours is not what is desired, the public should bear in mind that circumstances outside the control of any management are responsible." After explaining the local coal situation the pamphlet states: "In light of this situation the officials of the company would be subject to rightful condemnation if they did not conserve all coal that can be reasonably conserved."

More than half of the Kansas City Railways' pamphlet is taken up with reprints of articles and bulletins. Many of the articles appeared originally in the ELECTRIC RAILWAY JOURNAL.

Coal Shortage Forces Skip Stop at Columbus

On a statement of Harold W. Clapp, general superintendent Columbus Railway, Power & Light Company, Columbus, Ohio, to the effect that the adoption of a skip-stop plan would save from 400 to 500 tons of coal a month, the City Council adopted a resolution authorizing it. The company will be permitted to eliminate alternate stops on certain lines outside of the business section. Mr. Clapp also asked approval of a plan to reduce the evening service about 50 per cent as a war emergency measure, but no action was taken.

Illinois Railway Operators Studying Coal Conservation

In accord with the policy outlined by Fuel Administrator Garfield that the electric railways take steps to bring about important savings in coal consumption through the reduction of schedules and the amount of heating in the cars, Samuel Insull, chairman of the Illinois Council of Defense, has appointed a committee of electric railway men of the State to give careful consideration to these possibilities. The committee is composed of Edwin C. Faber, Aurora, Elgin & Chicago Railroad, chairman; J. R. Blackhall, Chicago & Joliet Electric Railway, secretary; C. F. Handshy, Illinois Traction System and president of the Illinois Electric Railway Association; D. E. Parsons, East St. Louis & Suburban Railway; L. A. Busby, Chicago Surface Lines, and Britton I. Budd, Chicago Elevated Railways.

The committee sent out a questionnaire to the various electric railway properties in the State requesting various information, and later held a meeting on Dec. 18 to review this information and condense it into a report to be made before the Illinois Public Utilities Commission and J. E. Williams, Illinois fuel administrator. What plans will be adopted to accomplish the end in view will have the approval of the Illinois Utilities Commission. The recommendations of the committee and the extent to which coal can be saved through execution of its recommendations, is not yet available for publication.

The Latest from Kentucky

Threatening shortages of coal which were stated to be about to compel suspensions of electric railway service at numerous Kentucky points have not as yet reached that stage. The Louisville Railway has been having some difficulties using the coal it has obtained, but there has been no danger of a famine. The Paducah Traction Company characterized as without foundation a report that it would shut down through lack of fuel.

The situation in Kentucky has been greatly helped by seizure by the State Fuel Administrator of 150,000 tons of coal on railroad tracks billed to points north of the Ohio River. Freight congestions of northern railroads have made it impossible to take this coal north, and it is now being diverted to Kentucky points where it is needed. Public utility coal was not included.

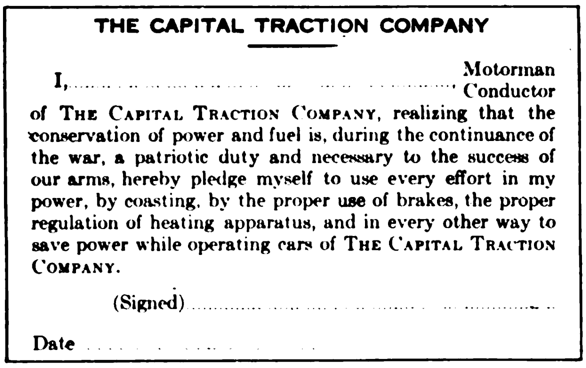
Doherty Organization Suggests Simple Rules for the Boiler Room

To impel employees of the Doherty organization to co-operate in reducing power-plant coal consumption by 10 per cent, or 7500 tons per month, the following suggestions have been sent to all workers in the company's power plants:

1. Keep the boilers in good condition by thorough and systematic inspection, cleaning and repairing.
2. Blow the soot from the tubes daily.
3. Keep the grates and stokers in good repair.
4. Help the firemen to get proper combustion by analyzing the flue gases, ash content and coal.
5. Maintain proper drafts and flue temperatures.
6. Keep no unnecessary boilers "hot," and bank fires properly.
7. Keep steam leaks at a minimum.
8. Get the greatest feed-water heating from exhaust steam by seeing that all free exhaust goes to the heater; that no steam exhaust from the heater has a water temperature of less than 210 deg. Fahr., and that the oil separator is properly piped up.
9. Do not overlook cleanliness.

Railways in Washington and Baltimore to Save Fuel

IN THE campaign for economies in the transportation department, the Capital Traction Company of Washington, D. C., and the United Railways & Electric Company, of Baltimore, Md., are issuing pledge cards to their motormen and conductors to save energy in every proper way. A reproduction of the card issued by the Washington company is shown herewith.



THE CAPITAL TRACTION COMPANY

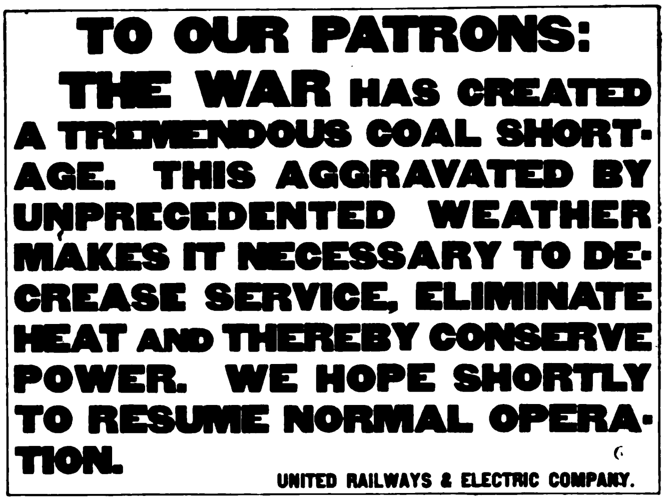
I, ... Motorman / Conductor of THE CAPITAL TRACTION COMPANY, realizing that the conservation of power and fuel is, during the continuance of the war, a patriotic duty and necessary to the success of our arms, hereby pledge myself to use every effort in my power, by coasting, by the proper use of brakes, the proper regulation of heating apparatus, and in every other way to save power while operating cars of THE CAPITAL TRACTION COMPANY.

(Signed) ....

Date ....

PLEDGE OF TRAINMEN TO SAVE ENERGY

A reproduction is also shown of one of the posters carried in the cars in Baltimore during the period there last week of acute power shortage brought about in part by the scarcity in fuel and in part by interruption in the company's supply of hydroelectric power. During the present week there has been a marked improvement in water conditions, so that the company is now receiving an increased amount of hydroelectric power, and normal operating conditions have been resumed.



TO OUR PATRONS:

THE WAR HAS CREATED A TREMENDOUS COAL SHORTAGE. THIS AGGRAVATED BY UNPRECEDENTED WEATHER MAKES IT NECESSARY TO DECREASE SERVICE, ELIMINATE HEAT AND THEREBY CONSERVE POWER. WE HOPE SHORTLY TO RESUME NORMAL OPERATION.

UNITED RAILWAYS & ELECTRIC COMPANY.

EXPLANATORY POSTER ISSUED IN BALTIMORE

Some More Rays of Hope

New York Second District Commission Grants One Six-Cent and Two Seven-Cent Fares—Nine Increases Now Authorized

MORE aid to struggling electric railways in New York State has been granted by the Public Service Commission for the Second District. On Dec. 13 and Dec. 15 the commission announced increases in fares from 5 to 6 cents for the Glen Cove Railroad, and from 5 to 7 cents for the Peekskill Lighting & Railroad Company and the Putnam & Westchester Traction Company. Six previous increases were noted in the ELECTRIC RAILWAY JOURNAL of Dec. 8, page 1029. In all of these the new fare authorized was 6 cents, with the exception of one 7-cent rate.

The decision in the Glen Cove Railroad case was based upon evidence presented at a hearing on Aug. 29, when the company furnished proof that the existing 5-cent fare was insufficient to yield reasonable compensation for service rendered. Under the order the rate of fare will be 6 cents for a trip between any two points on the railway, which operates 3.28 miles of track from Sea Cliff to Hempstead Harbor.

The fare increases for the Peekskill Lighting & Railroad Company and the Putnam & Westchester Traction Company were granted subject to the abrogation of a contract between the two companies which provides for the issuance of transfers from either line for continuous rides over the entire systems of the two companies. This reciprocal transfer agreement was made on Oct. 1, 1910. Under the terms of this agreement the Peekskill company furnished all car equipment for use on the Putnam & Westchester company's system, and also power at $2\frac{1}{2}$ cents per kilowatt-hour. In return the Putnam & Westchester line paid its proportion of other general operating expenses on a car-mile basis, as well as all other expenses incident to the repair and upkeep of its property plus a certain amount per car per month for depreciation in the equipment furnished by the Peekskill company.

Under the order just issued by the commission the companies are allowed to raise the maximum fare within the limits of Peekskill from 5 to 7 cents and to sell tickets at the rate of four for 25 cents. The order also provides for the discontinuance of free transfers. In making this fare readjustment, the commission ordered the discontinuance of the practice of carrying employees of the gas and electric light departments of the companies on passes. The practice of allowing this in the past resulted, the commission held, in loss of revenue.

In both instances the village authorities, represented by Corporation Counsel Robert F. Barrett, made objection to the rate increases. It was asserted that under the franchises granted the companies a maximum fare of 5 cents within the village limits was established. The commission, however, was governed by the determination adopted in the Huntington case [ELECTRIC RAILWAY JOURNAL, Nov. 24, page 946], namely, that it has the power to permit a company to increase its fares notwithstanding franchise restrictions. The commission decided that the fares charged by the Peekskill and Putnam & Westchester companies were insufficient to provide a fair return upon the value of property in public service.

The following details of the previously granted increase for the Northport Traction Company have just been published in the tariff bulletin of the commission: The local one-way fare within the limits of the incorporated village of Northport, and between the Long Island Railroad station at Northport and the village of Northport, was increased from 5 to 6 cents, effective on Dec. 14.

Electrification of Norwegian Railways

Following the example of Sweden, the kingdom of Norway is now working feverishly on the electrification of all its state railways, with the expectation of relieving the present unbearable situation caused by the coal famine. The experiences gathered on the Reichsgrenze-Kiruna line in Sweden will be used as the basis of all the electric roads planned in both Scandinavian countries. Seven million crowns (about $1,800,000) have been set aside by the Storthing for motors, engines, conductors, equipment, etc., and an additional $1,100,000 for the construction of a power station near Hakawik Falls. The plans comprise the electrification of all Norwegian railways as speedily as the work can be finished and materials obtained. The importance of electricity for railway operation in Norway is evident from an examination of the coal expenses for 1911 and 1916 respectively. In 1911 the state railways spent $550,000 for coal, and in 1916 $1,800,000, or more than three times as much. Norway has an abundance of available water power, estimated at about 7,500,000 hp. The state railways would use only about 150,000 hp., or barely 2 per cent of the available supply. The electrification of all the railways in Norway, at $55 per horsepower, would cost about $8,000,000.

Car Cards Used in Vancouver

Somewhat of a departure by way of co-operation between the British Columbia Electric Railway, Vancouver, B. C., and the advertising company holding the concession in the cars has led during the last year to a more extensive use of car cards in publicity work.

Primarily to fight the jitney, the company started a little more than a year ago to point out the public's part in keeping up the service. The advertising company offered space in the regular advertising racks in the cars, realizing that as the people were induced to patronize the cars more and the jitneys less and that as the jitneys were regulated or restricted the advertising space in the cars would be more valuable.

For the most part the advertisements have been addressed to the person who rides regularly in the cars, pointing out the benefit he will gain by supporting the service. At the same time there has been an appeal to the jitney patron, who is always at some time or other a street car patron. In general, fair play, appreciation of electric railway service, and co-operation of patrons have been the ends sought in the car cards.

The company has put its cloth fender signs on city cars on a paying basis. This space was formerly used for patriotic and traffic advertising. In the future, while some space will be given for this purpose, it will be used mainly for increasing the company's revenue.

COMMUNICATION

Mr. Coates Vindicates Expenditure for Educational Work

THE TOLEDO RAILWAYS & LIGHT COMPANY

TOLEDO, OHIO, Dec. 17, 1917.

To the Editors:

In response to your suggestion that I state my opinion as to the results of our joint (railway, light, heat and gas) company section work, I take pleasure in submitting the following comment:

While the activities of our section have been confined practically to the past ten months, during which period we necessarily experienced a lull on account of the summer season, we believe that much good has been accomplished throughout the property. By this token we feel there is a brilliant future straight ahead and our conclusions are based upon these considerations. America has been racing on and on industrially. She has been developing so rapidly that no measures could be adopted for meeting the contingencies which we now face.

We must tarry a while and inventory our resources. The world's stock in trade is men. As our government sends call after call we are going to be brought more and more to the dire need of trained men. Ours is a business which is no exception to the rule. We need highly skilled and trained men as we have never needed them before, due to a marked depletion of our ranks. We feel this is true of the industry. Therefore we must confront the task of properly training our men, introducing efficiency and bringing about both results through the cheerful co-operation of all concerned. This we hope to accomplish through the medium of education.

The joint section we feel to be a means to the above end. Through it we hope to dispel for all time the very shadow of suspicion that normally characterizes some individuals and often groups of men. We have begun an educational program and have more than 140 enrollments under the auspices of the group work committee. We have started departmental meetings in a small way and the results so far are very promising indeed.

Our employees are also being offered rewards for meritorious work in correspondence courses or in any of the local night schools. These, together with a monthly bulletin and open meetings of an instructive and entertaining nature, will, we think, produce lasting results for both men and company. By literally saddling the responsibility and policy of the joint section on the members themselves through their chosen leaders, and by adopting an attitude of absolute frankness and impartiality, there is every reason to believe our organization will fit itself admirably for the most trying future.

More than 350 of our employees have availed themselves of this opportunity to travel straight ahead constructively, and we feel that the joint section will attract as many more before next summer. The financial question has been practically eliminated by the company's decision to pay one-half of all dues and to foot all the bills incidental to the complete activities. This is not philanthropy, but rather it is labor maintenance work of the highest type, and we believe it is a proper operating expense. Among other things it is our duty to lead as well as direct. Between the two we choose to lead and to do so in the most natural and logical manner, namely, by indicating the way and inspiring our own men to leadership. The joint section has already proved its worth in that regard by forcing into the foreground personalities and talents that were literally being destroyed through mental indifference. We now know the real worth of the venture and do not hesitate in recommending a similar program to other organizations. The joint section has come to stay, it is very much alive, and it is here for the inspection of all.

F. R. COATES, President.

AMERICAN ASSOCIATION NEWS

Officers of Section No. 9

The following biographical notes relative to this year's officers of the Portland section continue the series of articles begun recently.

C. W. Bent, who was recently re-elected president of the Cumberland County Power & Light Company section, entered railroad work as freight clerk in 1907 with the Maine Central Railroad, Monmouth, Me. He was transferred to the automatic signal department and later was placed in charge of maintenance and construction on one of the divisions. He went to Portland in 1910 and entered the transportation department of the Portland Railroad, which is now operated by the Cumberland County Power & Light Company, and is now serving as motorman and spare starter. Mr. Bent is a charter member of this section and was its president last year.

C. W. BENT
President Cumberland County P. & L. Co. Section

P. C. PRATT
Secretary Cumberland County P. & L. Co. Section

P. C. Pratt, secretary of the section, succeeds H. V. Adleson, who is now in the United States Army. Mr. Pratt is chief clerk in the engineering department. He was stenographer in the operating department of the electric light company from 1908 to 1910 and was then made office assistant. He was transferred to the engineering department two years later when the railway property was consolidated.

EQUIPMENT and MAINTENANCE

HAVE YOU A GOOD WAY
OF DOING A JOB?
—Pass It Along

These Articles Have Been Selected to Provoke Thought and Stimulate Discussion. All of the Technical Departments Are Represented

Home-Made Machine for Dating Extra Transfers

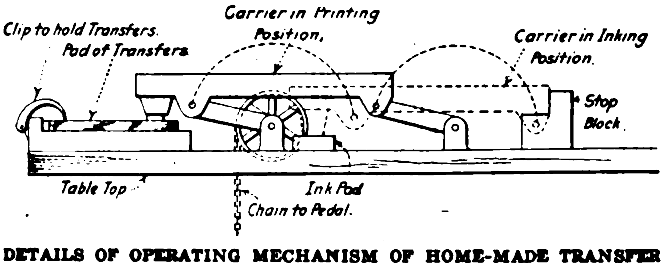
BY R. A. WILLSON
General Superintendent Washington Water Power Company,
Spokane, Wash.

To avoid wasting transfers the Washington Water Power Company has the dates put on only a minimum at the time that they are printed. Then if the supply for a certain date is exhausted, the home-made dating machine described below is used.

HOME-MADE MACHINE FOR DATING EXTRA TRANSFERS

The apparatus was mounted on an old sewing machine frame. The half-tone shows the general appearance of the machine, while the drawing gives the details of the operating mechanism.

An operator can stamp 150 transfers per minute. As the pedal is pressed the chain on the sprocket wheel causes the driving axle to revolve, thereby moving the carrier from the inking position into the printing position, the operating lever moving through approximately 180 deg. This brings the type down on the transfer pad in the space reserved for the date. A helical spring attached to the operating axle causes the dater to fly back to its initial inking position as soon as the pressure on the pedal is released. The type is made of standard type metal, copper faced. Each day of the month and each month are separate type units, which makes it very easy to change the dates.



DETAILS OF OPERATING MECHANISM OF HOME-MADE TRANSFER DATING MACHINE

Determining Best Location of Whistles on Interurban Cars

BY F. L. HINMAN
Master Mechanic New York State Railways,
Syracuse, N. Y.

The matter of selecting a suitable location for the whistles on high-speed interurban cars operating over the third-rail division of the New York State Railways lines has received considerable attention during the past summer, and a series of tests has been made to determine which of three different locations gave the best general results.

The cars are of the full monitor-roof type, and the forward portion of the body is designed to be used as a smoking compartment.

The whistles used are of the trombone type, and are connected by means of a 3/8-in. pipe to the main reservoir carrying 100 lb. of air. They were originally mounted on the right-hand side of the monitor, approximately over the motorman's cab, and close enough to the transom sash to be somewhat protected from the weather. This location was perfectly satisfactory from an operating standpoint, but was very annoying to passengers occupying the smoking compartment, it being in some cases impossible to carry on a conversation during whistling periods, which on local runs were rather frequent.

In order to overcome this objectionable feature several different plans were tried out, the four principal ones being as follows:

1. Placing a sounding-board between whistle and transom sash.
2. Moving whistle to extreme front end of monitor deck and placing sounding-board or deflector back of whistle.
3. Moving whistle to letterboard on front end of car.
4. Moving whistle to letterboard at side of motorman's cab.

The first plan produced very slight improvement, and was immediately discarded.

The second location was very much better, but still the annoyance caused by whistling was not entirely removed.

The third location was ideal from the standpoint of the passenger riding in the smoking compartment, but when used on two-car trains it was found that with the whistle on the leading car in this location it was rarely possible for the conductor on the second car of the train to hear the three short blasts which are always given by the motorman in acknowledgment of a signal for a stop at the next station. This condition was the cause of a great deal of complaint from crews operating the second cars of such trains.

The fourth location was found to be just as satisfactory as the third, from the passengers' standpoint, and it also possessed all of the advantages of the original location for the crew of the second car of a train.

It was found that there was a very slight difference with any of the above locations in the distance forward of the car at which a warning blast could be heard. All of the locations given above were found to be satisfactory as far as trouble caused by an accumulation of snow or sleet during severe winter weather was concerned.

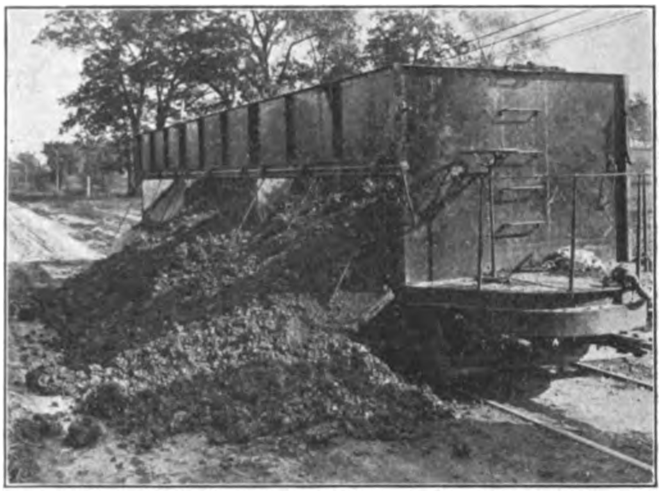
Ash Cars Made from Scrap Material

Connecticut Company Constructs in New Haven Shop Two Ash Cars from Old Carhouse Roof Trusses and Stack Plates

Since the completion of the Grand Avenue power plant of the Connecticut Company in New Haven, described in the issue of the ELECTRIC RAILWAY JOURNAL for May 12, 1917, page 860, two steel ash cars have been built for the purpose of removing ashes from beneath the boilers and transporting them to any part of the system. With the possible exception of rivets and a few pieces of rod they were constructed entirely from scrap material which the company had on hand. An old carhouse roof furnished the angles and channels making up the frames, while the floor and sides were covered with plates from a disused steel stack. The stack was dismantled with the aid of an acetylene torch and the plates were flattened by means of rolls in a local sheet metal working shop.

The general design of the car can be seen in the accompanying photographs, one taken in the shop at an early stage of the construction, the others taken on the road before and after dumping. The body is approximately 30 ft. long, 7½ ft. wide and 5½ ft. deep, with a floor sloping at an angle of 45 deg. from the center to each side. The platforms at the ends are each 3 ft. in length, the total length being, therefore, 36 ft. The height of the top of the body above the rails is 8½ ft. with no load.

The underframe consists of four 12-in. channels running lengthwise of the body and resting on a frame of 8-in. channel, all stiffened by means of four 1½-in. tie rods. These tie rods end in eyes, by means of which they are attached to 2½-in. bolts passing through holes in the ends of the 12-in. channels. They are bent up over the bolsters and down under the needle beams, and are without turnbuckles. The bolsters are built up of pairs of 8-in. channels joined with ⅜-in. plates, 8 in. wide top and bottom.



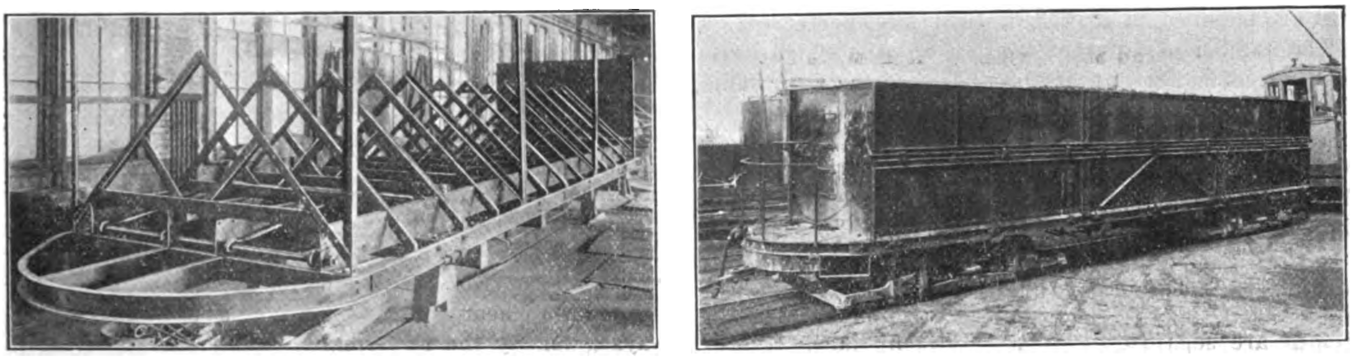
CAR BUILT IN CONNECTICUT COMPANY'S SHOPS FOR USE IN REMOVING ASHES FROM POWER PLANT

The floor is supported on trusses, spaced 2½ ft. on centers, the trusses being built up of angle iron with vertical, horizontal and diagonal members joined with gusset plates and riveted. The floor itself, like the siding, is of ⅜-in. steel plate. Two partitions serve to divide the body into three equal sections and to brace it against internal pressure.

The lower half of each side consists of three doors hinged to the side sill and held in the lowered position by means of two chains each. Locking rods spanning one and two bins respectively permit the dumping of one section or two as required. The doors are prevented by hand from falling too quickly.

The body is mounted on old Brill trucks which have been rebuilt, and the equipment also includes hand brakes, simple couplers, channel-iron bumpers, etc. The complete car empty weighs approximately 28,000 lb., and it has a capacity of 25 cu. yd. The labor cost of building both cars was about $1,800. They were designed by the Connecticut Company's engineering department and were constructed in the company's own shops.

The use of gas for locomotive tire setting in the shops of the Rutland (Vt.) Railroad is proving much quicker and less expensive than the former kerosene method. The work can also be done indoors. This company is also using gas for heating engine frames prior to making thermit welds, superseding gasoline torches, and thereby effects a considerable saving.



FRAMING OF CONNECTICUT COMPANY'S STEEL ASH CAR, IN INCOMPLETE CONDITION AND GENERAL VIEW OF COMPLETED CAR

Rail for Use in Paved Streets

A. E. Harvey, J. M. Larned, C. G. Keen, H. H. Ross, C. S. Kimball and E. M. T. Ryder Discuss the Points Raised by Martin Schreiber in His Article Printed Three Weeks Ago

After the publication of the article by Martin Schreiber on "Rail for Paved Streets" in the issue of the ELECTRIC RAILWAY JOURNAL for Dec. 1, page 997, the editors asked several engineers of maintenance of way for their opinions on this subject, with particular reference to the use of the tram rail. Their replies are summarized in the article which follows, the contributors to the discussion being A. E. Harvey, superintendent of way and structures Kansas City Railways; J. M. Larned, engineer maintenance of way Pittsburgh Railways; C. G. Keen, engineer of way and structures American Railways, Philadelphia, Pa.; H. H. Ross, railway engineer the Toledo Railways & Light Company; C. S. Kimball, engineer of way and structures Washington Railway & Electric Company, Washington, D. C., and E. M. T. Ryder, engineer of maintenance of way Third Avenue Railway, New York City. The discussion having been opened by these engineers, it is to be hoped that others will desire to contribute to it, as this will, in a measure, make up for the lack of opportunity to discuss this very live subject under the auspices of the American Electric Railway Engineering Association this year.—EDS.

Changes in Traffic Conditions Justify Return to Tram Rail

Mr. Harvey is impressed by the fact that after a few years' experiment a decided preference is given to T-rail instead of other sections for use in paved streets. This demonstrates the fact that the defects and objections which formerly arose in connection with the use of T-rail in such cases were due not so much to the section of the rail as to the methods of construction and paving. As rail of this section tends toward economy both in first cost and in maintenance, it is undoubtedly a matter of intense interest to the traction lines under present financial conditions.

The return to the use of tram rail in place of trilby rail is undoubtedly justified by changes in traffic conditions. Where for various reasons it is undesirable to use T-rail sections in pavements, it is, of course, necessary to substitute either some section of tram rail or the trilby rail. Rail section No. 101-486 has many excellent points to commend it from an operating standpoint, and, for reasons specified in the articles published in the issues of the ELECTRIC RAILWAY JOURNAL for Dec. 1 and Dec. 8, it is superior in every way to the trilby section. It should, therefore, be used wherever practicable in preference to such a section. It should not be forgotten, however, that the objections that pertain to the use of all rails of eccentric sections hold also in this case. Such rails are not as economical in first cost as the T-rail; they probably have a shorter life, and they are more expensive to renew. These are matters of prime importance at the present time to all who are engaged in electric railway transportation.

The number of different sections of rails which have been rolled makes it seem absurd at times that additional sections should be designed and rolled, or that the present standard sections should be materially changed. On the other hand, it would be unfortunate indeed if the principle is maintained to the effect that types designed years ago are the best that can be produced, and that any alterations or improvements should be barred. Such changes and improvements are inevitable, and it would appear that there are so many points of excellence from an operating standpoint in the tram rail sections that the Engineering Association should give serious consideration to adding such a section to its existing standards.

Tram Rail Not a Back Number

In the opinion of Mr. Larned the old-style plain tram girder rail should not be considered a back number, viewing the subject in a general way. It is preferable in many instances to the grooved girder or trilby girder rail. He has always thought that the Engineering Association standards should include a design for a plain tram girder rail for the reason that the street pavement can be more easily and economically maintained alongside a rail of this type that it can be alongside the grooved rail.

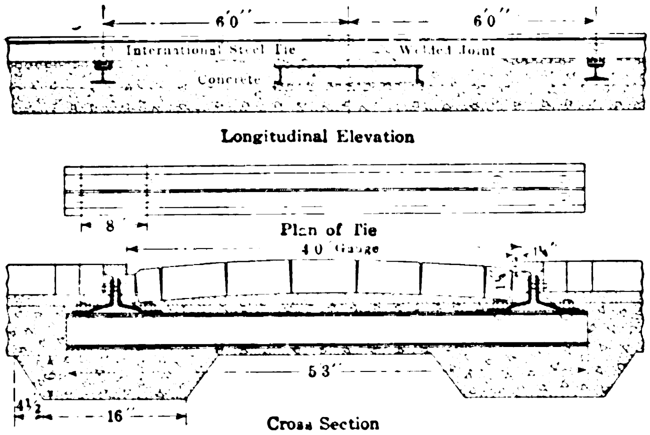
It is also quite possible that the crowned head may be preferable to the inclined plane head called for in the Engineering Association standard tram girder rail. Although Mr. Schreiber does not specifically call attention to the width of the head of the plain tram girder rail recommended in his article, it is interesting to note that the head of the rail is 2 11/16 in. wide, which is amply sufficient for electric railway purposes and preferable to the 3-in. width of head called for in the Engineering Association standards.

With respect to the style of rail and track mentioned by Mr. Schreiber as being his first choice for use in a paved street, namely, the 80-lb. standard section of the American Society of Civil Engineers T-rail, there has been but little experience in Pittsburgh in attempting to maintain a pavement in conjunction with T-rail of this depth. The experience of this company has largely been with such a rail upon road crossings on interurban track, and even in such places it has not been possible to maintain the pavement very successfully. With reference to Mr. Schreiber's third choice, the plain tram girder rail 7 in. deep, with a 5½-in. base and weighing 110 lb., Mr. Larned considers that this is neither sufficiently heavy nor sufficiently deep for heavy street railway traffic in paved streets on which there is heavy vehicular traffic. Neither is the rail base wide enough, for the width should be 6 in.

Mr. Larned refers further to Mr. Schreiber's fourth choice, the grooved girder rail weighing 116 lb. per yard, which he specially mentions is for use under heavy traffic in congested parts of cities, etc. This rail is also, in Mr. Larned's opinion, too light and too shallow for such places, although undoubtedly it is a very good rail of its kind. This rail also has a base only 5½ in. wide.

American Railways Company's Standards

By way of contribution to the general subject of track construction in paved streets, as raised in Mr. Schreiber's article, Mr. Keen submits the accompanying drawings showing the standard construction used on the properties of the American Railways Company. This company has adopted the 100-lb. American Railway Association series A rail for all track where municipal authorities will permit its use. The steel tie construction, shown in one of the drawings, is used only when ordered by the city. In this construction the joint plates are electrically welded to the web, and the base of the rail is electrically welded to the steel ties.



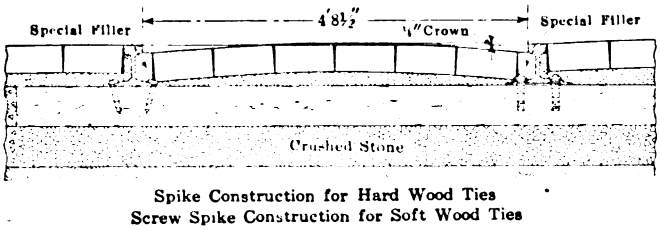
Longitudinal Elevation

Plan of Tie

Cross Section

STANDARD TRACK CONSTRUCTION OF AMERICAN RAILWAYS COMPANY—STEEL TIES

In wooden tie construction the company uses the continuous joint. The only difference which is made to take care of the character of vehicular traffic is in the modification of the paving surface. For ordinary streets the brick paving is satisfactory; for heavier traffic the granite nose block is used, and for extremely heavy traffic granite paving throughout has been adopted. The company has endeavored, wherever possible, to eliminate the groove in the paving at the inside of the rail head and has met with much success with paving laid as shown in the drawing illustrating wooden tie construction.



Spike Construction for Hard Wood Ties
Screw Spike Construction for Soft Wood Ties

STANDARD TRACK CONSTRUCTION OF AMERICAN RAILWAYS COMPANY—WOODEN TIES

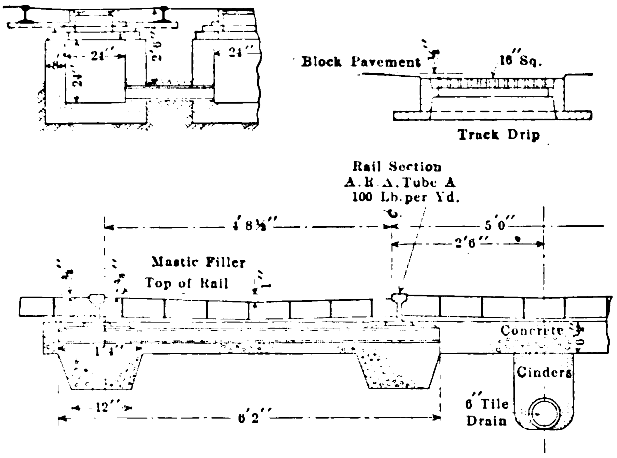
In Mr. Keen's opinion, the "Durex" form of granite paving lends itself admirably to this construction. The company has also laid a limited amount of cement paving in the same manner. The 100-lb. rail mentioned above is 6 in. in height, and it has proved itself to be amply high for use with any form of paving adopted by the company. It is, of course, much superior to the high T sections.

Mr. Keen calls attention to the fact that there is still considerable objection on the part of certain municipal engineers to the T-rail in paving, but it has been his experience that an inspection of track laid by the company with this rail is sufficient to convince the most skeptical engineer of its desirable qualities.

Dished Paving Preferred in Toledo

Mr. Ross states that the experience of his company with tram rail has been that wagons are always tempted to use the flangeway, and when once the wheels are in it is difficult to get them out. This causes much more delay to traffic than when wagons are kept out of the tracks. The company's experience is, further, that an 80-lb. rail is not high enough to permit the making of a good paving job.

The Toledo Railways & Light Company is at present using 100-lb. American Railway Association series A rail, and dishing the paving between rails and in the devil strip. This construction has proved very satisfactory, as the paving does not heave and as better clearance for motors, brakes, etc., is provided when in any case they are very close to the ground. With the paving crowned between rails damage is often caused by motors and brake rigging striking high blocks. This type of construction also keeps all drainage away from the rail, and in cold climate the track stands up better. The present construction showing the use of steel ties is indicated in an accompanying drawing.



STANDARD TRACK CONSTRUCTION IN TOLEDO WITH CONCAVED PAVEMENT AND STEEL TIES

The Tram Rail and Paving Maintenance

In Mr. Kimball's opinion the return to the tram girder rail section by the Public Service Railway presents some features which will reflect the troubles which brought about the design and use of the trilby sections, more commonly called self-cleaning groove rails.

The principal trouble with the tram section was the tendency of vehicular traffic to follow the rails, particularly on roughly paved streets. This of itself occasioned much inconvenience to the public and to transportation departments through the delays incident to waiting for teams to pull off and clear the tracks. Another matter is the maintenance of the track pavement. With trilby sections the pavement is brought close up to and level with the lip, whereas with the tram sections there is necessarily a wide groove between the gage lines and the outer edge of the lip, whether the pavement surface is flush with the top of the lip or above it. This creates a condition which in consequence of vehicular traffic brings undue wear on the pavement along the rail edge. There is, however, no question but that with the use of the tram section a much greater variation is permitted in track gaging. Possibly with the rapid change in the character of vehicles which travel the streets, particularly the extending use of those equipped with rubber tires, the wear on pavements will be largely reduced.

What Differentiates Heavy, Medium and Light Traffic?

Referring to Mr. Schreiber's article, Mr. Ryder notes first that the Public Service Railway has approved four types of track construction, differing chiefly in the type of rail used. The pavement in each case is granite block with the rails laid on cross-ties with ballast foundation. The order of desirability for different types of rails is stated to be as follows: First choice, 80-lb. standard T-rail; second choice, 7-in. high T-rail; third choice, 7-in. tram-head girder rail, and fourth choice, 7-in. grooved girder or trilby rail.

He notes, however, that where there is the "heaviest vehicular traffic" Mr. Schreiber prefers the use of the 7-in. grooved girder or trilby rail. Under such conditions possibly the desirability of the different types of rail mentioned would even be in precisely the reverse order to that stated. In view of Mr. Schreiber's varied experience with conditions on the different properties of the Public Service Railway, it would be very interesting to know his conclusions in the case of certain other conditions not mentioned in his article.

It is noticeable that all types mentioned call for granite block pavement. As it is not always possible or desirable to use granite, it would be interesting to know the type of rail Mr. Schreiber considers most desirable with asphalt pavement, for instance, and with wood block.

On the lines of the Third Avenue Railway System in New York City, with which Mr. Ryder is connected, the cost of paving maintenance is practically equal to the cost of all the other items making up the track maintenance account, and that rail should be used which best conserves the pavement. The type of pavement is controlled by the city authorities and trilby rail is used exclusively, of Lorain sections 492, 493, 494 and 496.

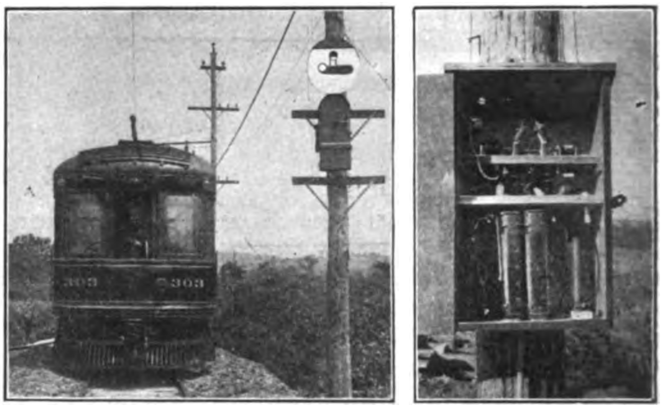
Mr. Ryder suggests that it would be very interesting to know Mr. Schreiber's recommendation for types of rails and pavements for medium and light traffic streets, as well as for heaviest city traffic conditions. In this connection it would be desirable to have some rule for determining what constitutes heavy, medium and light traffic. There is perhaps as much uncertainty and guess-work on this point as on any other maintenance of way question, different communities and individual engineers having entirely diverse opinions.

Track Relays Give Assurance in High-Speed Signaling

Their Operation on Line with Very Intensive Service Has Completely Eliminated Necessity of Actuating Signal Circuit at Low Speeds

While electric railway signals operated by overhead contactors placed on the trolley wire give excellent protection on lines where the cars are operated at moderate and low speeds, reliance cannot be placed upon the overhead contactors to operate properly at high speeds. Despite orders to the contrary, motormen will pass under such contactors at excessive speeds, thereby frequently failing to operate the signals, and after a time destroying the contactors themselves.

The Jamestown, Westfield & Northwestern Railroad, Jamestown, N. Y., faced precisely this problem on the "Chautauqua Route," which it operates between Jamestown and Westfield, and on the city lines of the allied Jamestown Street Railway. The service requires that the trains cover 32.5 miles in fifty-nine minutes and make five stops. In summer sixty-two local and express passenger trains a day are operated on the "Chautauqua Route," in addition to two baggage and express cars, a freight locomotive and a line car. The company put the problem up to the Charles N. Wood Company, Boston, Mass., agent for the Chapman automatic signal, and as a result there was installed in the summer of 1917 the track relay system hereinafter described, and which is now in use on the fifteen blocks between Jamestown and Westfield.



VIEWS OF TRACK RELAY INSTALLATION ON JAMESTOWN, WESTFIELD & NORTHWESTERN

The signals themselves are Chapman type B and are operated by the Chapman track relay system. This relay system consists of a simple relay mounted in a box and operated by a type E T, two-cell storage battery, which is put in the same box. To prevent freezing of the electrolyte, a 440-ohm resistance tube, connected to the lamp circuit of the signal, is installed in the box. The batteries are charged at ½ amp. continuously, through the lamp circuit, and require no attention except the addition of a little distilled water every three months.

To install the system it was necessary only to insulate two 60-ft. sections of rail. This was done by using Webber joints, with fiber and wood forms for the insulation. The installation can easily be made with ordinary joints using fiber insulation. The insulated rail sections are usually placed about 300 ft. ahead of the signal so that motormen have ample opportunity to get the indications without slowing down.

The Jamestown-Westfield installation has gone successfully through the railway's busiest service in both the operating and maintenance senses. An especially gratifying feature is that it is not necessary to slow down anywhere to be sure that the signal circuit will be properly actuated.

The relay is applicable to both single-car and train operation, and can be arranged either to operate directionally, that is, if connected to insulated rail sections on single track it will take care of travel in either direction (the Jamestown, Westfield & Northwestern uses this form), or it can be arranged to operate only in one direction by connecting it to insulated rails on the double track of a turnout.

Another use the Chapman Electric Railway Signal Company is making of this relay is for operating crossing signals or bells where certainty of operation is required and where excessive speed might cause a failure in a bell actuated by a trolley device.

Outdoor Substations for Industrial Loads

Distribution of Power from Simple Steel-Tower Stations Installed Along Transmission Lines Would Relieve Industrial Power Shortage

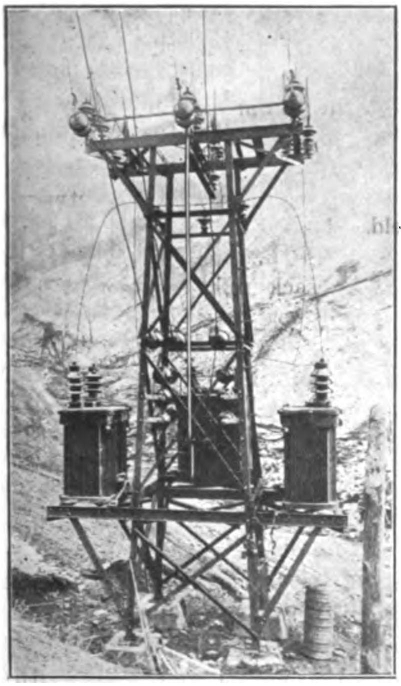
The sale of electrical energy to industries located along railway transmission lines is particularly favorable at this time when the high cost of operation and the shortage of coal are discouraging to the isolated plant operator. By securing additional loads with non-coincident peaks, the load factor on the line can be improved, and the higher efficiencies possible should be a patriotic consideration. An exact determination in any case of the available increased revenue from this source is quite an engineering problem, but inasmuch as taps for 15 kw. from a 33,000-volt line have been found commerically practicable, there is virtually no load, however small, not worth considering. The degree to which continuous service is imperative should determine the selection of the necessary protective devices. This also depends upon the character of the load. For instance, paper mills or textile factories would be seriously affected by short interruptions of power, whereas a group of farms might be cut off an hour or more without much inconvenience. It must be remembered also that a customer would be less likely to overlook an interruption in purchased power than a failure of his own plant, owing to his inability to appreciate the difficulties in the operation of a large system.

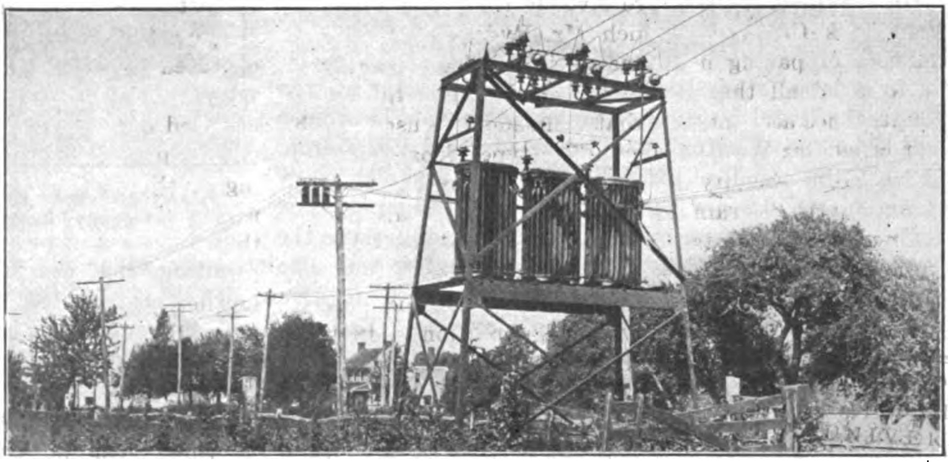
INTERIOR VIEW OF OUTDOOR SWITCH AND METER HOUSE

The simplest form of substation consists of a transformer, a lightning arrester, choke coil, horn-gap switches and fuses. Where the line is fed from both ends, greater flexibility can be had by installing sectionalizing switches on both sides of the tap-off, thus securing the advantage of a new sectionalizing point in case of line trouble.

The selection of the apparatus depends upon its relation to the system as a whole. Although a horn-gap without resistance in the ground circuit is comparatively inexpensive, the power arc which follows a discharge, especially when two phases "break over" simultaneously, will invariably trip the circuit breakers at sectionalizing points unless they are set so high as to diminish greatly their protective value. This is true also of the horn-gaps themselves. Without series resistances they must be set wide enough to increase considerably the voltage strain on the transformer at the break-over point.

Since the apparatus must operate for long periods without attention, and since the maintenance force generally consists only of the railway line and track crews, the apparatus must be mechanically simple, the condition of which can be determined by a casual inspection. For instance, a horn-gap switch with knife-blade contacts might eventually make poor contact owing to the bending of the switch jaws, while copper spring leaves working against a copper block cannot fail to make good contact so long as the switch can be closed. Exposure to weather, of course, demands that the appa-





TYPICAL OUTDOOR TRANSFORMER SUBSTATION AND 300-KVA., 13200/2200-VOLT SUBSTATION OF WILMINGTON & PHILADELPHIA TRACTION COMPANY ratus be sleet and snowproof. While expensive apparatus would be justified at large generating plants and substations, horngaps of the Burke type, made by the Railway & Industrial Engineering Company, with the choke coil a part of the gap itself, provide ideal protection for isolated tap-off points. The path of surges should be to ground instead of to the transformer, which should be some sort of tap-off. The gap should be close to the choke coil in order that it can discharge promptly and in so doing take the first shock of the surge.

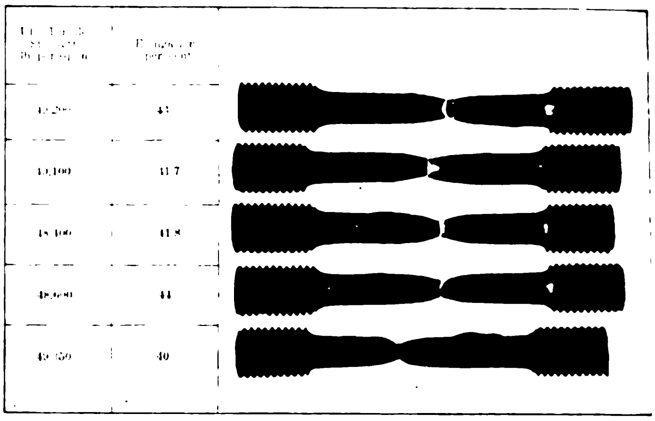
The control and protective equipment of the 33,000-volt outdoor substation made by the Delta-Star Electric Company, Chicago, consists of a three-pole switch—double brake per phase—with arcing horns, carbon-tetrachloride fuses, choke coils and high-speed, sphere-gap, graded-resistance lightning arresters. These arresters are so designed that as the arc rises on the horns resistance is automatically inserted in the ground circuit, thus limiting current flow. The fuses are so constructed that under short-circuit or overload conditions the circuit is opened in approximately 0.013 second. This prevents the disturbance from spreading to the main transmission line. The three-pole switch is provided with a manually operated remote-control mechanism equipped with a handle which can be locked in either open or closed position and which can be located near the transformer platform or at ground level. By means of this switch the station can be "killed" to permit work on the electrical circuits. The station tower is made of hot-galvanized steel sections, shipped ready for assembly.

Where the load center is at a distance from the transmission line, it is well to reduce the pressure to 2200 volts at a substation close to the line and meter the energy at that point. This encourages the customer to keep up the power factor and makes reading of meters easier. The Westinghouse Electric & Manufacturing Company has developed a line of standard single-phase and polyphase outdoor switch houses with capacities up to 6000 amp. and 7500 volts, and for either pole or platform mounting. These usually contain an oil circuit breaker and watt-hour meter with the usual transformers, calibrating terminals and necessary wiring. All apparatus is protected from the weather by a sheet steel case.

Effect of an Electric Arc on the Character of Metal

In order to study the change in the character of iron or steel effected by an electric arc, some tests have been made at the Westinghouse works at East Pittsburgh. Five ½-in. standard test pieces of hot rolled steel with from 0.1 to 0.2 per cent carbon were prepared, four of which were struck by an arc. On some of these the arc was merely struck and on the others it was also carried along the piece for a distance of 1 in. No material was deposited from the electrode. The arc-welding circuit carried 150 amp. at approximately 60 volts. The pieces were then tested in tension and the ultimate tensile strength of all five pieces checked very closely, the one on which the arc was not struck, shown at the bottom of the accompanying illustration, having the least percentage of elongation. Evidently the arc caused no material structural change in the metal.

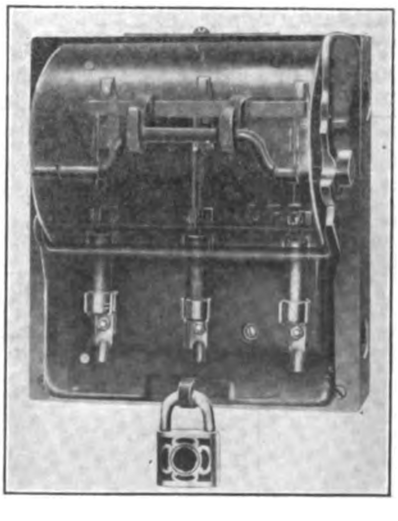
Another interesting investigation was made as follows: A solid plate of steel, which had a tensile strength of 56,000 lb. per square inch with a reduction in area of 60 per cent and elongation of approximately 28 per cent, was reinforced on one side with a deposit of metal by an electric arc. After the added material was machined off the plate to the original thickness, the tensile strength was 59,800 lb. per square inch, with 33 per cent reduction in area and 14 per cent elongation, showing also that the tensile strength is not decreased by the heat of welding.



TEST SPECIMENS OF STEEL BROKEN TO DETERMINE EFFECT ON METAL FROM APPLICATION OF ELECTRIC ARC

Improved Safety Lever Switch

The General Electric Company has introduced an improved type of inclosed lever switch which is especially designed to afford safety from both fire and accident hazards. The switch can be locked in the "off" position with from one to three individual padlocks, and the fuse cover can also be locked to prevent tampering. The main cover cannot be removed when the fuse compartment cover is closed, and the latter, of course, must be closed while the switch is closed. Another safety provision is a catch which necessitates that the operator use both hands when closing the switch, thus preventing the possibility of accidental closing. The switch is adapted to single or group mounting and when mounted in groups a bus compartment can be provided for inclosing all incoming wires and connections. The switch blades are operated by a hook-shaped casting which engages a curved shaft operated by the external handle. The box is provided with knockouts fitted with split porcelain bushings for conduit wiring.



PHANTOM VIEW OF IMPROVED SAFETY SWITCH

News of Electric Railways

Traffic and Transportation

Financial and Corporate | Personal Mention | Construction News

Portland Situation Reviewed

President Griffith Gives Reasons Why a Six-Cent Fare Is Needed—Civic Clubs Petition Commission to Act

The Portland Railway, Light & Power Company, Portland, Ore., on Dec. 10 presented to the Public Service Commission a report on the operation of its railway properties since October, to show the effect of certain changes suggested at the time the company's request for a 6-cent fare was refused.

PRESIDENT GRIFFITH SPEAKS

In this connection Franklin T. Griffith, president of the company, has reviewed the reasons why a 6-cent fare is needed. Mr. Griffith said that public service involved three factors—the public, the operatives and the investors. No question involving the conduct of a public utility should be or could be properly decided without fair consideration of each of the three factors involved. He said that in the early days of operating street railways under franchises railways were built so as to give the greatest possible net return to the utility with both the public and the employee as secondary considerations. During the last fifteen years, however, the principle of regulation had been adopted in nearly every state and that in the beginning of the era of regulation the commissions almost universally recognized one of the factors of public service—namely, the public. As the principles of public service regulation came to be better understood and the possibilities of public benefit through regulation more fully appreciated the powers of the commission were extended so as to include the power of determining the value of property used in public service.

Mr. Griffith said that, acting under the provision of the law requiring a valuation to be made, the commission required a complete inventory and appraisement of all of the property of the company. This work required three years and involved an expenditure by the company of more than $125,000. As a result of the investigation the commission on April 30, 1917, rendered a decision holding that the value of the electric railway property of the company on Dec. 31, 1916, was $18,233,000, which was several million dollars less than the figures presented on behalf of the company.

NO DIVIDENDS FOR THREE YEARS

In the case of the Portland company the stockholders had received no dividends during the last three and a half years nor had any sum been accumulated in that period applicable to the payment of dividends. During the same period the stockholders had paid into the treasury of the company an additional $2,500,000, all of which had been used to maintain the credit of the company. He then reviewed the earnings of the company by years. The minimum wage paid to trainmen in 1912 was 30 cents an hour. At present the minimum wage was 45 cents an hour. The cost of materials averaged 100 per cent higher than in 1912. Notwithstanding these increased costs, the company was giving a materially greater amount of service per passenger carried than in 1912. Notwithstanding the policy of rigid economy, the railway could not continue to give adequate service, provide a standard of working conditions and pay the wages required by its employees unless its revenues could be materially increased. On that account it petitioned the Public Service Commission for an advance in fares.

COMPANY BURDENED WITH NEEDLESS EXPENSES

Mr. Griffith next referred to the finding in the preliminary decision entered on Oct. 5, 1917, by the Public Service Commission with respect to the returns on the commission's own valuation of the property. He said that in accordance with the order of the commission the company had made some reductions in the service below the basis prevailing prior to Oct. 5, but that the present standard of service was considerably higher than the standard of service given in 1912. If the company was to restore the full service given immediately prior to Oct. 5 of this year such restoration would increase the operating expenses more than $200,000 a year at the present basis of operating costs. He then cited the other burdens of the company, including paving charges, bridge tolls, franchise fees and free transportation to city employees. He said that it would be decidedly to the advantage of the riders if the cost of service were reduced by relieving the company of all such charges except general taxation. He then referred to operation in Cleveland, Ohio, where a net return of 6 per cent is guaranteed to the company. In conclusion, he said:

CONTINUATION UNDER PRESENT FARES IMPOSSIBLE

"We bore with such fortitude as we could muster the meager returns for the years 1913 to 1917, and because of the confidence of our stockholders in the ultimate revival of Portland and the fairness of its people we were able, during those years, to meet our deficits by calling on our stockholders. We are to-day facing a condition of business revival, but operating costs have increased so enormously as to make impossible a continuance of operation under the present basis of fares. Our only source of revenue is the fares collected from the public, and if the fares are not sufficient to discharge the obligations of the street railway, it must inevitably fail."

HELP URGED BY CIVIC CLUBS

Resolutions praying that the Public Service Commission take action to relieve the company in its existing straits, through the granting of an increased fare or otherwise, and to enable the maintenance of the present scale of hours and wages for carmen, were adopted by the general committee from civic clubs of the city at a meeting on Dec. 8. The resolutions are as follows:

"Whereas, the investigations of our several sub-committees have established:

"1. That on the present basis of revenues and operating expenses the company is not earning sufficient to pay its operating expenses, depreciation, taxes and fixed charges.

"2. That during the last three and one-half years the company has paid no dividends to its stockholders, but on the contrary the stockholders have been called upon within that time to pay $2,500,000 into the treasury of the company in order to maintain its solvency.

"3. That the value of the street railway property has been determined by the Public Service Commission to be $18,233,000, and that said value includes no property except that used and useful in the operation of the street railway.

"4. That there has been a considerable increase in street railway revenues during the last six months, but that the revenues of the street railway are still on a basis somewhat lower than the revenues during the year 1912. That the year 1912 was the last year in which the street railway earned 6 per cent net on the value of the railway property, as determined by the Public Service Commission.

"5. That wages of employees of the street railway were fixed by arbitration on Oct. 15 on a basis of hourly rates 50 per cent higher than the hourly rates of wages paid in 1912. That the present cost of materials required for the maintenance of the railway averages 100 per cent more than the cost of such materials in the year 1912.

"6. That on present rates of street-car fare it does not appear to be possible for the company to give adequate service and meet the very greatly increased operating expenses to which it is subjected.

"7. That the need for the relief is immediate and urgent.

IMMEDIATE RELIEF ASKED

"Therefore, be it resolved, that this special committee, representing civic organizations of Portland, recommend to their respective bodies: That they urge upon the Oregon Public Service Commission that the Portland Railway, Light & Power Company be granted such relief as is necessary to justify the maintenance of present wages, hours and working conditions, and discharge the legitimate financial obligations of the company.

"And, be it further resolved, that the chairman of this general committee appoint a special committee of seven to further investigate the subject of street railway regulation and report back to this general committee recommendations as to a plan whereby street car fares in Portland can at all times be regulated in such a manner as to provide fair and equitable treatment of the interests of the public, street railway employees and the company, to the end that the best possible service be secured at the lowest practicable rate, including profit sharing to the city."

The civic organizations represented in the general committee of street railway investigation are the Chamber of Commerce, East Side Business Men's Club, City Club, Ad Club, Progressive Business Men's Club, Realty Board and Rotary Club.

Modification of Brooklyn Transit Plan

Changes Suggested for Downtown Brooklyn Would Involve Expenditure of $2,750,000

A settlement of the transit problem of central Brooklyn is proposed in a communication sent to the Board of Estimate of the city of New York on Dec. 19 by the Public Service Commission on recommendation of a special committee, consisting of Commissioner Travis H. Whitney and Leroy T. Harkness, chief of rapid transit. The letter recommends the approval of a modification of the dual system contract between the city and the Brooklyn Rapid Transit Company, to provide for the changes proposed.

Among those changes are the completion of a connection between the Fulton Street elevated line and the Fourth Avenue subway at Ashland Place, construction of a new station at Lawrence and Willoughby Streets on the Montague Street tunnel line, and a transfer connection between the Myrtle Avenue elevated railroad and the Myrtle Avenue station on the Fourth Avenue subway at Flatbush extension.

IMPROVEMENTS WILL COST $2,750,000

The program also includes the construction of a new express station on the Brooklyn Plaza of the Williamsburgh Bridge for the Broadway line and the abandonment of the Marcy Avenue station of that line. It is also proposed that the time of the Brooklyn Rapid Transit Company to third-track the Fulton Street elevated road west to Clermont Avenue be extended until one year after notice by either the company or the city. Under the plan, the completion of the Nostrand Avenue line to Clermont Avenue will be necessary in order to make full use of both subway and elevated railway facilities. The estimated cost of all these improvements is $2,750,000.

The commission points out that it believes the advantages of the plan it recommends are very great, in that it will not only provide adequate rapid transit service to the thickly populated portion of central Brooklyn, but, through the provision of such service, result in increasing the financial returns from dual system operation. The commission holds the construction of the Ashland Place connection "to be a matter of far-reaching importance and vitally necessary to permit of the complete utilization of the new subway system in a way adequately to serve the different sections of Brooklyn."

This connection has been the subject of much discussion and has the support of practically every civic body in Brooklyn. For two years the special committee has been urging its construction as the immediate response to the transit needs of central Brooklyn.

Detroit Warfare Continues

The Common Council of Detroit, Mich., continued its guerilla warfare on the Detroit United Railway in its session on the evening of Dec. 18, adopting a variety of resolutions as reprisals for the company's action in raising fares to 5 cents straight. A resolution providing that the Corporation Counsel take immediate legal steps looking toward the appointment of a receiver for the company was referred to that official for an opinion as to whether or not this step was possible. An attempt made by two Aldermen to restore skip-stop operation on the Woodward line was defeated, although the matter was finally referred to the public utilities committee for action.

It seems likely that the government will take a hand in the situation in Detroit through E. B. Whitcomb, the Detroit representative of the fuel administration, by ordering the company to establish skip-stop operation on every line in the city as a coal conservation measure. The Aldermen, however, at this week's session adopted a resolution warning the fuel administrator to "keep his hands off" the skip-stop proposition. It is the opinion of Corporation Counsel Dingeman that the Council would be powerless if the fuel administration ordered that skip-stop operation be re-established.

Among resolutions adopted by the Council were these: for the city to employ a staff of five inspectors to check up service and make complaints in court against the company for violations of ordinances; requiring the company to post in all of its cars signs showing the hour at which the first car leaves the terminus of each route in the morning and the frequency of service during the ensuing twenty-four hours.

The $10,000 appropriation with which some of the Aldermen proposed to conduct an investigation of the company in competition with a similar investigation by the municipal railway commission struck a snag in the ways and means committee. The Aldermen backing the proposition told the committee that they wished to hire Engineer Frederick T. Barcroft, who several years ago made an appraisal of the property of the Detroit United Railway for the city. Some of the members of the committee, however, did not favor holding two investigations at the same time and the matter was put over for another week.

St. Louis Grant to Be Amended

City Counselor Daues of St. Louis, Mo., has announced that amendments will be made to the measure for the settlement of the differences between the city and the United Railways now before the Board of Aldermen. These changes, Counselor Daues explained, would take the form of additions and omissions. He is reported to have said:

"The provision for a board of control will be stricken from the bill, and the Board of Public Service will be constituted the authority to compel extensions and adequate service on the company's present lines.

"We have decided also to write into the bill certain requirements to insure sanitation, ventilation, light and heat in the cars and to provide for more cars during rush hours. The section in the pending bill on the subject of the purchase of the company's properties by the city will be amended so as to authorize the city to condemn them at any time under the provisions of the charter—that is by the appointment of a commission to appraise them and fix their value, just as the valuation of real estate needed for public purposes is determined.

"The discussions of the bill thus far have afforded us new thoughts. I am frank to confess that I have come to the conclusion that we can greatly improve the bill."

It was expected that the amendments referred to by Mr. Daues would be presented to the public utilities committee of the Board of Aldermen on Dec. 6, but they were not submitted at that time.

An appropriation of $5,000 to employ additional assistance in drafting a new bill contemplating a compromise between the city and the United Railways was requested of the Board of Aldermen by the public utilities committee on Dec. 7. Chairman Barney L. Schwartz, of the committee, explained in supporting his motion to ask for additional assistance, that it will require six months to prepare a new bill.

Dempsey Conviction Set Aside

Employee Not Responsible for Violation of Commission Service Order

The Supreme Court, Appellate Division, on Dec. 7 set aside the conviction of John J. Dempsey, superintendent of elevated transportation of the Brooklyn (N. Y.) Rapid Transit Company, who was fined $500 in the County Court because certain express trains failed to stop at the Third Street station on the Fifth Avenue line. The court held that Mr. Dempsey was merely an employee of the railroad and not an officer, and therefore could not be made the victim of the penalty which the Public Service Commission law directs against officers or agents of the railroads for failure to obey the orders of the commission.

It was shown at Mr. Dempsey's trial that the contents of the Public Service Commission order were communicated to him by John F. Calderwood, who in 1912 was vice-president and general manager. It was Mr. Dempsey's understanding that the order required trains to stop at Third Street only between 8 and 9 a. m. For three years inspectors of the commission made no complaint of the service, and it was not until 1915, when the prosecution was commenced, that Mr. Dempsey knew the order was not being obeyed to the letter.

THE DEFENDANT NOT AN OFFICER

Justice Rich, who wrote the opinion for the Appellate Division, stated:

"The law provides that every officer and agent of a common carrier or corporation who shall violate the law, . . . etc. The defendant was not an officer of the corporation. He was an employee, charged with the operation under the direction of the vice-president and general manager, who gave him his instructions. The defendant was an agent in the sense that every employee is an agent for the discharge of the duties within the sphere of his employment. He received his orders and performed the duties of his position under the direction of the vice-president and general manager, who in this case was the officer and agent within the meaning of the law. If we were to construe the legislative intent to be otherwise, the motorman and conductor of every train which failed to comply with this order would be liable to prosecution and conviction, and this without regard as to whether they had ever heard of the order."

The Public Service Commission has requested Harry E. Lewis, District Attorney of Kings County, to appeal to the Court of Appeals from the decision of the Appellate Division, setting aside the conviction and dismissing the indictment of Mr. Dempsey. The commission believes that the efficacy of the penal provisions of the public service commissions law will be weakened, if not wholly destroyed, if the rule of law declared by the Appellate Division is upheld.

"Electric Railway Journal" Correspondent at the Front

Robert K. Tomlin, Jr., managing editor of *Engineering News-Record*, sailed recently for France to serve the *Engineering News-Record*, the ELECTRIC RAILWAY JOURNAL and the other papers of the McGraw-Hill Publishing Company, Inc., as special correspondent at the front. Mr. Tomlin was graduated from Harvard University in 1907. During his college course he served for two summers as assistant in the surveying and railroad field engineering of the Harvard Engineering Camp at Squam Lake, N. H. After he was graduated Mr. Tomlin entered the employ of the Pennsylvania Railroad on the tunnel work in connection with the Pennsylvania Station in New York City. He left this work to go to the New York Board of Water Supply, and was stationed with the Northern Aqueduct Department at Poughkeepsie, N. Y. His journalistic experience dates from March, 1909, when he became assistant to the editor of the *Engineering Record*. He was subsequently made associate editor of that paper, in charge of the municipal and sanitary field, and in 1913 was promoted to managing editor. When *Engineering News-Record* was formed last April by the consolidation of *Engineering News* and the *Engineering Record*, Mr. Tomlin was made managing editor.

Conferences on Wages in Toledo

Should the motormen and conductors and the electrical workers of the Toledo Railways & Light Company, Toledo, Ohio, fail to secure an increase of 10 cents an hour in their schedule of wages, it is said they will appeal to the Federal Board of Labor Conciliation to act as intermediary.

In conference with President F. R. Coates, agreements have been reached on working conditions and other differences that have existed, but little progress has been made on the wage matter. Mr. Coates told the men that the increase in the price of materials and the reduction in the amount of receipts make it impossible for the company to grant the advance in wages asked.

Edward McMorrow, vice-president of the International Union, recently made a statement in which he said the officers of the company recognized the truth of the contention of the men that they find it extremely difficult to live on the wages received. He said he had no knowledge of the company's financial affairs and could not dispute the claim that conditions would not allow an increase of wages, but that this did not change the needs of the men. He asserted that the men would go the limit to evade a strike and hoped that some means might be found for adjusting the matter in a way that would be fair to all.

The men are working under a contract which expires in April, 1919. Under this agreement the scale of wages ranges from 27 to 31 cents an hour.

South Boston Extension Opened

Short but Important Underground Line Placed in Operation in Boston

The Boston (Mass.) Elevated Railway opened the section of the Dorchester tunnel between the South Station and Broadway, South Boston, for service on Dec. 15. Although the length of tunnel involved is about a mile, the operation of trains from Broadway station through the shopping district to Harvard Square, Cambridge, constitutes one of the greatest improvements in Boston transportation facilities since the establishment of the original rapid transit system in 1901. The new line forms an extension of the Cambridge subway toward Andrew Square, Dorchester, and it is expected that the completed tube will be in operation next summer. The section now opened cuts down the running time between South Boston points and the Boston railroad, wholesale and business districts by six minutes at least, and provides connections of great value for the large residential and industrial population of South Boston and upper Dorchester with the city's downtown area. The running time from Broadway station to Harvard Square is about thirteen minutes and from Broadway to Washington station, in the heart of the shopping district, it is three minutes. At both Washington and Park Streets, Boston, underground free transfer connections are made with the most important north and south trunk lines of the Boston Elevated system.

PHYSICAL FEATURES LIKE CAMBRIDGE SUBWAY

In engineering features, the new line resembles the Cambridge subway, described in the ELECTRIC RAILWAY JOURNAL of May 11, 1912, page 782. Each track under Fort Point Channel, however, is carried in a single-barrel section of the tunnel, and the niches formerly provided for employees working in the tunnel on foot are omitted. The dimensions of the subway bore provide ample clearance, and to increase the safety of employees, hand rails are provided on each side of each track. Running and third-rails are 85-lb. T-section, with two 350,000-circ. mil bonds per joint. The track is laid in rock ballast on wooden ties. The signal system is of the Union Switch & Signal Company's three-color lamp type, operated by track circuit and using both running rails. Nine new blocks were added between the South Station and Broadway, and in connection with this installation all signals in the Cambridge subway were changed over from the four-color to the three-color type. Lamp signals for daylight service have superseded the semaphore type of signals employed on the Charles River Bridge open-air section of the Cambridge subway. Seven track-circuit signals for surface cars are also in service on the incline and station loop at Broadway.

More Philadelphia Lease Hearings

Sessions on Dec. 14 and 18—Hearing Set for Dec. 22 Likely to Be the Last Open Discussion

Considerable time was taken up on Dec. 14 in discussion of the proposed amendments to the lease of the high-speed city rapid transit lines to the Philadelphia (Pa.) Rapid Transit Company. Several speeches were made, including those by Councilman Buchholz and C. Oscar Beasley, counsel for the United Business Men's Association, arguing against hasty action, and objecting to the provisions of some of the amendments referred to in the ELECTRIC RAILWAY JOURNAL of Dec. 15, page 1087.

Another hearing was held on Dec. 18. It had been planned to make this the final open discussion of the lease, but it was decided to hear further argument on Dec. 22. According to the program the lease will then be reported favorably to Councils by the joint committee on street railways and finance.

OPINION DIVIDED

The hearing on Dec. 18 was marked by opposition of the United Business Men's Association to the lease. On the other hand the executive committee of the Philadelphia Chamber of Commerce indorsed the lease. The judgment of this committee was that it was desirable to consummate the negotiations with the company as soon as reasonably possible.

ESTIMATES ON FARES

Under the lowest estimate the proposed lease would start the fares off in 1919 at 5 cents and the highest fare would be 5.64 cents in 1924. Under the highest estimate the proposed lease would start fares off in 1919 at 5.11 cents and the highest fare would be reached in 1924 with 5.97 cents. The foregoing figures provide for free transfers. On the other hand, and with no free transfers with the Philadelphia Rapid Transit Company, the fares would start out in 1920 at 5.4 cents under independent operation, reaching the high figure of 8.1 cents the following year. At no time after 1922 and up to 1930 would the fares go below 6 cents.

The estimate for the independent or municipal operation assumes that city-built lines would begin on this schedule:

Frankford to Fifteenth and Chestnut Streets, July 1, 1919.
Darby line to Fifteenth and Chestnut, July 1, 1921.
North Broad and loop, July 1, 1921.
South Broad, July 1, 1922.
Parkway northwest, July 1, 1922.

The estimate for the unified system, the city co-operating with the Philadelphia Rapid Transit Company, assumes that operation of city-built lines would begin on this schedule:

Frankford, Bridge Street, to Front and Arch Streets, July 1, 1918.
Frankford to Rhawn Street, Thirty-fifth Ward, and Darby lines, July 1, 1919.
Broad Street, Spruce Street to Erie Avenue and delivery loop, July 1, 1920.
Parkway northwest, July 1, 1921.
Remainder of Broad Street subway and branches, July 1, 1922.
Chestnut Street subway, July 1, 1924.

Dr. William Draper Lewis, the city's legal adviser, was present and answered questions that were raised during the discussion.

H. M. Brinkerhoff Retained by Chicago

Henry M. Brinkerhoff, who acted as chief engineer of the Chicago Traction & Subway Commission, which made an elaborate report to the City Council of Chicago, Ill., in December, 1916, on the local transportation problems, has been retained by the local transportation committee of the City Council to advise with the committee on the physical recommendations contained in the report and to make such suggestions in regard to these as he sees fit. The committee began its deliberations with Mr. Brinkerhoff on Dec. 18, and will continue these meetings practically continuously until the report has been gone over thoroughly. It is anticipated that it will require a period of one week to go over the work planned.

Gas Diverted from Power House

Although the Cleveland, Southwestern & Columbus Railway, Cleveland, Ohio, has a contract with the Berea Pipe Line Company to furnish natural gas for fuel to its power house at Elyria, and through this contract a priority right over domestic users, the Public Utilities Commission of Ohio issued an order that the gas be turned off at the power house on Nov. 29. This was done as a result of a plea from the people of Oberlin that they had no fuel for warming their homes and would have to have the supply of gas going to the power house at Elyria.

E. F. Schneider, general manager of the railway, secured two cars of coal by 3 p. m., the time the gas was turned off. For the four hours succeeding that time the 217 miles of road was idle and Medina, Rittman, Sterling, Seville, Creston, Le Roy, West Salem, Crestline, Grafton, Norwalk and some other places were without light and power.

Strike in Mississippi.—A general strike of employees of the Gulfport & Mississippi Coast Traction Company, Gulfport, Miss., which operates a line between Biloxi and Pass Christian, was called on Dec. 5, when officials of the company refused to recognize a recently organized union and grant wage increase demands.

Bonuses in New York.—The directors of the Interborough Rapid Transit Company, New York, N. Y., have authorized the payment of a Christmas bonus of $5 each to employees whose pay is less than $150 a month and who have been in the employ of the company since Dec. 31, 1916. Similar action has been taken by the directors of the New York Railways.

Shore Line Men Accept Raise.—The trainmen of the Shore Line Electric Railway, Norwich, Conn., have accepted the recent wage offer of the company, to take effect immediately. The men will receive an increase of 3 cents an hour. Those who have been with the company more than six years will receive 35 cents an hour. The minimum wage will be 27 cents an hour.

New Entrance to Cincinnati Authorized.—The Public Utilities Commission of Ohio has authorized the Cincinnati, Lawrenceburg & Aurora Electric Railroad to enter Cincinnati over a new route, which has already been described in the ELECTRIC RAILWAY JOURNAL, and to abandon the old one. Cars will be operated over the present line until the new track is completed. An ordinance, providing for the route, is now before the City Council of Cincinnati.

Three Hundred New Men in Chattanooga.—The Chattanooga Railway & Light Company, Chattanooga, Tenn., now has nearly a full complement of motormen and conductors. When the men now in training have served the time required by law and are considered competent by the company, normal service will be possible. It is stated that since the second strike of the company's trainmen 300 new men have been employed. Nearly full time schedules have been resumed on most of the lines.

Inquiry Into Construction Progress Put Over.—The inquiry by the Public Service Commission for the First District of New York into the reasons for the delay on the part of the Interborough Rapid Transit Company in getting the new subway lines ready this month for at least partial operation has been postponed until the week commencing Dec. 24. In the meantime there will be conferences between the commission and officials of the company for the purpose of gathering the precise details of the work needed to be done.

Hudson Vehicle Tunnel Would Cost $12,000,000.—General George W. Goethals, who has been engaged as a consulting engineer by the New Jersey & Hudson River Bridge & Tunnel Commission, has submitted a report to the effect that a vehicle tunnel under the Hudson River to connect New Jersey with Manhattan could be built for a sum not exceeding $12,000,000 and that the project does not present insurmountable engineering problems. Mr. Goethals' figures were contained in an estimate by John F. O'Rourke of the O'Rourke Engineering & Construction Company, who said that his concern was prepared to complete the work in less than three years.

Financial and Corporate

Annual Report

Lima Light, Power & Tramways Company

The annual report of the Lima Light, Power & Tramways Company for the year ended Dec. 31, 1916, shows that the earnings reached a new high record, exceeding the earnings of 1913, the previous banner year. This company holds practically a monopoly of the railway, power and light in Lima, Callao and several suburban towns in Peru. The bonds of the company are largely held in London, but there is also considerable local and American capital invested in it.

The gross revenues for the year amounted to $1,986,363, compared with $1,880,035 for 1915, an increase of $106,328. The total expenses amounted to $1,359,557, compared with $1,386,968 in 1915, a decrease of $27,411. Operating expenses in 1916 amounted to $893,080, or $57,035 in excess of 1915. The taxes, leases, etc., totaled $179,783, or $10,380 more than in 1915. Interest and other charges amounted to $286,692, a decrease of $94,827.

The gross revenue on the various urban and interurban tramways operated by the company amounted to $991,762 in 1916, and the cost of exploitation to $633,476, leaving a net revenue of $358,286, compared with $383,487 in 1915. The increased cost of materials was the principal reason for the decrease in net revenue from this source. The principal capital expenditure in connection with tramway operation during 1916 was the alteration in the route of one of the Lima urban lines, involving an expenditure of $40,343. The gross revenue from the freight tramways in 1916 amounted to $154,823, the cost of exploitation being $153,905 for this portion of the service.

The directors distributed a part of the net revenue of $626,805 in the following form: Dividends, $131,475; amortization account, $194,660; and income tax on 1913, 1914, and 1915 revenue, $41,151. This company uses large quantities of American electrical equipment and goods; also American-built high-power cars of modern design for suburban operation.

Tax Payment Turned to Account

Milwaukee Electric Railway & Light Company Makes Public Relations Capital of Huge State and Federal Payment

The Milwaukee Electric Railway & Light Company, Milwaukee, Wis., recently made some public relations capital of its State tax payment by providing one of the local newspapers with a photograph of the check, which was for $546,872. The company supplied the newspaper with information for a story which accompanied the photograph, in which it was brought out that the city would ultimately receive 65 per cent of this amount, or $276,724; the county 20 per cent and the State 15 per cent, a division made in accord with a new State law. The total taxes against the company, including State and federal, will amount to $612,390.47. This amount represents 6.18 per cent of the total operating revenue of the above company in combination with that of the Milwaukee Light, Heat & Traction Company, which amounts to $9,892,492.04. For every dollar of the net income of $1,463,077.96 there is paid in taxes 41.86 cents, or nearly one-half.

During the year ended Oct. 31 the company carried a total of 177,515,482 passengers, including revenue, transfer and free passengers. This was an increase over the previous year of 4.12 per cent. The passenger revenue of the company increased 6.5 per cent. The railway operating expense, including taxes, increased 11.4 per cent. The electric service department of the company showed an increase in revenue of 21.9 per cent, while the expenses of that department, including taxes, increased 41.3 per cent.

Public Utilities Important

Committee of Investment Bankers Points Out that Utilities Represent Millions in Small Savings Among Individual Investors

The public service securities committee of the Investment Bankers' Association of America in a report to that organization says:

"Our country's economic and industrial future, as well as the successful prosecution of the war, depends in large measure on the ability of our public utilities to continue their service, and even more on the large expansion of their labor, time and money-saving machinery against the exigent needs of the post-war period, and these are all functions of capital.

"No class of securities is more widely distributed than the bonds and stocks of electric railway, gas and power and light, telephone and other public utility companies. The average holdings are small, and while very large amounts of utility securities are held by the insurance companies and savings banks, they are also widely distributed in the smallest denominations among a multitude of individual investors. More than $4,500,000,000 are invested in electric plants, nearly $5,000,000,000 in electric railways, $3,500,000,000 in gas plants, $1,500,000,000 in telegraphs and telephones and probably $500,000,000 more in equipment and supplies for these utilities in the hands of dealers—a total of $15,500,000,000 of the people's savings that are devoted to the conservation of energy in the public service."

Public Service to Retrench

President McCarter Discusses the Problems Before His Company and Tells What It Is Proposed to Do

Thomas N. McCarter, president of the Public Service Corporation of New Jersey, Newark, N. J., has recently announced proposed retrenchments, due to the effect of the war on transportation interests. He is quoted by the Newark *News* in part as follows:

"Our company is paying 8 per cent dividends, and if it is to continue to do that every effort must be made to keep it going at the lowest possible cost. Not to be able to continue that dividend rate would perhaps render it difficult to raise money advantageously or profitably to dispose of securities.

"The utility companies are being held down, and are not permitted to work out their own salvation, as are the steam roads and business in other lines.

"Too many people are obsessed with the erroneous notion that the Public Service Corporation is still being managed on the basis it was when the securities of its component companies were watered and not always equitably administered. They forget that that day is past; that for the last fifteen years, at least, there has been no water injected, that securities have been made good where they might have been subject to criticism. And if the time does not come when the people of the State recover from this mistaken view of the management of Public Service so that the public may feel confidence in the company and be willing to buy its securities, they will handicap and hamper the enterprise in the work of trying to meet the needs of the public.

"Some of the money needed now to be put back into the property will be secured through retrenchment rather than by capital issues. Other funds will have to be obtained also. Cars will not be put through the shops quite so often as heretofore, perhaps. Men with the company have always been supposed to do a full week's work every week. Probably they have done so, but now they are going to try to do a good deal more than that. We have forty-six cars waiting for us at Cincinnati, but we can't get them owing to priority of war shipments. Large orders for electrical units for the production of more power are behind time as to delivery for a similar reason, and much money will be needed in order to make payment for them when they get here."

Bankers' Committee to Consider Security Issues

Warren S. Hayden of Cleveland, president of the Investment Bankers' Association of America, has appointed, pursuant to a resolution of its board of governors, a special committee to investigate the question of conservation of capital in its relation to the prosecution of the war. The committee consists of the following: Allen B. Forbes, chairman, Harris, Forbes & Company, New York; N. Penrose Hallowell, Lee, Higginson & Company, Boston; H. C. McEldowney, president Union Trust Company, Pittsburgh; H. L. Stuart, Halsey, Stuart & Company, Chicago, and W. R. Compton, W. R. Compton Company, St. Louis.

Bluffton, Geneva & Celina Traction Company, Bluffton, Ind.—Thomas Flinn, who purchased the property of the Bluffton, Geneva & Celina Traction Company some time ago with the intention of junking it, has filed an answer with the Indiana Public Service Commission to the petition filed two weeks ago by farmers living along the line asking that Mr. Flinn be prevented from dismantling the road. Mr. Flinn states that he purchased the road at receiver's sale on Oct. 13, 1917, for $118,000. He declares that the Circuit Court ordered the road sold unconditionally after it had been ruled that the company operating it was insolvent; that he bought the property without any conditions, and that it is his to do with it as he pleases. For these reasons he asks the Public Service Commission to deny the petition of the people living along the road.

Chicago (Ill.) City Railway.—The directors of the Chicago City Railway have declared the regular dividend of 2 per cent and an extra dividend of three-quarters of 1 per cent, both payable on Dec. 29 to stock of record as of Dec. 24.

Eastern Power & Light Corporation, New York, N. Y.—The Eastern Power & Light Corporation has passed the regular quarterly dividend of 1¾ per cent on the preferred stock.

Fairmount Park Transportation Company, Philadelphia, Pa.—Judge Thompson, in the United States District Court at Philadelphia, on Dec. 13 confirmed the sale of the assets of the Fairmount Park Transportation Company by Frank Kreis, Jr., assignee, to Percival E. Foerderer for $58,000, subject to a lien of first mortgage bond issue for $750,000. On Dec. 14 the Fairmount Park Transit Company succeeded the Fairmount Park Transportation Company in the operation of the electric railway and other property.

Kansas City (Mo.) Railways.—The Missouri and the Kansas State Utilities Commissions have approved an issue of $1,200,000 of new bonds by the Kansas City Railways in addition to the $30,000,000 present capitalization. The company presented data before both commissions to show that it had made improvements totaling $3,000,000 in the last three years that properly would be chargeable to capital account. Of that amount $800,000 is credited to the city in the plan that gives it a growing interest in the ownership of the company. That left $2,200,000 in company ownership, but only $1,200,000 is to be borrowed. About 30 miles of extensions have been built in the last three years, making a total of 300 miles of track in Greater Kansas City.

Massachusetts Electric Companies, Boston, Mass.—At the annual meeting of stockholders of the Massachusetts Electric Companies on Dec. 19, Gordon Abbott, president, announced that a meeting of the trustees would be held the day after Christmas, when two members of the stockholders' committee would be appointed to the board. In addition, the stockholders voted to form a committee to seek additional information in regard to the situation of the company. Mr. Abbott appointed to this committee H. A. Holder, Roger W. Babson, Robert Morse and Gordon Abbott. The protective committee of the 5 per cent notes announced that more than a majority of the notes have been deposited with it pursuant to the terms of its agreement of Nov. 30. Mr. Abbott said that for the year to end with this month the controlled Bay State Street Railway would show earnings of about $400,000 above all charges, but that the demands made by local communities for improvements in the way of bridges, grading, etc., had used up all the company's cash.

Memphis (Tenn.) Street Railway.—Bertron, Griscom & Company, New York, N. Y., are offering at 97½ and interest, $1,250,000 of two-year 6 per cent collateral gold notes of the Memphis Street Railway, dated Nov. 1, 1917, due Nov. 1, 1919, but callable in whole on thirty days' notice at 100½ and interest.

Minneapolis, St. Paul, Rochester & Dubuque Electric Traction Company, Minneapolis, Minn.—A part of the Minneapolis, St. Paul, Rochester & Dubuque Electric Railway, extending from Otto Junction to Loose Line Junction, was sold under foreclosure at Minneapolis on Dec. 18 to a committee of holders of collateral trust notes for $100,000. No bid was received for the remainder of the line.

New York (N. Y.) Railways.—An order has been adopted by the Public Service Commission for the First District of New York permitting the Bleecker Street & Fulton Ferry Railroad to abandon operation of portions of its route on the lower west side of Manhattan. These portions of the route consisted of horse car lines upon which service has ceased. The commission at the same time adopted a memorandum by Chairman Oscar S. Straus setting forth the commission's reasons for its action. The Bleecker Street & Fulton Ferry Railroad is held under lease by the New York Railways, and portions of its route are valuable sections of trackage, including in the operation some of the city's most important crosstown lines. In his memorandum Chairman Straus makes it clear that parallel surface railroad lines and adjacent rapid transit lines make the continuance of the old operation unnecessary and that the abandonment will provide for the removing of the old rails from the streets, to the benefit of vehicular traffic.

Northern Ohio Traction & Light Company, Akron, Ohio.—The National City Company, New York, N. Y., is offering at par and interest $1,000,000 of 7 per cent secured bonds of the Northern Ohio Traction & Light Company, due as follows: $25,000 in 1919, $50,000 in 1920, $100,000 in 1921, $150,000 each in 1922, 1923, 1924 and 1925, and $225,000 in 1926. They are secured by $1,500,000 of first lien and refunding mortgage 5 per cent bonds. The proceeds from the issue will be used to increase the generating capacity with which to supply power to the rubber goods manufactories in Akron, Ohio.

Nova Scotia Tramways & Power Company, Halifax, N. S.—In connection with the company's application to increase the authorized capital stock from $6,000,000 to $10,000,000 and to issue $975,000 of bonds, the Public Utilities Commission at Halifax, N. S., has approved items of proposed capital expenditure amounting to $845,641, but held over for further consideration items aggregating $569,586. For the present the board refuses to increase the capital.

Electric Railway Monthly Earnings

ATLANTIC SHORE RAILWAY, SANFORD, ME.

Period	Operating Revenue	Operating Expenses	Operating Income	Fixed Charges	Net Income
1m., Nov., '17	$11,712	$10,175	$1,537	$471	$1,066
1 " " '16	22,841	21,072	1,769	668	1,101

CLEVELAND, PAINESVILLE & EASTERN RAILROAD, WILLOUGHBY, OHIO

Period	Operating Revenue	Operating Expenses	Operating Income	Fixed Charges	Net Income
1m., Oct. '17	$44,939	*$32,250	$12,689	$11,691	$997
1 " " '16	38,570	*23,545	15,025	11,489	3,535
10 " " '17	454,347	*281,890	172,447	116,838	55,609
10 " " '16	390,147	*219,471	170,676	114,042	56,634

LAKE SHORE ELECTRIC RAILWAY, CLEVELAND, OHIO

Period	Operating Revenue	Operating Expenses	Operating Income	Fixed Charges	Net Income
1m., Oct., '17	$142,840	*$107,995	$34,845	$35,321	†$476
1 " " '16	136,113	*84,878	51,235	36,521	14,714
10 " " '17	1,475,625	*999,418	476,207	346,848	129,359
10 " " '16	1,343,126	*838,007	505,119	363,827	141,292

NEW YORK (N. Y.) RAILWAYS

Period	Operating Revenue	Operating Expenses	Operating Income	Fixed Charges	Net Income
1m., Oct., '17	$1,103,614	*$819,086	$284,528	$280,995	‡$53,022
1 " " '16	780,263	*647,559	132,704	281,111	†$92,144
4 " " '17	4,388,906	*3,189,394	1,199,512	1,127,607	‡272,795
4 " " '16	3,610,105	*2,689,102	921,003	1,131,850	‡210,962

PHILADELPHIA (PA.) RAPID TRANSIT COMPANY

Period	Operating Revenue	Operating Expenses	Operating Income	Fixed Charges	Net Income
1m., Nov., '17	$2,512,229	$1,496,010	$1,016,219	$810,757	$205,462
1 " " '16	2,361,936	1,321,399	1,040,537	814,174	226,363
5 " " '17	12,408,029	7,234,599	5,173,430	4,056,582	1,116,848
5 " " '16	11,369,858	6,307,726	5,062,132	4,073,313	988,819

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*Includes taxes. †Deficit. ‡Includes non-operating income.

Traffic and Transportation

Indiana Body Assumes Fare Jurisdiction

Application of Union Traction Company of Indiana for Fare Increase Considered by Commission

The Public Service Commission of Indiana on Dec. 17 assumed jurisdiction in the petition of the Union Traction Company of Indiana for increased rates of fare on its city and interurban lines. These increases cover a 7-cent fare on the Broad Ripple line to points north of Fairfield Avenue, instead of a 5-cent fare; 35 cents to Fort Harrison instead of 25 cents, with intermediate points in proportion; a 6-cent fare in the cities of Anderson, Muncie, Marion and Elwood, eliminating the tickets sold six for 25 cents; 2 cents per mile for mileage books instead of 1¾ cents; 1 1/5 cents per mile for school passengers instead of 1 cent; 1½ cents for commuters instead of 1¼ cents, and a minimum fare on interurban lines of 10 cents instead of 5 cents. Evidence intended to show the necessity for these increases was introduced by the company.

Jurisdiction was assumed only temporarily in the case as it applies to Broad Ripple and Fairmount, since it was contended by Emsley W. Johnson, Indianapolis, and Clarence T. Parker, Fairmount, both attorneys, that the company is bound by franchises and has never surrendered them. In other objections the commission held it has power to grant the increases temporarily without disturbing the basic rates. The other objections were filed by Woodburn Masson for the city of Indianapolis, S. L. Strickler for Marion and Grant County, John McPhee for Muncie, A. E. Schmollinger and J. Carson for the Northwestern Improvement and Civic Association of Indianapolis. They were overruled by the right of the commission to grant emergency rates. The entire commission sat on the case with Commissioner Edwin Corr in charge.

PRESIDENT BRADY STATES THE CASE OF THE COMPANY

Arthur W. Brady, president of the company, stated that in an effort to reduce operating expenses the company had reduced its traffic on Sunday by 700 car-miles and that further reductions could not be made without grave impairment to the service. He stated that fixed charges of the company amounted to $935,000, and that unless sufficient increases in revenue could be obtained to meet these charges, somebody else would have to take charge of the company. The fixed charges mentioned included approximately 5 per cent of $17,894,500 of the bonds and the stock of three leased companies on which dividend rentals are being paid. No dividend, however, on the Union Traction Company stock had been paid since 1914. The company's bonds amounted to $15,394,500. Mr. Brady stated that the value of the property of the Union Traction Company was approximately $21,238,265. He declared that the deficit for the Broad Ripple line for the ten months ending October, 1917, was $22,000, and that the Elwood city line during the last six years had shown a deficit of $34,715.

Walter Shroyer, auditor of the company, testified that the operating revenue for the first ten months of the year 1917 had increased 10 per cent, but that the operating expenses for the same period had increased 27 per cent. Fuel cost was three times the amount of last year. The percentage of operating expenses to operating revenues for the period of ten months was 64 per cent as compared with 56 per cent for the same period in 1916.

DETAILED FINANCIAL STATEMENTS PRESENTED

At the continuation of the hearing on Tuesday, Dec. 18, the detailed financial statements of the earnings and operating expenses of the owned and leased properties of the company were presented by Mr. Shroyer. It was shown that the Muncie & Portland Traction Company had a net income for the year ended June 30 of $8,086; the Indianapolis, New Castle & Eastern Traction Company had a net income of $1,441.25; the Muncie, Hartford City & Fort Wayne Railway for the year ended Dec. 31, 1916, had a net loss of $3,145; the Broad Ripple Line had a deficit for the ten months ended Oct. 21, 1917, of $22,231, and for the period beginning with 1912 and ending Oct. 31 of this year, a total deficit of $77,079.

Chairman Lewis of the commission remarked that the revenues from the city lines of the company were falling off and asked if that was not the condition of city lines everywhere. Mr. Brady stated that he thought it was. Mr. Lewis asked what was the reason for this condition and Mr. Shroyer said that he thought it was principally brought about by the increased operation of automobiles and jitney buses. Mr. Lewis stated that there was a question in his mind as to whether or not the higher rate of fare would not result in throwing more business to the jitney buses. Mr. Van Osdol, attorney for the company, remarked that this was a matter which would have to be worked out.

Women for St. Louis Cars

United Railways Advertises for Women for Tripper and Other Duties

The United Railways, St. Louis, Mo., has established a school for the training of women in electric railway work for such duties as they may suitably perform. Much of this work will be morning and evening service which a woman may do without neglecting her household duties. The company is now ready to receive applications for this school, and in selecting pupils members of the families of employees and soldiers will receive the preference. Applicants must be in good physical condition, between the ages of twenty-five and forty years. Each applicant is required to give as reference at least two local business men. The training will require sixteen days, and at the end of this training period the company will pay $10 to each pupil who completes the training satisfactorily and is accepted as an emergency employee and who will agree to come to work whenever notified by the company. All work will be paid for at the same rate now paid to men for similar work.

PRESIDENT MCCULLOCH EXPLAINS

Richard McCulloch, president of the company, has explained the intention of the company in part as follows:

"There is no intention of using women to replace men except where such men are needed by the government, and we expect to hold open the places of such of our men as are called by the government, so that when they return to us they may immediately step into their old places or situations equally as good.

"In the selection of women to take the instruction, preference will be given to women belonging to the families of our employees or to the families of soldiers. The women will be paid for taking the training course, and we hope in this way to attract to our service earnest women who wish to become the breadwinners for their families. It is our intention to protect women in their work, and any attempt on the part of anyone to take advantage of the fact that they are engaging in unusual work will be repressed in such a way that there will be no recurrence of the attempt. Our work is serious business and should be treated as such. Women will be paid the same rate of wages now paid men for similar work. In the *United Railways Bulletin* will be found an advertisement describing the nature of the work and the conditions under which application may be made.

"As everyone in the electric railway busness knows, one of the most difficult problems is taking care of the extra service required night and morning. This constitutes one of the serious problems in arranging hours of work, as it is necessary that a man should be provided with a day's work. It is entirely possible, however, that many women who have household duties to perform can undertake night and morning work without interference with such duties. In this case work which does not appeal to men might be attractive to women.

"We hope that all of our employees will consider this as a war measure and one taken for the assistance of our government in these trying times."

Ticket Withdrawal Sustained

Massachusetts Supreme Court Decides that Public Service Commission Has Plenary Power to Adjust Bay State Company's Rates

The Bay State Street Railway on Dec. 8 was sustained by the Supreme Court of Massachusetts in a decision against the city of Fall River, which sought to set aside an order of the Public Service Commission effective March 15, 1917, relieving the company from selling six tickets for 25 cents. The court pointed out that no evidence of illegal action by the commission or error in the proceedings was apparent, and that the latter's functions are plenary with respect to the control of electric railway fares. Moreover, the decision denied the right of Fall River to a preferential rate because of the alleged profitableness of lines in that city. It is estimated that the withdrawal of tickets will increase the company's yearly earnings by about $50,000.

WHAT THE COURT RULED

The Fall River franchise contained the condition that the railway would sell six tickets for not exceeding 25 cents. This provision has not been complied with by the company since March 15, 1917. But, the court said, the statute of 1913 (Chapter 784), with certain exemptions not applicable in the present case, placed the subject of fares on all electric railways under the exclusive control of the Public Service Commission. It provides in Section 29 that "this act shall be deemed and construed as a remedial act and enlargement and extension of all previous acts and existing laws conferring upon or vesting in the commission any jurisdiction, powers or discretion with respect to any subject or matter treated in this act," and "all acts and parts of acts which would in any way limit or prevent the exercise to the fullest extent of any of the jurisdiction, powers, authority or discretion delegated herein to the commission are hereby repealed." The statute being constitutional and the powers of the commission plenary over the regulation of fares on electric railways, independently of whatever conditions may have been imposed in antecedent grants of location by selectmen of towns or municipal boards, the withdrawal of the cut-rate tickets involved no errors of law.

In regard to the preferential fare demanded by the city, the court stated:

"The inquiry of the commission as to whether an increase of fare was necessary in order to obtain a reasonable compensation for the service rendered involved primarily a question of fact. It was not limited to any particular part of the system which if operated by itself might be found to be more self-sustaining. And the question whether the company should be permitted to withdraw the commutation tickets called for the exercise of the sound discretion and judgment of the commission, based on the evidence of the company's financial condition and ability to serve efficiently the public dependent upon the maintenance of its entire system of intercommunication and transportation."

Hearing on Freight Rates

The Railroad Commission of Texas has issued notice that it will, at a hearing to be held in Dallas on Jan. 8, consider a proposition looking to the issuance by the commission of an order requiring the interurban railways of Texas and the express companies operating over such interurban lines, to observe the freight and express rates that were in force prior to Oct. 15, 1917, in lieu of the rates now in effect and termed by the interurban lines and interurban express companies as their "Class B" tariff. It has been represented to the commission that the interurban railways and the interurban express companies, prior to Oct. 15, were charging the class rates of the Railroad Commission of Texas, but that since Oct. 15 they have adopted the rates as provided in Fonda Tariff 2-B, which are somewhat higher than the commission's rates. The commission, which, as noted in the ELECTRIC RAILWAY JOURNAL of Dec. 15 recently issued an order assuming jurisdiction over all interurban railways operating in Texas, now proposes to order the reinstatement of the old freight and express rates.

Connecticut Fare Hearings Go On

At Short Sessions on Monday and Tuesday Professor Swain Testified for the Company—Case Goes Over to Dec. 27

Short sessions were held on Dec. 18 and 19 before the Public Service Commission of Connecticut with respect to the application of the city of Hartford for the restoration of the 5-cent fare on the lines of the Connecticut Company in that city. Among those who testified at the sessions were W. E. Jones, statistician; ex-Congressman Louis Sperry of South Windsor, and Prof. George F. Swain of the Massachusetts Institute of Technology. Mr. Sperry appeared in the interests of the people of the town. Professor Swain appeared for the Connecticut Company.

CONSOLIDATIONS WERE IN THE PUBLIC INTEREST

Professor Swain said that consolidations of electric railways into large systems were in the public interest. They enabled the operating companies to save by unified operation and to give better service for lower rates than could independent units. He said that consolidations should not be allowed with the object of making prosperous companies bear the burden of carrying unsuccessful companies. He interpreted the statutes passed in Massachusetts to mean that consolidation must not be the pretext for raising fares on any specific road. Neither was it the intent to bar an electric railway formed by consolidation from increasing its fares. He said that a company could add to its earnings by practising economies and by securing increases in business. Consolidations were made for profits or for a change from a losing proposition to a paying one. After consolidation a company should be considered as a single unit and the same fare should be applied to all lines whether the fare was increased or decreased.

NEXT HEARING TO BE HELD ON DEC. 27

At the conclusion of Professor Swain's testimony the hearing was adjourned until Dec. 27. It is expected that at the next session Matthew C. Brush, president of the Boston Elevated Railway, and Charles Rufus Harte of the Connecticut Company will testify.

Service Change Proposed in Portland

The City Council of Portland, Ore., has ordered that the proposed ordinance permitting the Portland Railway, Light & Power Company to abandon the tracks on East Sixty-second and other streets leading from the Sandy Boulevard line to the old Country Club grounds be advertised in accordance with the provisions of the charter. After the ordinance has been advertised for twenty days objections to such abandonment will be received, and the Council will hold a public hearing on the proposal. The tracks are used only when there are attractions at the Country Club. The company desires to abandon them so as not to be required to pay its share of the cost of paving and maintaining the streets.

In an opinion to the City Council the city attorney holds that that body has the right to amend the franchises of the company so that service on stub-end lines may be abandoned. The amendments to the franchise, however, have to be made through regular procedure prescribed in the charter. The company will discontinue "owl" service on the Richmond line.

Public Representative a Director

Albert M. Lyon of the Newton (Mass.) school committee and a Boston attorney, has been appointed as a representative of the public to serve with the directors of the Middlesex & Boston Street Railway in connection with fare problem discussions and prospective increases in rates. The appointment came at the suggestion of James L. Richards, president, who advised a committee representing various Newton improvement associations and the Board of Trade to select one man who would represent all these bodies and would serve as a director in order to obtain first-hand information as to the company's affairs.

Car-Heating Case Closed

Commission Concludes Hearings on the Application of the Brooklyn Rapid Transit Company for Suspension or Modification of Car-Heating Order

The Public Service Commission for the First District of New York announced on Dec. 14 that the hearings upon the application of the Brooklyn Rapid Transit Company for a suspension or modification of the commission's car-heating order have been closed, and that the detailed reports by the commission's inspectors, who made observations during the recent tests, are being compiled and further summarized. When this is done, they will be examined by the commission, to see if there is warrant for any modification of the prescribed heat standards.

WHERE THE TESTS WERE CONDUCTED

The tests as to surface cars were conducted upon only one line, the Flatbush Avenue line, from Brooklyn Bridge to the carhouse at Avenue N and Forty-ninth Street, and no more than three cars were used in the tests during any rush-hour period. On the elevated lines, no more than one train was in any instance used during any rush-hour period, and usually only two or three cars in that train were observed and reported upon. Accordingly, out of the entire number of surface and elevated cars operated by the system in Brooklyn, no more than three surface cars and two or three elevated cars were being used in the tests during any morning or afternoon rush-hour period.

Another Connecticut Fare Change

Reasons for Adoption of Copper Zone System Explained by the Hartford & Springfield Street Railway

The Hartford & Springfield Street Railway, Warehouse Point, Conn., has explained to its stockholders the proposed change by it to the copper zone system referred to briefly in the ELECTRIC RAILWAY JOURNAL of Dec. 8, page 1055. The company said in part:

NO DIVIDENDS SINCE 1913

"Since 1913 no dividends have been paid upon the stock of the company, but up to the current year earnings have been sufficient to meet all operating expenses and fixed charges and maintain the company's property in fair physical condition. During the past eleven months, however, the price of fuel and of other raw material has advanced to such a point that the income of this company for the period is not sufficient to meet these abnormal conditions.

CHANGE BASED ON RECOMMENDATIONS OF ENGINEERS

"This state of affairs was anticipated by the officers of your company early in the year, and in the summer of 1917 Sloan, Huddle, Feustel & Freeman, engineers, were employed to make a complete study of the situation and advise some means of increasing the company's revenue. This report is now available and the engineers recommend therein that a system of charging by zones, such as has been successfully worked out in the Middle West and by the Shore Line Electric Railway in Connecticut, be installed as soon as possible. The plan contemplates the separation of the road into definite zones and to charge 2 cents per zone, with a minimum charge of 6 cents.

"This method of collecting fares is a much more equitable arrangement than the present system, as the amount each passenger pays is in proportion to the distance he rides. In no other line of business does the consumer expect to pay a fixed sum regardless of cost to the producer, but the New England public must immediately recognize that there is no mystery about the operation of an electric railway, and unless they are willing to pay the cost of service rendered then the enterprise cannot be continued.

"Preparations are now being made to have the new system effective on Jan. 1, 1918, and an increase in gross income is looked for immediately."

Traffic Study of Congested Cleveland

Fielder Sanders, street railway commissioner of Cleveland, Ohio, has completed a survey of certain spots in the congested district which shows that in the territory bounded by East Ninth Street, West Ninth Street, St. Clair Avenue and Eagle Avenue, 31,279 automobiles, wagons and street cars passed in a single Saturday between 2 p. m. and 6.15 p. m. The vehicles collectively would occupy three times as much space as is contained in the streets of that district. The displacement of wagons and automobiles was estimated at 70 sq. ft. each, and electric railway cars at 422 sq. ft. in making the compilation. The figures showed that vehicles with a total displacement of 3,534,874 sq. ft. passed through 1,000,000 sq. ft. of streets in the district in four hours and fifteen minutes. Removal of the electric railway cars would take away one-half of the space-consuming vehicles.

16,165 AUTOS PASS IN FOUR HOURS

In the four hours and fifteen minutes 16,165 automobiles, trucks and wagons and 3822 electric railway cars passed through the district. Standing automobiles and wagons to a total of 11,292 were counted. Euclid Avenue and East Ninth Street, where 4671 vehicles of all kinds passed, was the busiest corner, while Superior Avenue and East Ninth Street came second. Automobile traffic was heaviest between 5 and 5.30 p. m.

Figures are being prepared by Mr. Sanders to show the saving that will be effected by the use of subways on Superior Avenue between East Ninth and West Ninth Streets, Euclid Avenue between East Ninth Street and the Public Square and Ontario Street between Lakeside Avenue and Central Market.

HOW SUBWAY WOULD HELP

Mr. Sanders estimates that cars operate 3,548,432 miles annually in the territory above outlined. It requires 821,359 hours of labor annually by motormen and conductors to operate the cars. In Boston the number of hours, with a district of comparatively the same size, is 625,791. The Boston subways save 195,568 hours of man labor. As the average wage in Cleveland is 33.55 cents an hour, the saving in money, with the subway system completed, would be $65,613 annually.

In the morning rush hours the average speed in Cleveland is 8.13 m.p.h. as compared with 10.95 m.p.h. in Boston. In the afternoon rush hours the speed in both cities drops, but Boston with 7.85 m.p.h. still has the advantage over Cleveland with 6.60 m.p.h.

Cleveland cars travel a total of 1,570,651 miles annually during the rush hours in the small district outlined and the hours of man labor total 357,927, as compared with 281,691 in Boston where there is a saving of 76,236 hours of labor each year during the rush periods alone.

Cleveland Fare Increase in Effect

Since Dec. 15 the people of Cleveland, Ohio, have been paying fare on the Cleveland Railway at the rate of 3⅓ cents, which is the first step above the minimum established by the Tayler franchise. Tickets are sold in strips of three for 10 cents or six for 20 cents, while the cash fare is 4 cents. A charge of 1 cent is made for transfers, but this is rebated when the transfer is used.

The change went into effect without any protest from the public. J. J. Stanley, president of the Cleveland Railway, said that the increase would yield very little, if any, more than the old plan of a straight 3-cent fare, with a charge of 1 cent for transfers, not rebated. Under the franchise, however, the fare must be increased one step at a time.

Should the next monthly statement indicate that as a result of the change there has been no increase in the interest fund, the charge for transfers will not be rebated. This would constitute the next step under the terms fixed by the franchise. The company asked Council to authorize it to increase the fare to this point at once, but it delayed action by submitting the matter to the railway committee.

The change in rate made on Dec. 15 did not require the consent of the Council, since the franchise provides for an automatic change when the interest fund reaches minimum.

Hearing on Rainier Valley Fares

City in Anomalous Position of Wanting to Render to One Company Relief It is Seeking to Deny to Another

A preliminary hearing was held recently on the petition of the Seattle & Rainier Valley Railway to the City Council of Seattle for permission to abolish the 4-cent fare and to impose a 2-cent charge on the issuance and receipt of transfers with the Puget Sound Traction, Light & Power Company. The majority of the councilmen who took part in the discussion declared that in view of the litigation by the city over the action of the Public Service Commission in permitting the Puget Sound Traction, Light & Power Company to abolish 4-cent tickets, the relief asked by the Seattle & Rainier Valley Railway could not be granted. The Council appointed Judge Moore and Councilman Lane as a special committee to confer with Walter F. Meier, acting corporation counsel, to determine whether the Council could grant the relief asked and whether, in view of the litigation, it would be advisable.

RELIEF SHOULD BE GRANTED

Oliver T. Erickson, chairman of the public utilities committee of the Council, intimated that the relief asked by the company should in justice be granted, but that "the public would not understand why we permit something to be done by this company which we are opposing in the case of the Puget Sound Traction, Light & Power Company." Judge Moore declared that there was a marked difference in the two cases. He said: "The Seattle & Rainier Valley Railway has offered to lay the facts before us, while the other company did not lay the facts before the City Council or the Public Service Commission."

Marshall P. Sampsell, Chicago, president of the company, who is conducting the negotiations with the Council, states that wage increases made by the company during the last year have added $30,000 a year to the operating expenses and that the advance in the cost of materials and in the maintenance of the property has added $12,000 to the expenses.

The judiciary and franchise committee of the City Council of Seattle, Wash., in joint conference, recently decided that the City Council would not assume jurisdiction over the application of the Seattle & Rainier Valley Railway for elimination of 4-cent tickets unless the city won its appeal from the action of Thurston County in upholding the action of the Public Service Commission on the application of the Puget Sound Traction, Light & Power Company. It was decided, however, that the city would not formally oppose the application which the railway will make to the Public Service Commission, but would appeal from the commission's decision only if the Council considered that the action of the commission was not justified by facts presented at the hearing.

Jitney Injunction Made Permanent

So-Called Free Buses in Portland, Ore., Must Go, the U. S. District Court Holds

United States District Judge Jeremiah Neterer, in Seattle, Wash., entered an order on Dec. 6, making permanent the temporary injunction issued on the application of the Puget Sound Traction, Light & Power Company restraining Earl W. Arnold and nearly 190 other jitney operators from operating jitney buses in competition with the cars of the company. The permanent injunction, as did the temporary injunction, holds against all the defendants served with processes except H. G. Gould, against whom the petition for an injunction was dismissed. Following the granting of the temporary injunction on July 11, last, a hearing of the case on its merits was held, arguments made and briefs filed. The validity of the injunction was attacked chiefly on the ground that the defendants claimed not to be acting as common carriers, and that, therefore, they did not come within the provisions of the law passed by the last Legislature requiring jitney owners to furnish indemnity bonds.

In disposing of this contention, as well as the claim of the defendants that they are operating "free buses," Judge Neterer said that the purpose of the law requiring jitney operators to furnish bonds was to protect the public against irresponsible operators, and that the act, therefore, must relate to all engaged in like business. Judge Neterer said:

"The defendants may operate jitneys carefully and free from any negligent conduct, but that does not excuse them from compliance with the act requiring the filing of a bond. The defendants are not operating 'free buses.' Operating a jitney is one of the sources of income and is employment for private gain. A card on the windshield on the outward side of which appears 'free bus' and on the inward side of which appears 'contributions received for defense fund against the traction company' is clearly a subterfuge, and will not excuse the defendants from compliance with the provisions of the act. It is an evasion which the law will not countenance. The law may be very undesirable. The motive which inspired it may have been unworthy. The wisdom of the law or the motive which inspired it are not matters for judicial determination on this trial. This court is merely concerned with the law as it relates to the facts presented. The defendants are not prohibited from operating jitneys. They are merely required to comply with a regulatory statute which has been held by the Supreme Court of the State to be constitutional."

ONLY NOMINAL DAMAGES GRANTED

In concluding his opinion, Judge Neterer said that while the evidence shows that the plaintiff company has been damaged by reason of the acts of the defendants, there was no testimony upon which the court could base the amount of damages, except upon conjecture and surmise, and he, therefore, directed the entry of an order awarding nominal damages to the plaintiff company, and further directed that except as to the defendant H. G. Gould, who should be allowed his costs, no cost be taxed against either side.

Indianapolis Fare Case Goes to Courts

The Indianapolis Traction & Terminal Company on Dec. 15 filed a writ of mandamus in the Circuit Court of Marion County to compel the Public Service Commission of Indiana to hear the company's application for increased fares. At the hearing before the commission on Dec. 12 and 13 that body decided that it did not have jurisdiction in the case because the company had not surrendered its franchise contract.

The document filed in the Circuit Court included all remonstrances, petitions for denial of the increase and other protests which were filed with the Public Service Commission. A hearing was held before Judge Eubank of the Circuit Court on Dec. 18. The case has been set down for argument on Dec. 26.

Tickets Withdrawn in Owensboro.—The Owensboro (Ky.) City Railway has discontinued its policy of selling six tickets for 25 cents and is now collecting a flat rate of 5 cents.

Bridgeport to Postpone Six-Cent Fare Protest.—The city of Bridgeport, Conn., has decided not to carry its protest against the 6-cent fare of the Connecticut Company to the Public Utilities Commission until the similar case of Hartford has been finished.

One-Man Car in Service on Michigan Line.—On Dec. 10 the Detroit (Mich.) United Railway placed a car of the one-man type in operation in Monroe. During the first day 173 passengers were carried. The one-man car now in service in that city is of the single-truck type and was rebuilt in the company's Highland Park shops. The car is double-ended. It has longitudinal seats.

Aurora, Elgin & Chicago Fare Case Presented.—The first hearing on the petition of the Aurora, Elgin & Chicago Railroad for increased fares was held before the Public Utilities Commission of Illinois in Chicago on Dec. 14. Only a few objectors were present. The case was continued until Dec. 20, at which time the public will again have an opportunity to present any evidence against the petition.

Heavy Snow in Louisville.—The heaviest snow in the history of Kentucky fell on Saturday and Sunday, Dec. 8 and 9, and disorganized all electric railway traffic. In many of the smaller Kentucky towns and in southern Indiana cities attempts to maintain service were abandoned. In Louisville most of the workers walked to their places of employment on Dec. 8. On the morning of Dec. 9 conditions were still unsatisfactory.

Increase in Fares on Reading Lines.—The Reading Transit & Light Company, Reading, Pa., has filed with the Public Service Commission of Pennsylvania, a new schedule of fares providing for an increase from 5 to 6 cents on the city lines of Reading, Norristown and Lebanon, to go into effect on Jan. 10, 1918. A 6-cent fare went into effect on the suburban lines of the three cities on Nov. 6, and the advance now proposed would mean a universal 6-cent fare over the entire 200 miles of railways operated by the company.

Cities Oppose Further New York Increases.—At a hearing in Albany on Dec. 19 before the Public Service Commission for the Second District of New York representatives of various cities opposed further fare increases for electric railways in the State on the grounds that the companies are overcapitalized, that their earnings are actually increasing and that a 6-cent fare would cause a falling off of traffic and be of no benefit. Edward W. Bemis was the principal witness. As noted in the ELECTRIC RAILWAY JOURNAL of Dec. 8 and elsewhere in this issue, the commission has already granted fare increases in nine out of thirty-one cases.

Women to Be Employed in Kansas City.—The Kansas City (Mo.) Railways placed advertisements in the Kansas City newspapers on Dec. 15 asking for women between twenty-one and thirty-five years to apply for work as conductors at the same pay as the men now employed. Although the days set for answering the advertisement were Dec. 18, 19 and 20, several women made application on previous days, showing a decided interest in the plan. The company has decided not to employ women car cleaners, as the present car-cleaning force is made up of men too old to be of practical use in operating cars. The women conductors will be used in rush-hour traffic at first.

Modification of "Full Car" Rule Sought.—Representatives of the United Railways & Electric Company, Baltimore, Md., appeared before the Public Service Commission of Maryland on Dec. 6 in support of the company's application for a modification of the "full car" order. As a substitute for the "full car" order the company suggests an order limiting overloading to 50 per cent, based on the number of cars passing a given point in fifteen minutes under a three-minute headway. This would mean no limit to the number of passengers that might be carried on one car so long as the overload on all of the cars passing a given point under conditions described above did not exceed 50 per cent.

Service Abandonment Asked.—O. W. McConnell, representing the Helena Light & Railway Company, Helena, Mont., at a recent hearing before the State Utility Commission, stated if the commission consented to the company discontinuing service on that portion of its Upper Broadwater line, from the Kenwood trestle to the Broadwater, the company would give a much improved service to patrons on both the Upper and Lower Broadwater systems. Mr. McConnell stated the company did not ask for permission to abandon its tracks; that the commission had no authority over that matter, but that it did ask for authority to discontinue the service upon the grounds that there was no public necessity for it.

Skip Stop Adopted in Columbus.—The City Council at Columbus, Ohio, has adopted a resolution authorizing the Columbus Railway, Power & Light Company to eliminate alternate stops on all lines north of Goodale Street, south of Livingston Avenue, east of Fourth Street and west of Front Street. No change has been made in the business section. Harold W. Clapp, general superintendent of the company, stated at the Council meeting that the adoption of this plan will save from 400 to 500 tons of coal per month. Mr. Clapp also asked that the proposal to reduce the evening service about 50 per cent be authorized as an emergency measure. He promised that full service would be restored when conditions become normal. No action was taken on this matter.

Personal Mention

W. H. Lines, industrial engineer of the Portland Railway, Light & Power Company, Portland, Ore., will succeed Roy C. Taylor as secretary to Franklin T. Griffith, president of the company.

George Spaulding has been appointed superintendent of the Blue Hill Street Railway, Canton, Mass., to succeed Frank T. Buchanan, whose resignation is referred to elsewhere in this column.

Oscar T. Crosby, Assistant Secretary of the United States Treasury, was elected president of the Inter-Allied Council, which is to take up the question of war purchases and finances. The council met in London on Dec. 15.

I. L. Ward has been appointed purchasing agent for the Pacific Electric Railway, Los Angeles, Cal., to succeed F. W. Taylor, who resigned recently to become purchasing agent for the Southern Pacific Company, Los Angeles.

William Bingham has resigned as assistant secretary and assistant treasurer of the Chattanooga Railway & Light Company, Chattanooga, Tenn. He will be succeeded by G. W. Bachman, at present auditor of the Tennessee Power Company.

Wilford Phillips, who recently resigned as general manager of the Winnipeg (Man.) Electric Railway on account of failing health, has been presented with a gold watch and chain and Mrs. Phillips with a traveling bag by employees of the company.

Roy C. Taylor, for the last four years secretary to Franklin T. Griffith, president of the Portland Railway, Light & Power Company, Portland, Ore., has resigned to join the legal staff of Griffith, Leiter & Allen, attorneys for the Portland Railway, Light & Power Company.

Byron M. Clendening, Cincinnati, Ohio, has been nominated by Governor James M. Cox to be a member of the Public Utilities Commission, as the successor of the late Judge Oliver H. Hughes. Up to the present time he has been a member of the State liquor licensing board.

W. C. Hawkins, formerly managing director of the Dominion Power & Transmission Company, Hamilton, Ont., has been elected president of the Southern Canada Power Company, Ltd., in place of C. J. McCuaig, who remains on the board of directors and executive committee.

Charles W. Ricker, assistant general manager and chief engineer of the Havana Electric Railway, Light & Power Company, Havana, Cuba, is in the United States for a short time in the interest of his company. Mr. Ricker expects to visit Schenectady, Buffalo, Pittsburgh and other Eastern cities before he returns to Havana early in January.

Rufus Moses has been appointed assistant manager of railways of the Mahoning & Shenango Railway & Light Company, Youngstown, Ohio. Mr. Moses has been with the company for eight years, successively occupying the positions of storekeeper and freight agent at Sharon, Pa., and then traffic chief and superintendent of freight for the entire system.

Frank T. Buchanan has resigned as superintendent of the Blue Hill Street Railway, Canton, Mass., to continue with Stone & Webster, who retired as managers of the railway on Nov. 1. Mr. Buchanan has been with Stone & Webster companies for the last fifteen years, serving at Plymouth, Mass.; Sydney, N. S.; Key West, Fla., and Canton, Mass. He will now be located in the construction department at Philadelphia.

G. W. Buchanan, formerly auditor of the Chattanooga Railway & Light Company, Tennessee Power Company and the Nashville Railway & Light Company, has been appointed assistant secretary and assistant treasurer of the Chattanooga Railway & Light Company, Lookout Mountain Railway and Lookout Incline Railway. Mr. Buchanan has been connected with these companies since 1915. Provious to that he was for several years with the Ohio Electric Railway and the Chicago elevated lines.

Clinton L. Bardo, general manager of the New York, New Haven & Hartford Railroad, has been appointed chairman of the New England Operating Committee, under which plans are now being perfected whereby locomotives, cars, and all other railroad and railroad-owned steamship facilities will be used interchangeably to the end that the highest transportation efficiency possible may be obtained for New England interests. Mr. Bardo was formerly superintendent of the electric division of the New York Central & Hudson River Railroad.

Wallace Brett Donham, recently appointed temporary receiver of the Bay State Street Railway, Boston, Mass., is a vice-president of the Old Colony Trust Company, Boston. Mr. Donham was born at Rockland, Mass., in 1877, was educated at Harvard College and received the degree of LL.B. from the Harvard Law School in 1901. He was admitted to the bar in that year and entered the legal department of the Old Colony Trust Company with which he has been closely identified. Mr. Donham is chairman of the directors of the Massachusetts Employees Insurance Association and a director and member of the executive committee of the Carolina, Clinchfield & Ohio Railroad, Clinchfield Coal Corporation and Cumberland Corporation.

F. Wharton Baker has resigned as secretary to the vice-president and general manager of the Cumberland County Power & Light Company, Portland, Me., and associated companies to become connected with the E. I. duPont de Nemours Company at its Carney's Point plant as assistant supervisor of one of the departments having to do with the manufacture of smokeless powder. Mr. Baker entered the employ of the Cumberland County Power & Light Company in 1913, and assumed the position of secretary to the vice-president and general manager in 1915. He was graduated from the civil engineering course of the University of Pennsylvania, and previous to his connection with the railway and lighting interests at Portland was an inspection engineer for the Independence Inspection Bureau of Philadelphia.

J. B. Stewart, Jr., has been promoted from assistant to the general manager to assistant general manager of the Mahoning & Chenango Railway & Light Company, Youngstown, Ohio. Mr. Stewart has been with the company since 1913, when he became safety and efficiency engineer and superintendent of freight. Subsequently he was appointed superintendent of equipment and traffic and then was made assistant to Richard T. Sullivan, general manager. Mr. Stewart was graduated from the high school at Newton, Mass., and the Massachusetts Institute of Technology. His first employment in the railway field was with the Middlesex & Boston Street Railway, Newtonville, Mass., as an engineer, whence he went to Erie, Pa., as assistant to the general manager of the Buffalo & Lake Erie Traction Company. In 1910 he was engaged in the construction of the Corning division of the Elmira, Corning & Waverly Railroad, Waverly, N. Y., and two years later became park manager and acted as assistant to the traffic manager of the Lehigh Valley Transit Company, Allentown, Pa.

Edward Troy, who was recently made engineer of maintenance of way of the Chicago, Ottawa & Peoria Railway, Ottawa, Ill., began his work in the railway field in November, 1904, with the Chicago, Cincinnati, Cleveland & St. St. Louis Railway as a rodman on the St. Louis division. He served with this company as rodman, levelman and transitman until April, 1911. From May, 1911, until October of the same year, he was employed by the Ashtabula Rapid Transit Company and the Pennsylvania & Ohio Electric Railway, Ashtabula, Ohio, as assistant superintendent in charge of the street railways in Ashtabula and the engineering work on both properties. He then became connected with the Central Illinois Public Service Company and the Central Illinois Traction Company at Mattoon, Ill., serving as engineer of maintenance of way until May 1, 1917. At this time he was appointed superintendent of railways of the Mattoon property and as such had charge of the operation of the city lines at Mattoon and Charleston, and the interurban electric railway between these two towns. He retained this position until his recent appointment as engineer of maintenance of way of the Chicago, Ottawa & Peoria Railway, controlled by the Illinois Traction Company.

Construction News

Construction News Notes are classified under each heading alphabetically by States.

An asterisk (*) indicates a project not previously reported.

FRANCHISES

Omaha, Neb.—The City Council committee has agreed to grant the Omaha & Council Bluffs Street Railway a permit to construct an extension from Twenty-fourth and O Streets to Nineteenth and W Streets. The company will build an extension on Thirty-sixth Street from Q Street to Y Street if the property owners will widen that thoroughfare.

Dallas, Tex.—The County Commissioners of Tarrant County have granted the franchise asked by the Dallas Southwestern Traction Company, authorizing the construction and operation of an electric interurban railway line in and through Tarrant County on a line drawn from Grand Prairie in Dallas County to Alvarado in Johnson County. The franchise is granted for a period of fifty years on condition that the road building on this line would begin within twelve months. E. P. Turner, president. [Dec. 1, 1917.]

TRACK AND ROADWAY

Stouts Mountain & Hanceville Railroad, Hanceville, Ala.—This company plans to construct a line between Hanceville and Stouts Mountain, 6 miles. Charles F. Wheelock, Birmingham, is interested.

Edmonton (Alta.) Municipal Street Railway.—A new belt line for the Edmonton Municipal Street Railway will be built shortly. The recommendation of the commissioners that the tracks be laid across 106th Avenue between Ninety-seventh and 101st Streets has been adopted by the City Council, and the superintendent of the system has authority to proceed with the work.

Pacific Electric Railway, Los Angeles, Cal.—Application has been filed by the Pacific Electric Railway with the Railroad Commission of California for authority to build its tracks at grade across twenty streets in Los Angeles County, and across the tracks of the Southern Pacific Railroad and the Atchison, Topeka & Santa Fé Railway. These crossings are in connection with the construction of a proposed line from Glendora to the Pacific Electric Company's Los Angeles-San Bernardino line at Lone Hill.

United Railroads of San Francisco, San Francisco, Cal.—A report from this company states that it will reconstruct about 5 miles of track in 1918.

Savannah (Ga.) Electric Company.—The construction of a 5-mile extension to Fort Wentworth is planned by the Savannah Electric Company.

Valdosta (Ga.) Street Railway.—A report from the Valdosta Street Railway states that it will build 1 mile of new track during the first part of the year.

Alton & Eastern Electric Railway, Alton, Ill.—A report from the Alton & Eastern Electric Railway, which is a subsidiary of the East St. Louis & Suburban Railway, states that it expects to place in service next year its line from the Alton City limits to the Alton Insane Hospital, 1¼ miles.

Chicago & Interurban Traction Company, Chicago, Ill.—This company will rebuild 4 miles of track.

Terre Haute, Indianapolis & Eastern Railway, Terre Haute, Ind.—This company reports that it will reconstruct 2.8 miles of track in 1918.

Inter-Urban Railway, Des Moines, Iowa.—An order has been placed with the Union Switch & Signal Company, Swissvale, Pa., by the Inter-Urban Railway for alternating-current automatic signal materials to protect three stretches of its single track leading out of Des Moines. The system is to be installed for the protection of traffic to and from Camp Dodge on parts of the line where double-tracking is not possible at this time on account of existing bridges and fills.

New Orleans Railway & Light Company, New Orleans, La.—During 1918 the New Orleans Railway & Light Company will rebuild 5.7 miles of track.

Hagerstown & Frederick Railway, Frederick, Md.—It is reported that the Hagerstown & Frederick Railway contemplates improvements to the Chambersburg, Greencastle & Waynesboro Railway, which it has acquired.

Massachusetts Northeastern Street Railway, Haverhill, Mass.—This company reports it will rebuild 1 mile of track.

Panama Traction Company, Jamestown, N. Y.—A contract has been made by the Panama Traction Company for rails to build a section of its line from Sugar Grove to Jamestown in the early spring. Much of the grading for the line has been done, the bridges built and the right-of-way into Jamestown has been secured. The company proposes to construct a line from Sugar Grove to Erie via Jamestown, Ashville, Panama, Clymer and Findley Lake. The line will enter Jamestown via McDannell Avenue, Sixth Street, Steel Street, Market Street and Brooklyn Square. D. L. Davis, Jamestown, general manager. [Aug. 11, '17.]

Cincinnati, Lawrenceburg & Aurora Electric Street Railroad, Cincinnati, Ohio.—The Public Utilities Commission of Ohio has authorized the Cincinnati, Lawrenceburg & Aurora Electric Street Railroad to enter Cincinnati over a new route, which has already been described in the ELECTRIC RAILWAY JOURNAL, and to abandon the old one. Cars will be operated over the present line until the new track is completed. An ordinance, providing for the route, is now before the City Council of Cincinnati.

Brantford (Ont.) Municipal Railway.—The Brantford Board of Railway Commissioners reports that during 1918 it will construct 2½ miles of new track providing material and labor can be obtained.

Minden, Ont.—At a recent meeting held in Minden it was decided that a committee be appointed to take any steps they think advisable toward urging the Hydro-Electric Power Commission to construct a line from Kinmount Junction to Minden.

Pacific Power & Light Company, Astoria, Ore.—Plans are being considered by the Pacific Power & Light Company for the extension of its line to the McEachern Ship Company yards and to the plant of the Astoria Pulp & Paper Company at a cost of about $20,000.

Stroudsburg (Pa.) Traction Company.—Physical connection has been made between the lines of the Stroudsburg Passenger Railway and the Stroudsburg, Water Gap & Portland Railway, now operated by the Stroudsburg Traction Company.

Hull (Que.) Electric Company.—A report from the Hull Electric Company states that it will build 1.3 miles of city track and will rebuild 1.3 miles of track during 1918.

Nashville Railway & Light Company, Nashville, Tenn.—Because of the fact that the cost of materials is so high at the present time, the plan to extend the Buena Vista car line across the new Hyde's ferry bridge has been abandoned by the Nashville Railway & Light Company.

Dallas (Tex.) Railway.—George E. Kessler of St. Louis, employed by the city of Dallas to supervise the planning of electric railway extensions and betterments under the terms of the service-at-cost franchise granted the Strickland-Hobson combine, has approved all the extensions as recommended to the City Commission by N. M. Baker, supervisor of public utilities. The Lorain Steel Company, Johnstown, Pa., has accepted the order of the Dallas Railway for rails to be used in connection with the improvement.

Northern Texas Traction Company, Fort Worth, Tex.—The City Commission of Fort Worth, Tex., will ask the Northern Texas Traction Company to extend the Arlington Heights car line to Lake Worth, a distance of approximately 8 miles. The proposed extension would follow the county road to the municipal bathing beach. The company now operates a bus line from the end of the street car line to the bathing beach, maintaining a regular schedule, with round trip for 25 cents. Mayor Davis and City Attorney Odell are now in the East and will confer with officials of the Stone & Webster Corporation at Boston relative to the extension.

Virginia Railway & Power Company, Richmond, Va.—Surveys have been begun by the Virginia Railway & Power Company for an extension to Pig Point.

Seattle, Wash.—The imperative need of increased transportation to the Duwamish Valley district in Seattle, where new industrial plants have been located, has engaged the attention of the industrial bureau of the Chamber of Commerce and Commercial Club, which have been in conference with railway officials, traction representatives of the city and the department of public utilities. The most feasible plan so far presented seems to be the use of two five-car electric trains twice each day, to run from Fifth Avenue and Jackson Street to Ninth Avenue South, skirting the foot of Beacon Hill and turning off at Lucille Street to run west to First Avenue South, and thence south on First Avenue to Fidalgo Street. It is estimated this line will cost $65,000 to install. The shuttle system working along Lucille Street and First Avenue South, making transfer connections with the Georgetown and South Park cars, will cost $45,000. The operation of a boat along the Duwamish waterway, one of the plans proposed, was found to be entirely impractical.

Seattle (Wash.) Municipal Railway.—The Board of Public Works of Seattle has received plans from the public utilities department for track construction work on the Nickerson Street extension and also on the Leary Avenue extension of the Seattle Municipal Railway, Division A.

Seattle & Rainier Valley Railway, Seattle, Wash.—Operation has been begun by the Seattle & Rainier Valley Railway on its Genesee Street line.

Charleston-Dunbar Traction Company, Charleston, W. Va.—A new bridge will be built by the Charleston-Dunbar Traction Company in connection with its proposed extension to Sattes.

SHOPS AND BUILDINGS

Chicago (Ill.) Surface Lines.—It is reported that the companies in the Chicago Surface Lines are planning to make extensive additions to their carhouses at North Clark Street and Schreiber Avenue. While it is understood that no construction work is contemplated in the near future, plans are being prepared for four buildings, each about 450 ft. in length, and adjoining the present houses on the south. The new carhouse will have a total capacity of about 300 cars. The plan will also probably include a one-story power house and a two-story office building. The entire layout will cost about $500,000.

Trenton & Mercer County Traction Corporation, Trenton, N. J.—Fire recently damaged the new carhouse of the Trenton & Mercer County Traction Corporation at Trenton. Three new trolley cars and two old ones were destroyed and five others were damaged. The loss is estimated at about $65,000.

Durham (N. C.) Traction Company.—The old carhouse of the Durham Traction Company is being remodeled and a new addition 30 ft. by 150 ft. is being built to take care of the cars. A new machine shop has been built by the company, where it will be able to handle its own work. A new horse barn, 110 ft. by 45 ft., containing housing room for twenty-four horses, will soon be completed by the company.

POWER HOUSES AND SUBSTATIONS

Trenton & Mercer County Traction Corporation, Trenton, N. J.—A contract has been awarded by the Trenton & Mercer County Traction Corporation for an additional 2000-hp. generator unit for its power house on Lincoln Avenue.

Albany (N. Y.) Southern Railroad.—The Public Service Commission for the Second District of the State of New York has granted the application of the Albany Southern Railroad to construct a power plant in Greenport and to furnish service.

Petersburg & Appomattox Electric Railroad, Petersburg, Va.—Plans are being made by the Petersburg & Appomattox Electric Railroad for the construction of a one-story, granite block central heating plant at Lakemont, near Petersburg.

Dunbar (W. Va.) Traction Company.—This company will rebuild its power plant and carhouse recently destroyed by fire. The loss was about $75,000.

Manufactures and Markets

Discussions of Market and Trade Conditions for the Manufacturer, Salesman and Purchasing Agent

Rolling Stock Purchases Market Quotations Business Announcements

Condition of Shops of Freight Car Builders

Plants Working at 40 Per Cent Capacity with Unfilled Orders Sufficient at Present Rate of Output to Use Available Facilities Until Next September

Acting on the understanding that a more extensive use of electric railway facilities for freight handling is under contemplation and knowing that at least in certain sections of the country standard M. C. B. rolling stock cannot operate on traction roads owing to the difference in rail and wheel specifications, inquiry was made by the ELECTRIC RAILWAY JOURNAL about the ability of freight car builders to take care of orders from traction properties should they arise in any quantities.

It developed that car builders have on their books at the present time unfilled orders in the neighborhood of 85,000 freight cars which are almost entirely for steam roads. These orders at the present rate will require from eight to nine months to fill. Furthermore, it is the intention of the builders to turn out these orders before others received later. On this basis, therefore, generally speaking, it would be next September before the electric railways could expect to get shipment, under existing conditions, of new freight cars. Of course, it is not to be expected that these conditions, which are average over the entire field, exist to that very degree in all shops. Some, naturally, are in a position to make better than the average deliveries just as some are doing worse than the average.

The present builders' capacity for turning out freight cars is in the neighborhood of 25,000 cars per month. Actually the output at present is running around 10,000 cars per month, or 40 per cent capacity. Of these, 8000 are for use in the United States and the remaining 2000 are for use overseas.

Materials and labor are the two factors causing such a reduced output of freight cars. Insufficiency of lumber and steel, particularly the latter, is the greatest handicap to car builders. Furthermore, the labor situation is to a large extent the outgrowth of the materials supply. Labor can be employed only so long as there is a supply of building material. The incoming supply is so small and uncertain that it is quickly used up, and until more arrives labor is idle unless it takes employment elsewhere. For that reason each new arrival of materials of any size means the rehiring of construction labor. With the turnover in the labor market as large as it is—with one car builder it amounts to 2.5—the difficulty in getting labor of the desired kind and experience is quite large.

No 1918 Exhibition by Railway Supply Manufacturers

Master Mechanics and Master Car Builders' Associations Not Likely to Hold Conventions Owing to the National Crisis

The Railway Supply Manufacturers' Association has just sent out to its membership a letter pointing out that as matters now stand the regular annual exhibition will not be held in 1918. The letter reads in part:

"When our circulars of April 18 and May 2 of this year were issued, it was the hope of the American Master Mechanics' Association and the Master Car Builders' Association that the national crisis would have been passed before convention time, 1918, and that they could hold their annual conventions, in conjunction with our exhibition, at that time.

"The crisis has not passed. The pressure upon railroad men is greater than ever before, and during the coming year there is greater reason for conservation of their time and energies, as well as ours, than in the year just closing. Therefore, unless conditions change very materially and very soon, which does not look probable, there will be no railroad convention, nor any exhibition by our association, in 1918.

"Should there be a change in the situation that would warrant the railroad associations having a convention, and our association holding an exhibition, in connection therewith, your committee has made such arrangements as will permit full activities to be renewed by our association on short notice.

"As there seems to be no machinery provided to relieve the present officers and members of the executive committee from their duties, and as all have signified their willingness to continue, the personnel of your officers and executive committee will remain the same, for the present, at least."

Southern Railway Supply Market Slowing Up

Some Lines, Such as Car Heaters, Jacks, Fare Registers and Trolley Catchers, Show Considerable Activity with Advancing Prices

The general situation with regard to the market for electric railway supplies remains unchanged as compared to November. Information obtained from various sources in the South indicates that no larger purchases are being made and material is bought only in quantities to take care of normal upkeep and maintenance. A number of the larger companies are taking more interest in the operating results secured for the "one-man frequent service cars." There is no doubt but that the necessary funds could be obtained, even in the face of present conditions, if some of these companies could be convinced that these cars are past the experimental stage and suitable for certain routes.

The demand for wheels continues fairly steady, all companies buying on contract, and ordering only for current needs. Car seats are comparatively listless outside of orders on new equipment. There is very little call for Agasote.

The demand for overhead material is comparatively light and very little business has been done in trolley hangers, ears, or insulators during the past month. There has been no advance in porcelain insulators within the last few months, but deliveries show no signs of improvement. Some activity was noted in car heaters last month in the face of a 15 per cent advance. A few substantial orders were placed for jacks recently, and this line in general continues pretty strong, although the price advanced 10 per cent recently and shipments are growing worse, at least so far as the Southern district is concerned.

Headlights have advanced about 40 per cent within the past twelve months, but shipments are being made from ten to fifteen days and a fair business is noted. Bond requirements have dropped off, with a price reduction of 5 per cent. No trouble is being experienced in deliveries. There is very little activity in gears and pinions. The "lightweight frequent service car" being placed in the South has tended to stimulate the sale of fare registers. Deliveries are very prompt. Trolley catchers remain active, with three to five weeks shipment promise. This line also advanced 10 per cent within the last month.

On the whole, it can be stated that electric railway work in the South is slowing up, with the exception of a few isolated cases of extensions and much needed repairs.

Meaning of Transportation Priority Order No. 5

No "House That Jack Built" Materials of Manufacture Priorities Permitted Under Latest Government Order

Some confusion has arisen in the trades over the exact meaning and application of Priority Order No. 5, issued by Judge R. S. Lovett's committee. This order provides for five different classes of transportation priority and went into effect on Dec. 12. The order gives preference in car supply and movement, (1) to coal for current use of railroads, (2) to food and perishable freight, (3) to military supplies and government shipbuilding material, (4) to coal for by-product coking plants, and (5) to coal for domestic and institutional purposes and to coal and raw materials for blast furnaces, foundries, iron and steel mills, smelters, manufacturers engaged in work for the government or its allies, public utilities, flour mills, sugar factories, fertilizer plants and shipbuilders, besides shipment of paper, petroleum and petroleum products.

These priorities are now automatic, and any manufacturer by satisfying the local railroad agent that his products come under one of the five heads can secure, if at all available, quick and adequate transportation of his goods. The railroads can issue no embargoes on any of the items enumerated in Order No. 5 unless the matter is first taken up with the priorities commission and approved.

To a representative of the ELECTRIC RAILWAY JOURNAL it was stated last week in Washington that the committee on priorities believed it to be particularly important that manufacturers understand clearly the intended meaning of Section 5 of the order. The order says for "raw materials for current use but not for storage consigned direct . . . to manufacturers engaged in work for the United States government or its allies, public utilities," etc. By "raw materials" is meant anything necessary to the manufacture of the finished product.

It was definitely stated that the order was not meant to include those products which enter into the manufacture of what the order calls "raw materials." Thus a wire manufacturer could expect priority shipments of wire rods, rubber, etc., but the rod manufacturer could not, on the basis of this contract, under Priority Order No. 5, expect priority transportation of his raw materials. What the committee has tried to accomplish in this connection is to eliminate the "house that Jack built" class of priorities.

Shipments under the five classes listed take up, it is understood, about 50 per cent of available transportation. The remaining facilities are at the disposal of all other commodities in accordance with the roads' designations.

Railways Buying Armature and Coil-Winding Machines

Prices Have Advanced While Deliveries Continue Reasonably Satisfactory Under Existing Conditions

A much greater demand for armature and coil-winding machines is reported within a period of a year or two. This represents an increase of at least 25 per cent. Where these machines were not so frequently called for, now they are generally considered as an essential part of the railway equipment. A number of leading roads, where traffic conditions are exacting, have installed the heavy drive type with the best results.

Deliveries of these goods have been fair, and continue reasonably satisfactory under the present trying circumstances, as with other railway specialties. Prices have been advanced along with the rapid increase in the cost of material and factory operation. Skilled labor is hard to replace, and in common with other industrial activities, workmen are enticed by higher wages and shorter hours to the munition plants. These factors all figure in the production of armature and coil-winding machines.

Manufacturers of these specialties appear on the whole to be provided with a sufficient stock of wire, but, as one producer stated, while in a pretty strong position in this respect, resulting from anticipating requirements, no further purchases of material are made than is absolutely necessary to complete imperative orders. It may be said, however, that there is a sufficient quantity of wire on hand to fill commitments accepted; but not much if any chance to accumulate stock. The uncertainties of the future make it rather difficult to anticipate material requirements, although in this respect the manufacturers declare they are no worse off than producing plants in other industries not engaged in governmental work.

Reasons Why Electrical Goods Are Not Higher

Economies in Manufacture, Due to Waste Elimination, Quantity Production and Modern Apparatus Help Prevent Prices Rising

That electrical supplies have not advanced to the same extent that basic materials and labor have increased is now well known and is often wondered at. The reason is not due entirely to any one cause but to a number of causes all of which tend toward one end—economy of production.

It probably costs considerably more to sell to-day than it did normally because of the heavy extras and special methods. Production costs per unit of output, however, have not risen so fast. For one thing, quantity production has helped to hold down unit costs; also, new methods and machinery have been devised to decrease labor costs. Utilization of what was formerly called waste is a third factor. It is doubtful whether the saving in this latter matter would formerly have been profitable or sufficiently so to warrant any great activity in that direction. Now it is different.

Indications Point to Longer Insulator Deliveries

Glass Insulators Have Increased in Price 15 Per Cent and Porcelain May Be Higher After First of the Year

Reports this week from the Middle West state that after a lull of about two months the market for suspension type insulators has become active, with inquiries originating from several sections of the country. It is thought by the manufacturers that a large part of the business is replacement work.

Deliveries of both pin and suspension types of insulators are generally at the present time on a two months' to three months' basis. Indications, however, are that if present inquiries result in orders, deliveries may go to a six months' basis on account of the fuel shortage in eastern Ohio and western Pennsylvania. Recent reports from the South state that porcelain insulator deliveries are in a bad shape and that no immediate improvement is in sight.

Glass insulators have advanced in price, an increase of 15 per cent having gone into effect on Dec. 1. Porcelain insulator prices are still unchanged but it would not be surprising to see an increase shortly after the first of the year. Fuel and labor have acted to curtail production besides increasing the cost.

ROLLING STOCK

New Orleans Railway & Light Company, New Orleans, La., is reported as contemplating the purchase of a number of double-truck cars.

Trenton & Mercer County Traction Corporation, Trenton, N. J., had five cars destroyed and five others damaged in a fire on Dec. 15. The loss to the company is estimated at $65,000.

Northern Ohio Traction & Light Company, Akron, Ohio, has recently received a new locomotive from the General Electric Company, which will be used in the company's general freight business.

Brockton & Plymouth Street Railway, Plymouth, Mass., contemplates the purchase of ten cars.

Princeton (W. Va.) Power Company will probably negotiate for two trail cars in a short time.

Charleston (W. Va.) Interurban Railway is reported to be contemplating the purchase of new cars.

Madison (Wis.) Railways has just placed an order with the American Car Company, St. Louis, Mo., for five new safety cars.

Scioto Valley Traction Company, Columbus, Ohio, is reported to be in the market for ten cars, some of which are freight equipment.

Montreal & Southern Counties Railway, Montreal, Canada, contemplates purchasing two 50-ton locomotives and eight passenger cars during 1918.

Augusta-Aiken Railway & Electric Corporation, Augusta, Ga., has put in operation four new cars with a seating capacity of fifty-two passengers each.

Charleston Consolidated Railway & Lighting Company, Charleston, S. C., contemplates purchasing two double-truck motor cars and two double-truck trailers and also five single-truck cars during 1918.

Indianapolis Traction & Terminal Company, Indianapolis, Ind., has placed an order with the Cincinnati Car Company for twenty-five new city cars. It is understood that construction work on these cars will not be begun until June, 1918.

TRADE NOTES

N. B. Payne has opened an office in the Havermeyer Building, 25 Church Street, New York, N. Y., as an electric crane specialist. He was formerly associated with Manning, Maxwell & Moore, Inc.

Holden & White, Inc., Chicago, Ill., have received an order from the Bangor Railway & Light Company, Bangor, Me., for a complete equipment of air rectifiers for all cars having air brakes and pneumatic control. The function of this device is to prevent the freezing of air line.

J. W. White has been appointed manager of the power and railway divisions of the Detroit (Mich.) office of the Westinghouse Electric & Manufacturing Company, East Pittsburgh, Pa. Mr. White was formerly connected with the Pittsburgh office of the company, subsequently becoming associated with the Allis-Chalmers Company, and has now returned to the Westinghouse Company.

Jeffrey-Dewitt Company, Detroit, Mich., manufacturer of high-tension insulators and other porcelain specialties, is erecting a new factory at Huntington, W. Va., for the exclusive manufacture of high-tension insulators. This factory will have a capacity of 500,000 units per annum and will be capable of further expansion. According to present plans, the factory will be started about April 15, 1918.

Anaconda Copper Mining Company, Great Falls, Mont., is erecting a rod and wire manufacturing plant, which is expected to be in operation in the spring. Its annual capacity on an eight-hour working-day basis will be 62,400,000 lb. of rods and 27,520,000 lb. of wire, and it will consume one-fifth of the output of the Anaconda company. The plant will cost more than $500,000 and will mark the entry of the Anaconda into the manufacturing field. A brass manufactory is expected to be erected after the rod and wire mill is completed.

Bureau of Foreign & Domestic Commerce, Washington, D. C., has engaged J. W. Sanger to make an advertising survey of South America. The purpose of the bureau is to help American business men obtain the facts that will enable them to get and hold trade with South American countries. Mr. Sanger has already made a preliminary tour of the United States, meeting business men of all kinds, to determine the questions they want the survey to answer. Manufacturers who desire to receive Mr. Sanger's reports will be placed upon the mailing list by addressing such a request to the Bureau of Foreign and Domestic Commerce, Department of Commerce, Washington, D. C.

W. C. Lincoln has been appointed electrical engineer for the Railway Improvement Company, New York, N. Y., effective Dec. 1. For the last four years he has been connected with the General Electric Company in the Philadelphia district as commercial engineer, railway department. Mr. Lincoln is a graduate of Union University, and after graduation took the General Electric test course. Subsequently he was assigned to special railway work and later took up and completed the engineering extension course. Following this he was connected for some time with the consulting engineering department. From there he changed to the railway engineering department, where he remained until transferring to the Philadelphia position.

NEW ADVERTISING LITERATURE

Blaw-Knox Company, Pittsburgh, Pa.: A leaflet descriptive of its "Blaw" locking cableway carriages.

General Electric Company, Schenectady, N. Y.: Type FK-25 oil circuit breakers made by the company are illustrated and described in bulletin No. 47,471.

Sherman Service, Boston, Mass.: Pamphlet entitled "Industry, Society and the Human Element" descriptive of work which Sherman Service can do and instances of what it has done. One chapter is on preventive strike service and strike breaking service.

Walter A. Zelnicker Supply Company, St. Louis, Mo.: Bulletin 227, illustrated, for "The Man Behind the Dollar," in connection with rails, cars, trucks and miscellaneous railway equipment. Bulletin 231 is a gentle reminder of the capability of the Zelnicker organization to serve the trade in its special lines.

Bates Expanded Steel Truss Company, Chicago, Ill.: Has completed the preparation of "Bates Steel Pole Treatise," a revised edition of the company's catalog. It will be ready for free distribution on Jan. 1, 1918. This catalog contains not only illustrated descriptions of the company's products and processes, but also technical information regarding deflections, carrying capacities, etc., of Bates expanded steel poles of sizes from 4-in. to 8-in. sections and 20-ft. to 35-ft. lengths. Included is an account of the formation of an Italian company for the manufacture of these poles, which have been adopted by the Italian government for use on the state railroads.

NEW YORK METAL MARKET PRICES

	Dec. 12	Dec. 19
Prime Lake, cents per lb	23½	23½
Electrolytic, cents per lb	23½	23½
Copper wire base, cents per lb	29	29
Lead, cents per lb	6½	6.40
Nickel, cents per lb	50	50
Spelter, cents per lb	7.77½	7.75
Tin, Straits, cents per lb	86	*85.50
Aluminum, 98 to 99 per cent, cents per lb	36	36

OLD METAL PRICES—NEW YORK

	Dec. 12	Dec. 19
Heavy, copper, cents per lb	22	22
Light copper, cents per lb	19½	19½
Red brass, cents per lb	17½	17½
Yellow brass, cents per lb	14¼	14¼
Lead, heavy, cents per lb	5¾	5½
Zinc, cents per lb	5¾	5
Steel car axles, Chicago, per net ton	$42.00	$44.50
Old carwheels, Chicago, per gross ton	$31.00	$32.50
Steel rails (scrap), Chicago, per gross ton	$34.50	$34.50
Steel rails (relaying), Chicago, per gross ton	$55.00	$55.00
Machine shop turnings, Chicago, per net ton	$17.50	$17.25

RAILWAY MATERIALS

	Dec. 12	Dec. 19
Rubber-covered wire base, New York, cents per lb.	34	32-34
Rails, heavy, Bessemer, Pittsburgh	$38.00	$38.00
Rails, heavy, O. H. Pittsburgh, per gross ton	$40.00	$40.00
Wire nails, Pittsburgh, per 100 lb	$3.50	$3.50
Railroad spikes, 9/16 in., Pittsburgh, per 100 lb.	$5.50	$5.50
Steel bars, Pittsburgh, per 100 lb	$5.00	$5.00
Sheet iron, black (24 gage), Pittsburgh, per 100 lb.	$5.80	$5.80
Sheet iron, galvanized (24 gage), Pittsburgh, per 100 lb	$4.85	$4.85
Galvanized barbed wire, Pittsburgh, cents per lb.	$4.35	$4.35
Galvanized wire, ordinary, Pittsburgh, cents per lb.	$3.95	$3.95
Cement (carload lots), New York, per bbl	$2.22	$2.22
Cement (carload lots), Chicago, per bbl	$2.31	$2.31
Cement (carload lots), Seattle, per bbl	$2.65	$2.65
Linseed oil (raw, 5 bbl. lots), New York, per gal.	$1.21	$1.23
Linseed oil (boiled, 5 bbl. lots), New York, per gal.	$1.22	$1.24
White lead (100 lb. keg), New York, cents per gal.	10	10
Turpentine (bbl. lots), New York, cents per gal.	48½	47½

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*None offering.

Electric Railway Journal

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The "Journal" Favors Steam Road Interchange

A HURRIED reading of the second paragraph of our editorial "The Industry Assumes a New Outlook and Responsibility," in the Dec. 15 issue, might cause a misinterpretation of the position the JOURNAL takes and always has taken in regard to the interchange of freight between the electric and steam railways. The editorial is correct as it stands, but it has been called to our attention in the above light, and we desire to make it clear that the JOURNAL very strongly advocates practical interchange with the steam roads. What it was intended to point out as undesirable was the apparent assumption of some electric railway men that they could expect the steam roads to haul a shipment a short distance to interconnect two electric lines not themselves connected, thus making an interchange necessary from electric to steam and another from steam to electric lines, when the steam road involved also reached direct the destination of the shipment and could therefore avoid one transfer. If the steam road did not serve the destination town direct, then the second transfer could as logically be made to an electric as to another steam line. It was also intended to point out that any co-operation with the steam lines which involved the use of their terminal facilities was not good, to speak generally, because terminals are the most congested points, and the electric railways are to find their real place in the nation's transportation system by the measure of their ability to relieve the steam road congestion. This means that terminals and other particularly congested points of the steam roads must be avoided to make interchange with the electric lines effective.

Intelligent Optimism Is a Vital Need of the Hour

DURING the period covered by the fifty volumes of this paper, completed with the present issue, horse, cable and electric railway managers have been called upon to solve many technical and operating problems. Those which confront them to-day are, however, more difficult than the problems of the past because more elements are involved. Automobile competition, increasing street traffic congestion, high costs and scarcity of labor and materials, increasing tax burdens and impaired credit are some of the things which have become more and more important in recent years. In spite of all these service must be maintained and improved. One might well be discouraged by taking too close a view of the situation; it is necessary to study it in perspective to see the true proportions of the picture. The opening of a new year is an appropriate time for such a study. In making it there are three facts which may be considered vital. In the first place urban and interurban transportation on rails is a fundamental and continuing necessity of the country. Second, rapid strides will continue to be made in the improvement of equipment and operating methods. Third, the most economical service can, in general, be furnished under private rather than under public ownership and management, and in due course the public will permit earnings to be made that are commensurate with the service given. But the industry will need men of wide vision, rich experience, sound principle and indomitable courage. Moreover, the railways must pull together as they have only just begun to show signs of doing, and they must, while admitting their limitations and shortcomings, demand justice at the hands of the commissions on behalf of those who, in good faith, have invested their savings in this business.

Should the Government Take Over the Electric Roads?

UNDER the urgency of a great national necessity, President Wilson has taken over the steam railroads of this country. In this critical period what pleases him pleases us. The new plan, as far as it has been developed, seems fair, reasonable and workable, and if wisely administered by the government and enthusiastically supported by all parties concerned it should prove helpful in meeting the nation's needs.

But what of electric railways? They are specifically excluded from the proclamation of Dec. 26, but just as specifically they are declared to be subject to a subsequent proclamation "if and when it shall be found necessary or desirable" to take over possession, control or operation. If the government should so act its move could hardly be for the same immediate purpose as in the case of the steam railroads. In the latter case the government is primarily interested in gaining an immense increase of efficiency in the conduct of the war and the innumerable activities upon which its successful conduct depends. The maximum of unified efficient operation is the goal of steam-railroad control.

The operation of electric railways is to a much more limited extent concerned in the direct prosecution of the war, but such transportation agencies are important in connection with general low-cost production and are essential to community and general domestic vigor.

Were such carriers to be taken over by the government, the end in view would undoubtedly be the preservation of property and service. Is this likely to be necessary? Not if liberal fare increases are secured and all possible economies effected when needed. That is the crux of the question—will sufficient relief be obtained in time?

There are some who say, "No." In their opinion it would be better to have the electric railways operated on government account during the war, a fair return being guaranteed. Under such a system operating economies would be initiated under government orders, possibly through the commissions, in a nationwide manner. New construction and refinancing needs would be certified by such bodies up to the Treasury Department. Thus competition with government financial needs would be avoided and great savings made. The present financing problem is certainly serious, and some way of solving it must be developed. The whole plan of government operation, however, hardly seems necessary, provided commissions and railways alike act with broadmindedness and a spirit of unfailing co-operation.

But the preservation of the electric railway industry is imperative for the nation's welfare. If the various measures under way fail to secure the proper results, the government will not be able, nor should it try, to abstain from taking the necessary action.

How Much Should Fares Vary with Cost of Service?

SHOULD an electric railway always be considered as a unit in a rate-making case? This question is of current importance, but it should not be answered with a hasty generalization which might embody a retrogressive step in rate-making or a dangerous attack upon the integrity of existing systems. Nor should the subject be dismissed after one cursory glance; there are many angles from which it needs to be viewed.

There is, of course, not an atom of sense in the frequent contention of city representatives that every part of an electric railway system—even portions of each line—must be considered as an independent unit when the return on operation is considered. Existing systems have not been built up under such a rule. Even the later franchises, requiring certain revenue assurances for new lines, do not go so far, for they recognize the equity of general aid for extensions under development. But is it wise to go to the other extreme, and say that every company should consider all its lines as a whole?

Manifestly such a statement has its exceptions. For example, it is not at all certain that varying flat rates of fare, based on different costs of service, could not justly be fixed for some lines operating in separate cities but under one management. If the railways were separately owned, their managements would expect each fare case to be decided upon its merits. The Public Service Commission for the Second District of New York, in granting some 6-cent and some 7-cent fares, is so acting at the moment. Is it to be seriously asserted that the mere union of financial control of two lines, or their existence within a certain distance of each other, should always necessitate a disregard of local costs?

Furthermore, there is the case of unprofitable lines in urban service. If the generalization were accepted that an electric railway must without restriction be considered as a unit in rate-making, a company would have no ground upon which to ask to abandon a losing line. This is not a theoretical matter; we have in the last few months published report after report of lines being given up. Had the companies concerned considered themselves entirely as units, they would have been estopped from asking for the relief granted. But it may be argued the concept of unity applies to only the integral parts of a system, and undesirable tag ends here and there may therefore be eliminated. This is probably true, but the generalization thus proves defective in universality of application.

Similarly the generalization can hardly apply to a company doing a strictly urban and also a strictly interurban business. Between urban and suburban traffic the varying cost elements are not so readily distinguishable, but even these sorts of services should not be simply combined in one's thoughts and thereupon dismissed. Regulatory bodies, it is true, have held that few suburban extensions are paying at the start and the reasonableness of making additions must be determined largely by the profitableness of urban traffic; and also that suburban revenues and expenses, when closely connected with city operation, can seldom be considered as absolute criteria for the adjustment of fares. On the other hand, the United States Supreme Court, in the North Dakota lignite coal case of 1915, ruled that each class of traffic must pay its own costs and a reasonable return to the carrier. This doctrine might have a distinct bearing upon the establishment of electric railway fares to suburban points.

But to what extent could suburban operation meet its share of the cost of transportation? In the present state of development, this would seem to depend upon the fare system in use. A flat fare for urban and suburban operation does not permit adjustment to cover the cost of increasing long-haul traffic. As long as a company and the communities desire to use such a fare system, the demand is justified that urban and suburban territory be considered as a unit in establishing rates. If individual lines were operated on a flat-fare basis, the result would be discriminatory distortions of service and the destruction of various outlying unprofitable lines, integral parts of the system though they might be. In this general connection it is worth while to note that the Massachusetts Supreme Court has just denied a preferential fare to the city of Fall River below the general 6-cent fare authorized for urban and suburban territories of the Bay State Street Railway.

If a company and its public desire to introduce the distance factor—by means of central and outlying zones—each zone should be required to make its unit contribution toward the total of terminal and movement charges. The respective contributions for urban and suburban traffic might not be absolutely proportionate to the cost of service, for even if these were accurately determinable expediency might require only a partial covering of the costs in the outermost zones, the inner area making up the deficits. To the extent that the suburban traffic did bring in additional revenue, however, there would be a recognition, as far as local electric railway operation might permit, of the principle of self-supporting classes of service enunciated by the highest court in the land.

What fare system a company should use is not the question here. As we have before stated, this is a matter which demands a more scientific investigation and a greater experimentation than heretofore. But note this: Whether or not an electric railway should be considered as a unit in rate-making depends on the fare system used, the classes of service offered, the location of the properties, the existence of unbearably costly sections of line, and other similarly relevant matters. Use sound judgment in interpreting local needs on this point, and don't rush into some uncalled-for generalization.

Just a Hint About What Bankers Are Beginning to Think

THE other day we were talking with the representative of a banking house which has a reputation for handling only the most conservative issues. We had been surprised to see among the issues offered by it the securities of an electric railway system about which there had been more or less concern. "Why are *you* selling such securities?" we asked. The answer was frank. "Well, we made the usual investigation, but there were certain features in the management which the engineering, banking and accounting examinations failed to disclose. One of them was the matter of public relations. They were not good, and the security sales suffered," And then the whole story came out. The bankers ceased to play-up the securities of this company, but they did not give up the case as hopeless. A member of the firm was elected to the railway directorate, and this man did all that he could to correct previous sins of omission and commission. In one instance, at considerable personal sacrifice, he helped to clear up a strike situation and otherwise assisted in bettering the condition of the company. Now things are much better than they were, but the bankers have learned a lesson. Never again will this house have anything to do with a financing proposition where the public relations are not of the best. Let us hope that the time is not far distant when the circulars of all banking houses will cover the point of public relations. What does it profit a man to purchase securities apparently satisfactory from the standpoint of the present earning power of a company, if he is not reasonably sure that the management has laid a good foundation for future harmonious relations with the public served? A dissatisfied public is no friend of the investor.

Ante-Rush-Hour Homeward Trips a Patriotic Service

ELECTRIC railway patrons who can be induced during the next few months to return homeward before the afternoon rush hour gets well under way will perform a real patriotic service in so doing. There is a close connection between a country-wide efficiency of urban transportation agencies at this time and the war tasks of the nation on this side of the ocean. This connection should be made clear to the general public by appropriate posters or other notices; it might well be the subject of publicity by some of the committees of civilians doing such good work in eliminating waste of resources. Of course, it is clear that the great majority of electric railway patrons are unable to choose the time of their home-going, but on the other hand there is in every city a class of shopping patronage from which not a little constructive assistance ought thus to be secured from patriotic motives.

It requires no extended argument to prove that anything which spreads a stated volume of travel over longer periods enables a company to handle it at a lower cost, not only to itself, but to the community. This reduced cost is expressed, not only in a smoother time card and in a platform working schedule of more regularity and less extreme peaks, and in reduced fuel consumption at the power plant, but also in a freer operation of cars, better punctuality of service and more efficient movement of population.

Every electric railway operator, beyond all doubt, knows well enough that early home-going brings its reward to the tired shopper in more comfortable transportation than is possible under the stress of rush-hour conditions, but this appeal in the past has not had the patriotic basis which should now be recognized and brought to the attention of the public. Every woman, for instance, who rides homeward before 4.30 p. m. does her bit in saving some of the fuel and labor required otherwise to transport herself and her sister shoppers in the peak hours. Paradoxical as it may appear to a layman, it is a fact that if the shopping load is distributed over the mid-afternoon hours rather than concentrated in the evening rush, less fuel will be required on a given system to handle the traffic and more men can be released for other service. The public does not realize that it is the peak which plays the mischief with economical operation on many systems, but this can be explained sufficiently to encourage the layman to try to form the helpful habit of early home-going if the manager cares to do it. It should not be forgotten that a large extra investment is entailed by rush-hour demands and that this increases the over-all cost of providing service.

It would require the formation of a general habit of early home-going materially to affect service cost from the investment standpoint, and this is hardly to be expected just yet; but if patrons the country over with free time co-operate along the line suggested, a real gain of patriotic import will certainly be susceptible of attainment.

Savona-Ceva (Italy) Mountain Railway Electrification

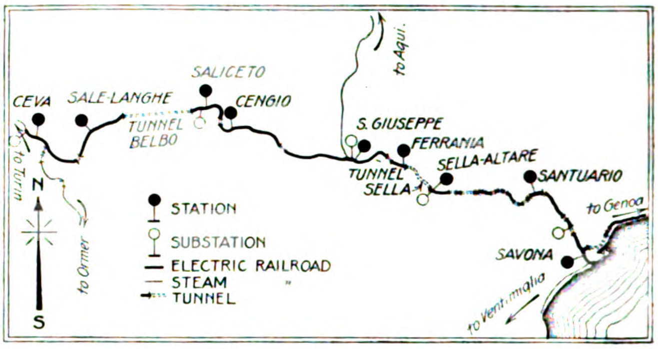
Operating Difficulties on This Road, Which Is of Great Economic Importance, Have Been Largely Overcome with Three-Phase Locomotives, Including the Use of Pushers—The Line Has an Average of One Tunnel per Mile

By W. LESNIEWSKI
Electrical Engineer, Petrograd, Russia

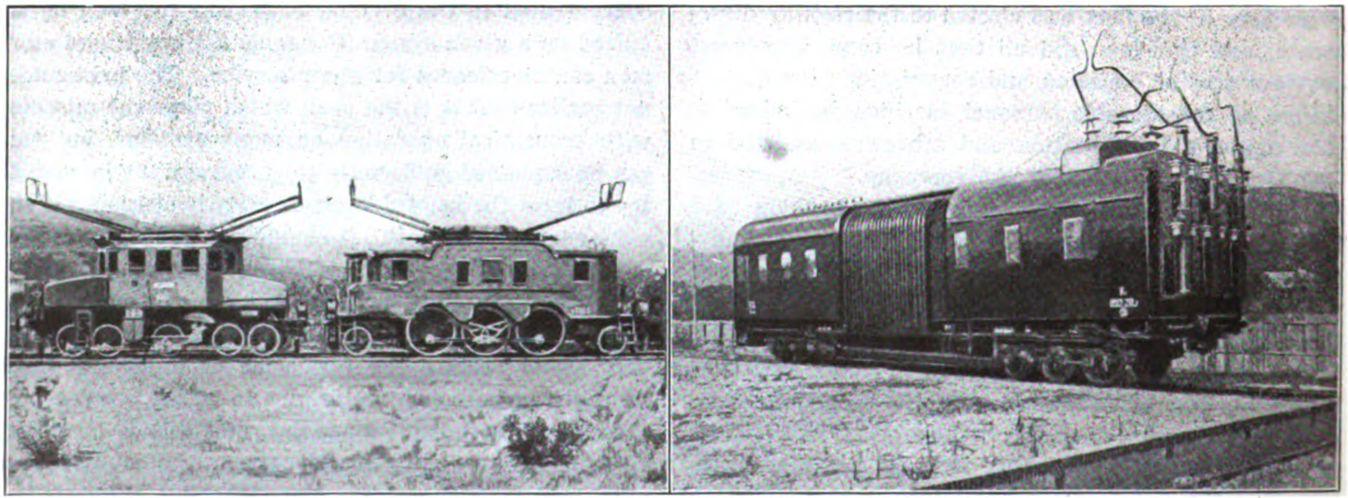
ELECTRIC traction is widely utilized in Italy, more than 435 miles of the State Railways being electrified. This figure, however, conveys but a faint idea of the significance of electric traction in that country, for the electrified sections are in general of difficult profile, with steep gradients and numerous tunnels, and have heavy freight and passenger traffic. On these sections about 200 locomotives are used, most of which have a one-hour rating of 2200 hp. and the majority of the remainder 2600 hp. The three-phase system is almost universal throughout Italy, and as a consequence it has attained a high degree of perfection. Moreover, owing to the practicability of changing locomotives and other electrical equipment, as well as operators, working conditions are very satisfactory.

This article describes the Savona-Ceva Railway, the electrification of which is typical of most of the Italian electric railways. Notwithstanding its technical success, practically no literature pertaining to this electrification has been written, except a little in the Italian language. This neglect by the foreign press must be ascribed to the fact that the year of its completion marked the commencement of the war, when many technical matters on the continent were overshadowed. The Savona-Ceva line extends northwest from Savona, which it joins with the richest part of Piedmont, forming a long-distance line from Savona through Turin to France and Switzerland. About 70 per cent of the imports, consisting chiefly of coal destined for the northwest of Italy, Piedmont and Lombardy, as well as France and Switzerland, are carried by this road. The goods imported at Savona during 1913 totaled 1,620,000 tons.

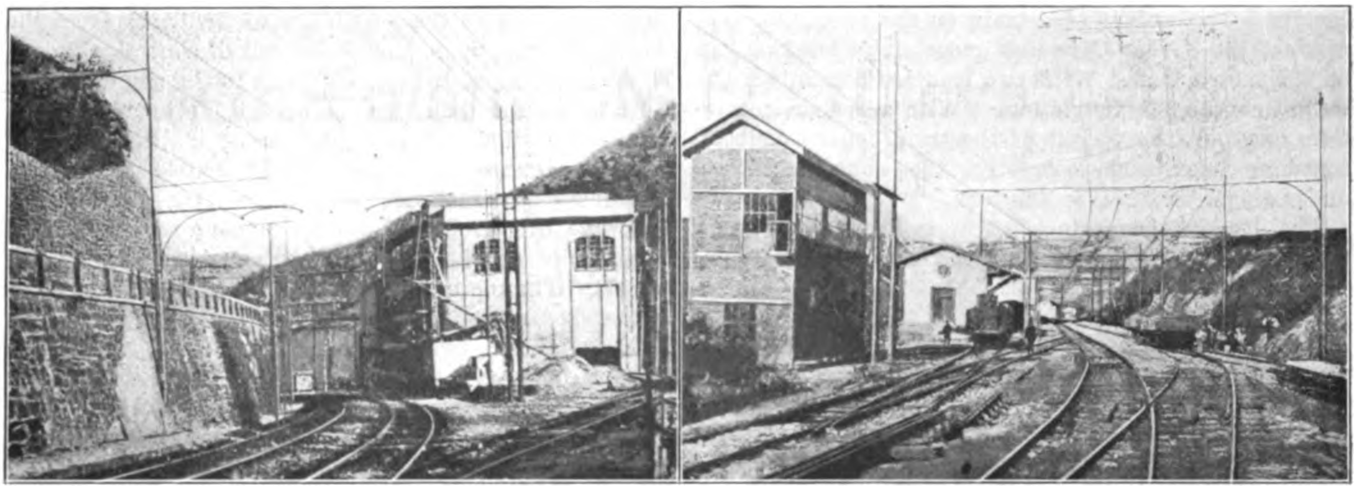
The whole of the electrified section, 28 miles long, is single track and has numerous tunnels, and about 60 per cent of its total length consists of curves. The least curve radius is about 1300 ft., and the maximum gradient 2½ per cent. The road traverses several mountains, as indicated by the accompanying profile, and attains an elevation of 1600 ft. Between Savona and Ferrania is a very difficult section, in which the elevation of the track varies more than 1000 ft. within a distance of 10 miles. A tunnel 1½ miles in length is located on a curve at the end of this section. It hindered the traffic considerably during operation with steam, as did also the Belbo tunnel, which is 2½ miles long. Almost the entire capacity of the line was



MAP OF THE SAVONA-CEVA ELECTIFIED LINE



ITALIAN THREE-PHASE ELECTRIC LOCOMOTIVES. "GIOVI" TYPE, 2200-HP., FOR 31 M.P.H., AND TYPE 1-3-1, 2600-HP., FOR 62 M.P.H.—TYPICAL 100,000-VOLT, 2250-KVA. PORTABLE SUBSTATION ON ITALIAN STATE RAILWAYS



60,000/3700-VOLT, 2250-KVA. SUBSTATION ON SAVONA-CEVA RAILWAY AND SWITCHING POST AT SALICETO STATION

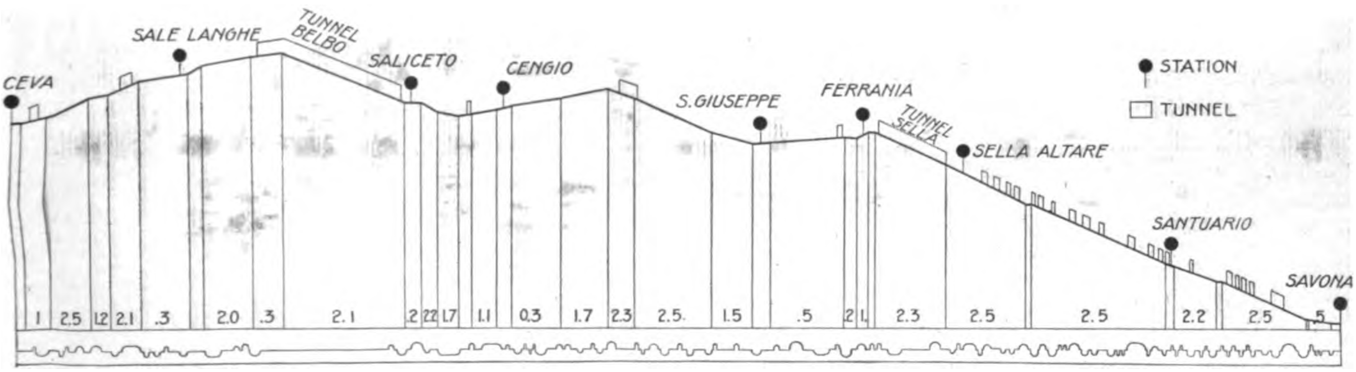
utilized under steam operation, and the problem of handling the ever-increasing freight traffic, coupled with the desire for higher speeds, led to the electrification of the road. The demands of traffic have been met successfully with electric traction.

The three-phase system was selected with 3700 volts for the contact line and a frequency of 16.7 cycles. As mentioned above, the capacity of the road was considerably augmented after electrification, when the longest two tunnels ceased acting as "bottle necks," and even without forced ventilation there is now no essential difference between traffic conditions in the tunnels and out in the open. The schedule speed has been approximately doubled, the speed now maintained on the steepest ascent being 31 m.p.h., whereas especially powerful mountain locomotives of the "Dekapode" type were unable to exceed a speed of 15 m.p.h.

With a view to increasing the speed of express trains to 47 m.p.h., which was possible on the down grades by the use of regeneration, forty high-speed electric locomotives were ordered for this and other electric railways. In 1915, when the data contained in this article were collated, only sixteen of these locomotives were completed, all of which were appropriated for other lines. The express trains were consequently limited to a speed of 31 m.p.h. Drawn by electric freight locomotives of the "Giovi" type and making all the former stops, they reduced the time of the 28-mile trip by twenty minutes. On the Mont Cenis line, another Italian three-phase electric railway with curves of about 900-ft. radius, described in the ELECTRIC RAILWAY JOURNAL for Sept. 1, page 344, express trains attained a speed of 47 m.p.h. on an up grade of 3 per cent. Therefore, from the technical standpoint, the attainment of such a speed is not exactly new.

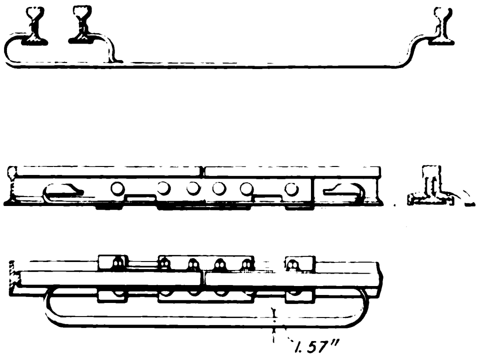
The 1-3-1 type, 73-ton locomotives, made by the Societa Italiana Westinghouse, when running at 47 m.p.h. develop a tractive effort of about 21,000 lb. From a calculation of train resistance on a curve of 1200-ft. radius and gradient of 2½ per cent, it is found that the train can have a weight of about 210 tons. By using a pusher locomotive, 400-ton trains can be hauled along the profile assumed. This system of double traction—that is, a locomotive at each end of the train—was adopted for the Savona-Ceva line. One point worthy of mention is that the possibility of using double traction on a three-phase electric railway was formerly disputed, owing to the shunt or constant-speed characteristic of the three-phase motor. The experience gained in the operation of the Savona-Ceva line has gone much further than the results gained on other railways in disproving this contention. It has demonstrated conclusively that on a varying profile over undulating ground, and particularly with very steep gradients, a train can be handled successfully by two or more locomotives with shunt characteristics and quite safely at high speed.

The limitation on the make-up of trains negotiating gradients as set by the strength of the rolling stock couplings applies particularly to Italian railroads, where the tractive effort exerted normally must not exceed 10 tons and on steep gradients advisably not more than 7½ tons. In the event of a locomotive developing a tractive effort nearly equal to the durability allowance of the couplings, the full tractive effort of a second locomotive at the head of the train cannot, of course, be



PROFILE AND CURVES OF SAVONA-CEVA RAILWAY—GRADIENTS INDICATED IN PER CENT exerted. The weight of a train on the maximum gradient of the Savona-Ceva line under single traction can be 230 metric tons. With two leading locomotives the weight can be 260 metric tons. With a pusher locomotive, however, the weight of the train can be doubled, throwing upon each locomotive the same weight as under single traction, or 230 tons.

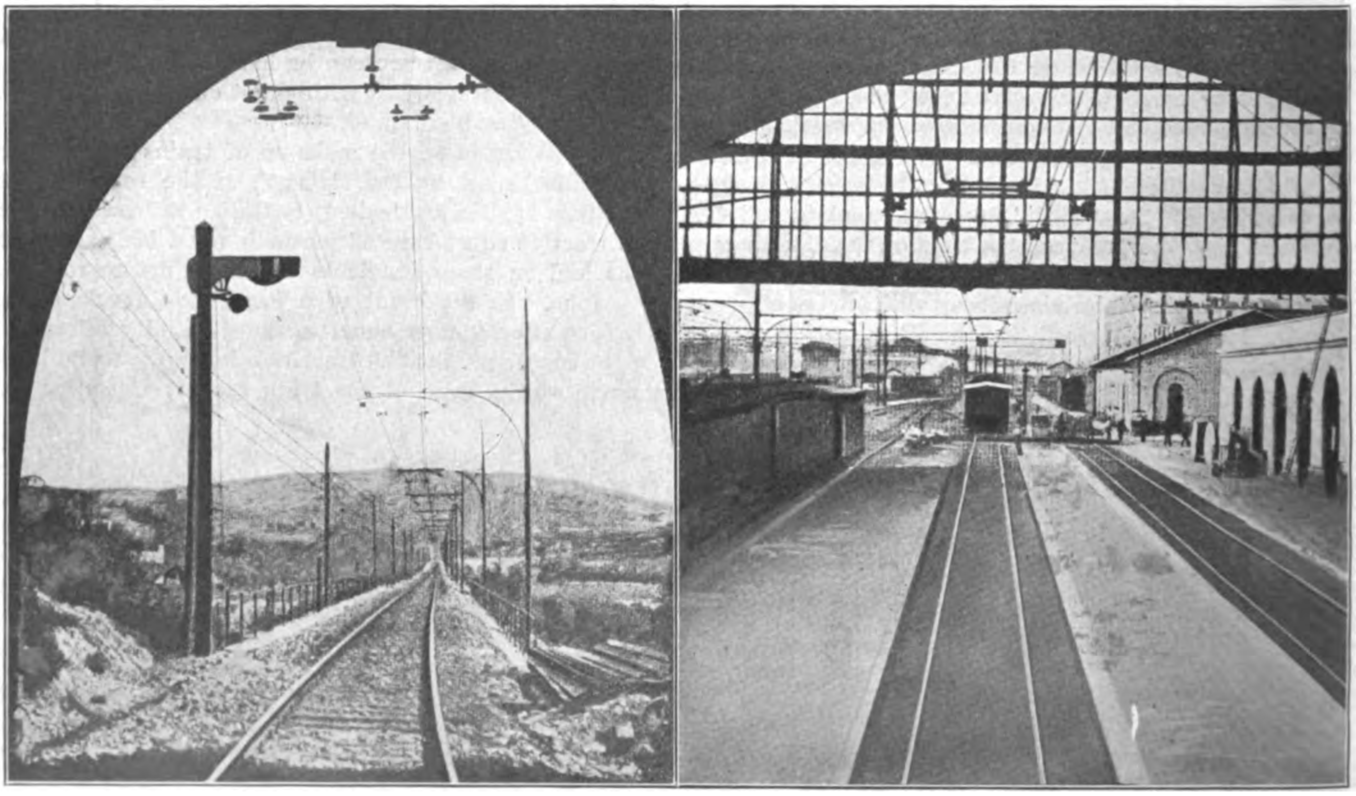
The Italian mountain electric railways go beyond this, however. The fact that a train permits "compression" considerably in excess of the permissible strain in tension has led naturally to the placing of two locomotives at its rear on grades. Thus a triple traction is obtained. One objection, however, to the use of one locomotive at the head and two at the tail of the train on track of varying profile and where regeneration is in use is that the strain exerted by the rear two locomotives may, on a gradient, prove too great. Consequently triple traction is sometimes used on the Savona-Ceva line, but double traction has been more generally adopted, with single traction for trains of light weight. Since the freight cars on Italian railways do not have automatic brakes, the use of pusher service decreases the possibility of accidents from the train dividing, as no part is left out of control.



SOFT IRON RAIL BONDS APPLIED BY AUTOGENOUS WELDING, SAVONA-CEVA RAILWAY

As already pointed out, it is due to the shunt characteristic of the induction motor and its energy regenerating feature that such high speed is attainable and that the successful utilization of double traction is possible. With three-phase locomotives a train can traverse the whole distance at a speed which remains practically constant without being controlled by the driver. The power is automatically distributed proportionately between the locomotives while "motoring" on ascents, and on reaching a down grade the locomotives in turn automatically regenerate. Thus the train traverses the changes of profile smoothly and at high speed without pulling apart, even in the case of a heavy train, and without braking. A watt-meter on the locomotive indicates the power being used and shows when the locomotives change from "motoring" to "generating," or the reverse. Thus a constant speed of 31 m.p.h. was attained with most successful results, and it is intended to increase this later to 46 m.p.h. The use of regeneration has considerably reduced the energy consumption, but of not less importance is the greater degree of safety assured and the smoothness on the down grades as well as the reduction in the wear of the line, superstructure, rolling stock, tires and brakes.

Electric energy is purchased from the Negry & Maira Company. A large part of the energy is supplied from the St. Dalmazzo hydroelectric central station, situated nearly 100 miles from Savona. This station has a 40,000-hp. output, which will be increased in the near future to 60,000 hp. A steam central station stands as reserve. The power company constructed and owns the substations, of which there are five in all and located as shown on the accompanying map. Each substation contains four single-phase, 750-kva. transformers, continuous rating, and a corresponding switch-gear set.



VIEWS OF CONTACT LINE FROM TUNNEL AND CONTACT LINE SUSPENSION AT SAVONA STATION, SAVONA-CEVA RAILWAY

Three transformers are connected in delta, and the fourth is held as reserve. Upon occasions the substations have worked successfully with only two transformers operating. The switch-gear arrangement can be made to fulfill the function of a switching post for the 60,000-volt transmission line. To insure continuity of service each section of line is provided with a portable substation capable of replacing any of the stationary substations. These portable substations constitute one of the most remarkable features of Italian electric railway engineering.

The contact line is connected with the substation through special switching posts in charge of attendants. These switching posts are provided with oil switches, lightning arresters and power-measuring instruments for all outgoing feeders. They are placed at all the stations in order to disconnect the circuit at the station or any other adjoining section without interrupting the feeding of the other sections. The switching posts are connected with each other and with neighboring substations and the huts of the flagmen by telephone.

The contact line consists of two circular wires of hard-drawn copper having a diameter of 0.315 in., making the copper section per phase 200,000 circ. mil. No parallel feeders are provided either for the overhead contact wires or for the third phase, the so-called "return" rails, as the high voltage and the distance between the substations do not necessitate higher conductivity. This lends evidence to the fact that, owing to the small section of copper, the overhead system, the most complicated part of a three-phase railway, is often cheaper than that of other types.

The construction of the rail bonds on this railway is interesting and of a kind seldom used in these days. They are made of soft iron, and while amply meeting the needs in conductivity, their great solidity and cheapness render them valueless to thieves.

Quick Service Demands More Pay

Connecticut Commission Rules That Character of Electric Railway Freight Service Justifies Classification in Substantial Conformity with Express Company Classification —New Rates, However, Are Moved Down a Notch

THE Connecticut Public Utilities Commission recently handed down a decision that is of marked importance in connection with the handling of freight by electric railways. The tenor of the decision is that the character of the expedited service rendered in handling station-service freight is such as to justify the use of substantially the classification legally established for express companies. The shipper of heavy and slow freight in less-than-carload lots should pay for the more prompt service rendered by the electric railway—in other words, he should not demand a special low rate by reason of steam railroad classification.

HOW THE QUESTION AROSE

The decision was rendered in the case of various petitioners against the Connecticut Company, New Haven, Conn. (Docket No. 2402.) In addition to its business of passenger transportation, this company has for some time been conducting a general freight and express business. For the purposes of the case under discussion this branch of the company's activities was subdivided into (1) carload freight, (2) station-service freight; and (3) pick-up and delivery express. The carload rates were not involved, the petition being directed against new station-service freight rates and new express rates. When the matter came to a hearing the petitioners did not press their objection to the express rates (a minimum charge of 25 cents and a flat rate of 50 cents per 100 lb.), and these were not specially considered.

As for the station-service freight rates, it appears that prior to May 21, 1917, the Connecticut Company had rates in effect applicable to goods shipped in less-than-carload lots from one station to another on its line and subject to a classification of commodities which was based roughly, but quite definitely, upon the freight classification then in force upon the steam railroad lines operating in the same territory. This included four general classes, the rates applicable to the second, third and fourth classes grading down from the first-class rates. On May 21, 1917, the company cancelled the former tariffs and classification and published a new classification modeled after the official Interstate Commerce Commission classification for express companies doing business upon steam railroad lines.

The effect of this new classification was virtually to abolish the former second, third and fourth classes, most of the commodities formerly grouped therein being transferred into the first class. This continued to carry the rates previously applied to first-class commodities. A few light and bulky articles and livestock received rates higher than first class.

The petitioners asserted that the new schedule showed practically no classification at all, 90 per cent of the goods handled being included in one class. Furthermore, they said that the abolishment of the three lower classes with their corresponding lower rates resulted in an inequitable and excessive burden upon shippers of certain commodities formerly grouped in the lower classes.

COMPANY'S CLASSIFICATION IS DEEMED EQUITABLE

In supporting the reasonableness of its new classification the Connecticut Company claimed that the character of its expedited service justified a classification in substantial conformity with the legally established express-company classification. In ruling upon this point the commission said:

"There has gradually developed an apparent demand and an actual existence of a substantial volume of business, first in the handling of crushed stone and other carload shipments, and later in the carrying of sundry commercial and industrial products in less-than-carload shipments for quick delivery, generally within a radius of from 10 to 50 miles. Frequent and unlimited slow freight transportation of heavy and bulky commodities which would naturally be transported on steam railroads is inconsistent with the use of public streets and the reasonable accommodation of passenger traffic in electric railway service.

"The actual service rendered by the electric railway in the handling of less-than-carload shipments is an expedited service in the interest of the public in the quick delivery of perishable and other daily required commodities, and corresponds more closely with express-company service than with steam-railroad freight business. If a shipper desires to use this service, on account of its expedition, for the transportation of heavy freight which would normally move by steam railroad, he should pay for the more prompt service rendered.

"The actual cost of handling heavy freight formerly carried under the lower classifications is substantially the same in this type of service as the cost of handling the so-called first-class shipments, and such heavy freight naturally increases the liability to damage of the lighter or more fragile shipments when moved in the same car. A special low rate by reason of classification should not be given to heavy and naturally slow freight at the expense, if not the entire abolishment, of the expedited service natural to electric railway operation. The commission finds that the classification established by the company along the lines of the official express company classification is reasonable and equitable."

DIFFICULT TO DETERMINE INCOME AND INVESTMENT

To the contention of the petitioners, however, that the abolition of the second, third and fourth classes with their lower rates and the general adoption of the first-class rate resulted in an undue burden upon shippers, the commission gave partial assent. In discussing the reasonableness of the new rate, the commission said that it must be recognized that there was no present basis for determining accurately, or even with any fair approximation, either the gross return to be secured under the new rate structure or the value of the company's property used for station-service freight and entitled to a reasonable and fair net return from such employment.

According to the commission, it had been admitted by petitioners that since May 21 certain former patrons of the freight service had generally sent their short-distance shipments by automobile trucks in an endeavor to save on transportation charges, and possibly, by boycott, to induce the company to resume the former classification. The company had frankly admitted also that the new arrangement was designed to some extent to divert from the electric lines to the steam railroads heavy and bulky shipments conceived to be legitimate steam-railroad freight.

It might be claimed, the commission remarked, that the new rate structure, in so far as it increased by large percentages the charges on certain classes of commodities, would so restrict and discourage electric railway shipment of such commodities as to result in a serious falling off in revenue from this freight business. On the other hand, it might develop that the present limitations of the freight-handling facilities of the steam carriers at a time when expedited service is more than ever demanded by both peace and war industries would divert to the electric railways an unusual amount of all kinds of intra-state freight. In the commission's opinion, therefore, the amount and kind of freight carried by the Connecticut Company under the old classification and graded rates could be used safely only as a very general indication of what might be expected to result under the new conditions.

Moreover, the commission said that it was perhaps futile to assume that any figures available could be taken as a trustworthy guide for the value of the station-freight equipment and facilities. The Connecticut Company is a composite of a large number of original companies purchased and combined at prices which should not, in the commission's opinion, be taken as indicating to-day the fair value for rate-making purposes. On the basis of book values, however, a painstaking effort was made to segregate and allocate the portions applicable to the service in question.

NEW RATES CUT TO OLD SECOND-CLASS FIGURES

According to the company's figures about $44,000 additional annual revenue would be needed to assure an 8 per cent return from the station-service freight and express business combined (the investment for these two classes of service not being separable). If the express business could be relied upon to produce $15,000, the station-service freight must yield $29,000, or a 10 per cent increase. In this connection the commission added that if the company was allowed to earn a net return of at least 8 per cent on the investment, no additional allowance out of current income for what were properly capital expenditures would be necessary. That is to say, if the company secured an additional 10 per cent net revenue from the station-service freight business it would be earning as much as it could justly claim to be a reasonable return.

The new rates, as they were increased by the company, would, to the commission's mind, give an average rate increase of 33 per cent, which would probably yield very much more of a revenue increase than the 10 per cent needed for a fair return. If the company, however, had used the old second-class rates rather than the first-class as the basis for the new rates and had abolished all except such second-class rates, the average rate increase would be approximately 14 per cent. Even on this basis, the commission stated, there would be a possibility of something more than the necessary 10 per cent revenue increase. In view of constantly mounting expenses, the additional taxes which would accompany increased revenue and the uncertainty as to the quantity of freight which would be offered under higher rates, however, there would be perhaps no excess margin between the 14 per cent estimated increase in rates and the 10 per cent increase in the company's revenue.

The commission decided, therefore, that the new rates of the Connecticut Company on station-service freight were unreasonable, and it ordered the company to make effective on and after Jan. 1, 1918, a new schedule of first-class rates based upon, and in no case to exceed between any two points, the former second-class rates The company's official classification effective May 21 1917, must not, without approval of the commission, be modified so as to bring about by means of reclassification additional rates or charges upon any commodity. The order, however, does not prohibit the company from charging rates in excess of the maximum first-class rates prescribed, if such excess charges result solely from the application of the rules contained in the official classification of May 21.

Proper Uniform for Women Workers

Chester B. Lord, general superintendent Wagner Electric Manufacturing Company, St. Louis, Mo., declared at the recent New York convention of the American Society of Mechanical Engineers that overalls for women workers are not only unnecessary but the women who consent to wear them are of the masculine type and lacking in sex consciousness. He believes, however, that all women workers in a plant should dress alike, and has found from his experience that the best dress is a dark skirt with a fadeless blue linen waist and apron, both of standard design. The women are usually willing to obey such rules about their clothing, provided the rules apply to them all.

Mr. Lord said further that the successful employment of women depends on many little things which contribute to their contentment of mind, without which they are inefficient. In the Wagner plant all the machines are painted white in the shops employing women, and special attention is given to cheerfulness and cleanliness throughout.

When the Mark Twains Become Buffalo Bills

BY THOMAS DREIER

Assistant to President Bay State Street Railway

Mark Twain loved to tell this story:

> "I knew you as soon as I saw you," said a little girl who ran up to him as he walked up Fifth Avenue, her eyes shining with joy.
>
> Flattered, delighted by the compliment paid by the child, Mark asked, "And who am I?"
>
> "Why," answered the little girl, "you —you are Buffalo Bill."

I could not help think about this story the other day when I heard a street railway president complaining about the people of his city. "They don't understand," he said. "Here I have been talking to them whenever I got a chance, telling them about my problems. But look at them. Their ignorance astonishes me."

What I wanted to say to him (but didn't) was this: "Do you expect all the citizens of your city to be professional mind readers? Mark Twain, one of the most advertised men of his time, with his pictures printed hundreds of thousands of times, was not Mark Twain but Buffalo Bill to the little girl on Fifth Avenue, and there were millions of men and women who never heard his name.

"You have talked your little talk, have buttonholed a few bankers and prominent citizens, have had a few scattering articles printed in the local papers. But what have you done day after day and week after week to educate your car riders? What have you done to educate your own employees? How much, as a matter of fact, do the people in your own offices know about your problems? Can half of them answer questions intelligently?

"If your own employees, if those in your own offices cannot tell your story convincingly, what right have you to blame the thousands of car riders who have no personal interest in you and your affairs beyond getting the best service for the least money?"

It is a fine thing for street railway men to get together and tell one another how bad everything is, and how the roads are going to the demnition bow-wows. But when they do that they remind me of the young fellow who told his friends he feared that he could not win the hand of a certain maiden. "Have you asked her?" questioned the friend. "No," mumbled the love-sick youth, "I sort of had an idea she ought to feel it without making me tell it."

Street railway men must understand that they cannot get results unless they get public opinion on their side. The folks who make up the mass of car riders are ordinary men and women, amenable to suggestion, open-minded to those ideas that are presented intelligently, and are disposed to do the fair thing at least ninety-eight times out of a hundred.

Favorable public opinion cannot be won in a day or a month. The big national advertisers have discovered that fact. These "Assyrian came down like a wolf on the fold" campaigns, these hip-hip-hurray-let-us-do-a-fast-job advertising stunts are fine things—for the printers and the advertising men.

But the hundreds of thousands of car riders are in no hurry. They take their time. They have other things to think about besides street railways and their troubles. Ideas must be put into their minds as painlessly as possible. Ideas must be dropped on these people like the snow—each flake is small, almost insignificant. At first no impression is made. Soon little patches of the ground are covered. After a while the earth is covered with a white blanket. Eventually heavy loads may be hauled over it.

So is it with ideas dropped on the public mind. Plan ahead. Give yourself time. Tell the truth. And always and forever remember to be sincere. What is in your heart will write itself into your copy and make itself heard in your speech.

Do these things and your Mark Twain problem will not be a Buffalo Bill.

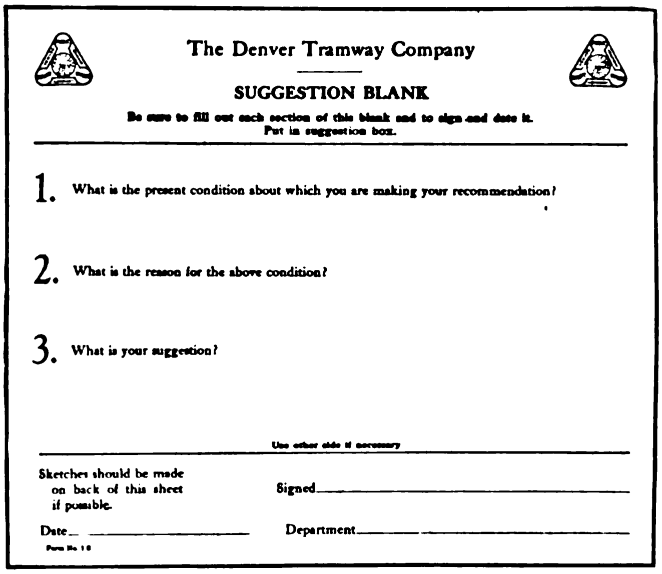
Getting Employees to Make Suggestions

How the Denver Tramway Through its Suggestion Campaign with Prize Awards Has Stimulated the Co-operation of its Men in Solving Various Problems

THE Denver (Col.) Tramway has launched among employees a "suggestion campaign," which has every indication of being a marked success. The idea of the campaign was taken from a system used by the Chalmers Motor Company in awarding prizes for good ideas. A few other companies were also consulted with regard to the results secured by them in using suggestion campaigns. After making a study of what had been found to be either the snags or the strong points of such campaigns, the Denver company evolved the detailed plan described herewith.

ANNOUNCING THE CAMPAIGN BY POSTERS

The general outline of the campaign was announced in large posters which were put up in convenient and conspicuous places on the company's property and buildings, so that all employees could see them. The posters, one of which is shown in Fig. 2, stated that the company intended to give prizes for the best ideas advanced by employees. The rewards would be divided into two classes—grand annual prizes and monthly prizes. In the first group the leading prize was one month's extra wages; the second prize, two weeks' extra wages, and the third prize, one week's extra wages. The monthly prizes consisted of $20, $15 and $5 in gold for first, second and third prizes respectively. The poster also promised that 50 cents would be paid for every suggestion that was judged worthy and practical.



The Denver Tramway Company

SUGGESTION BLANK

Be sure to fill out each section of this blank and to sign and date it.
Put in suggestion box.

1. What is the present condition about which you are making your recommendation?

2. What is the reason for the above condition?

3. What is your suggestion?

Use other side if necessary

Sketches should be made
on back of this sheet
if possible.

Signed________________

Date________________

Department________________

Form No. 18

SUGGESTION CAMPAIGN—FIG. 2—BLANK FORM USED BY EMPLOYEES IN MAKING SUGGESTIONS

According to the poster, the sort of idea desired by the company was as follows:

1. Where can expenses be reduced or eliminated?
2. Where can a reduction in cost be made?
3. What improvements can be made in existing mechanical devices used on construction and maintenance work?
4. What improvements can be made in general arrangement of machinery facilities in shops, power-plant, tool-room and carhouses?
5. What improvements can be made in methods of handling materials, so as to increase the efficiency of workmen and facilitate the completion of jobs?
6. What precautionary measures can be taken to prevent, error, fire and accident?
7. What improvements can be made in light, heat, ventilation, sanitation and all other matters which will promote the health, safety and comfort of employees? (Wash-room and toilet facilities, lunch and rest rooms for women, etc.).
8. What economy can be practised in electric light, steam, power and use of material?
9. What improvements can be made to any part of the street car coaster savings?
10. What new features can be introduced tending to improve street cars?
11. How can the shop, track, bridges and buildings, power plant, overhead and bonding be better planned?
12. What improvements can be made in employees' record system, statistical records, correspondence filing, cost system, piece-work and time-keeping system?
13. What reduction can be secured in the cost of transportation of company employees, materials, express and mail?
14. What new or novel advertising ideas can be introduced?
15. How can the sale of street car service be increased?
16. How can co-operation be increased?
17. How can the service to the public be improved?
18. Where is unnecessary work being done and where is work being duplicated?
19. What improvements can be made in blank forms?
20. What instances can be cited where expensive tools or operations are being used on work which might be done as well with cheaper tools or operation?

The poster stated that all employees of the company might compete, with the exception of officers, department heads, division superintendents, assistants in charge of power, line, bridge and buildings, and track; the mechanical engineer, the field engineer, the superintendent of planning and the office engineer or draughtsmen. Draughtsmen, however, might make recommendations that had to do with matters not pertaining directly to their work.

HOW SUGGESTIONS ARE HANDLED

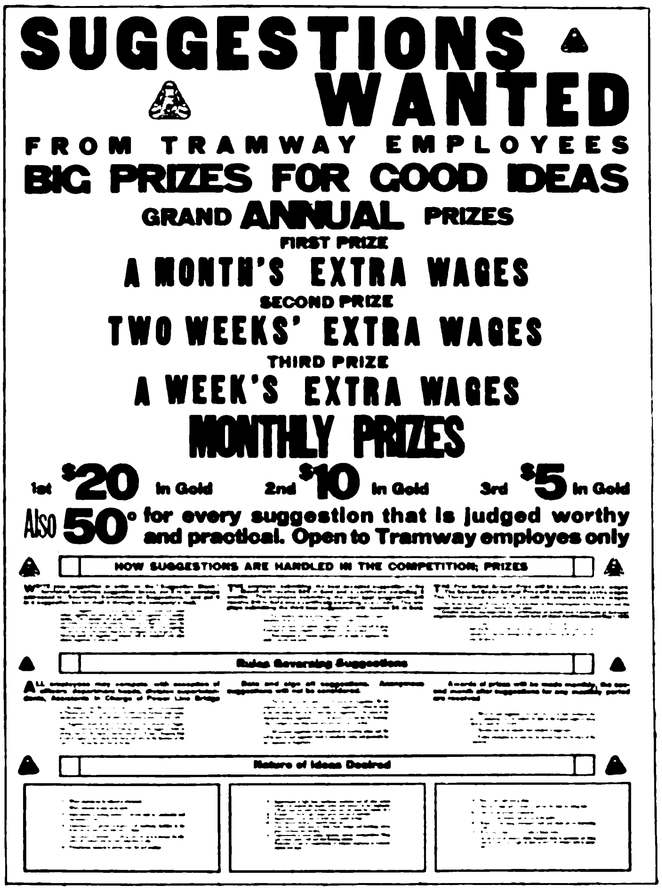
The suggestions made by employees may be sent to the company by placing them in the regular tramway mail or United States mail or by dropping them into suggestion boxes put up in the various buildings. These boxes are locked, and the secretary of the committee on suggestions is the only person having a key to them. This committee, which receives all suggestions, is composed of seven officials of the company.

On top of each suggestion box is a rack, in which is kept a supply of blank forms used by the employees. The employee writes his suggestion, dated and signed, on the blank shown in Fig. 1. On this, it will be noticed, there are general questions asked, as follows: "What is the present condition about which you are making your recommendation? What is the reason for this condition? What is your suggestion?" These questions are aimed to help the men reason systematically and also to standardize to some extent the suggestion procedure.

When the employee has written out his suggestion, he places the form in a prepared envelope addressed to the secretary of the committee on suggestions. This envelope is marked personal and also bears the following statement in the upper left-hand corner: "The secretary is the only person permitted to see original suggestion with name attached. Others please do not open." On receiving the suggestion the secretary acknowledges it with the statement shown in Fig. 3. He then gives the suggestion a number and makes an entry corresponding upon the employee's record card (4 in. x 6 in.). This shows at the top the name and the department of the employee, and has five columns for the following: Number, date, filing subject, points, and action taken.

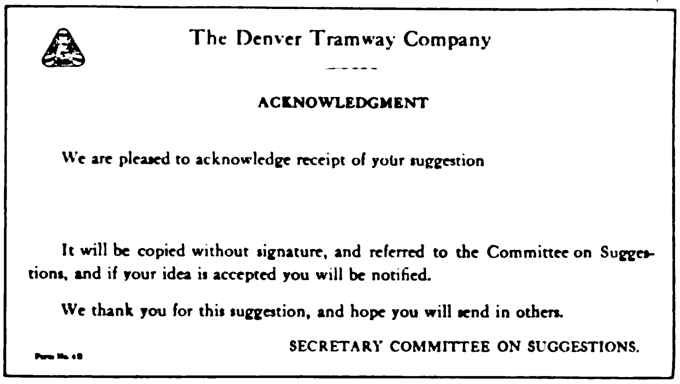
After the suggestion is thus entered, the secretary copies it without signature on a yellow letter-size sheet which bears only the date and the suggestion number. He then files the original suggestion in his private file, and no one else has access to it. Thus, when the suggestion is taken up by the committee the members do not know who submitted it. The committee goes over all of the suggestions on the fifth day of each month and reports on each one, either favorably or unfavorably.

If any of the suggestions is not accepted, the report shown in Fig. 4 is sent to the employee, a full notation being made thereon as to why the suggestion was not found suitable. With it is sent a certificate of acknowledgment (Fig. 6), which states that the employee has been awarded a one-half credit for a suggestion made "for the betterment of service, operation or efficiency in a department of the company." This gives the employee some reward for his effort in spite of the rejection of the suggestion, but the reward is so small that there is no chance of his winning a big prize through mere rejections. Reinvestigation of a rejected suggestion will be made if the employee requests such action.


SUGGESTIONS WANTED
FROM TRAMWAY EMPLOYEES
BIG PRIZES FOR GOOD IDEAS
GRAND ANNUAL PRIZES
FIRST PRIZE
A MONTH'S EXTRA WAGES
SECOND PRIZE
TWO WEEKS' EXTRA WAGES
THIRD PRIZE
A WEEK'S EXTRA WAGES
MONTHLY PRIZES
1st $20 In Gold 2nd $10 In Gold 3rd $5 In Gold
Also 50¢ for every suggestion that is judged worthy and practical. Open to Tramway employes only
HOW SUGGESTIONS ARE HANDLED IN THE COMPETITION; PRIZES
Rules Governing Suggestions
Nature of Ideas Desired

SUGGESTION CAMPAIGN—FIG. 2—POSTER ANNOUNCING DETAILS AND RULES OF PRIZE AWARDS

If the committee accepts a suggestion, it so reports by means of the blank shown in Fig. 5. This states that the suggestions, including the one in question, which were accepted that day will be considered within the next thirty days and the monthly prizes for the best adopted suggestions will be awarded at the end of that period. With this


The Denver Tramway Company

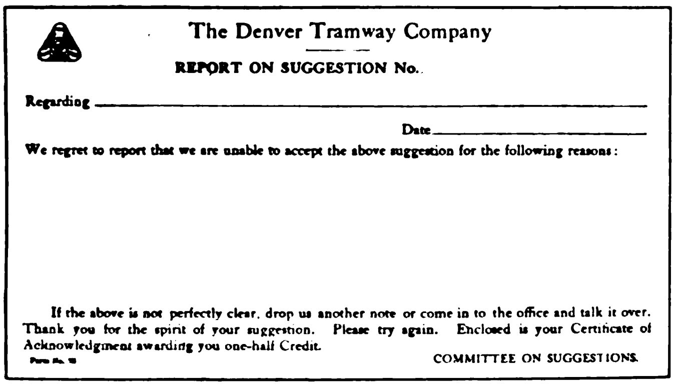
ACKNOWLEDGMENT

We are pleased to acknowledge receipt of your suggestion

It will be copied without signature, and referred to the Committee on Suggestions, and if your idea is accepted you will be notified.

We thank you for this suggestion, and hope you will send in others.

SECRETARY COMMITTEE ON SUGGESTIONS.


The Denver Tramway Company

REPORT ON SUGGESTION No.

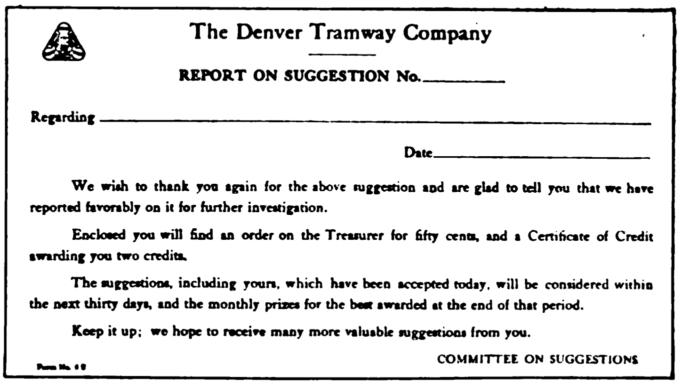
Regarding ____________________

Date ____________

We regret to report that we are unable to accept the above suggestion for the following reasons:

If the above is not perfectly clear, drop us another note or come in to the office and talk it over. Thank you for the spirit of your suggestion. Please try again. Enclosed is your Certificate of Acknowledgment awarding you one-half Credit.

COMMITTEE ON SUGGESTIONS.


The Denver Tramway Company

REPORT ON SUGGESTION No. ________

Regarding ____________________

Date ____________

We wish to thank you again for the above suggestion and are glad to tell you that we have reported favorably on it for further investigation.

Enclosed you will find an order on the Treasurer for fifty cents, and a Certificate of Credit awarding you two credits.

The suggestions, including yours, which have been accepted today, will be considered within the next thirty days, and the monthly prizes for the best awarded at the end of that period.

Keep it up; we hope to receive many more valuable suggestions from you.

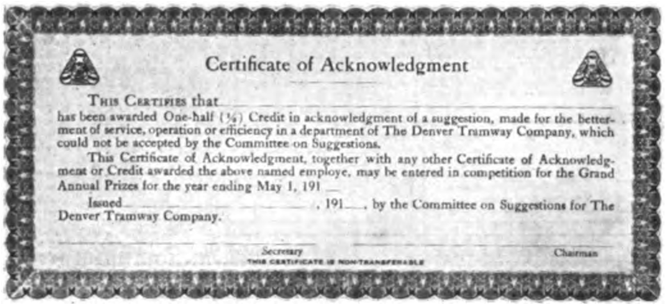
COMMITTEE ON SUGGESTIONS

SUGGESTION CAMPAIGN—FIG. 3—ACKNOWLEDGMENT SENT UPON RECEIPT OF SUGGESTION FROM EMPLOYEE. FIG. 4—REPORT SENT UPON REJECTION OF SUGGESTION. FIG. 5—REPORT SENT UPON ACCEPTANCE OF SUGGESTION report is inclosed an order on the treasurer for 50 cents, which may be cashed at once, and a certificate of credit valued at 2 points. The latter is similar to the certificate shown in Fig. 6.

AWARDING THE PRIZES

The gold prizes are awarded each month, the second month after suggestions for any month period are received. These prizes are based not on credits but on the merit of the suggestions. The accepted suggestions are forwarded to the proper departments for full investigation, and those adopted are considered eligible for the prizes. The employee submitting the best adopted suggestion receives $20 and a certificate awarding three credits. The employee submitting the next best suggestion receives $10 and a certificate awarding one credit, and the employee submitting the third best suggestion receives simply $5.

The grand annual prizes are awarded to the employees who have earned the highest number of credits in the year. A month's wages is considered as the total year's earnings divided by twelve, and a week's wages as the year's total divided by fifty-two. When the same suggestion is received from two or more employees, the first one submitting it receives the credits, the date on the original suggestion being taken as the basis for the award.



Certificate of Acknowledgment

THIS CERTIFIES that ____________________

has been awarded One-half (½) Credit in acknowledgment of a suggestion, made for the betterment of service, operation or efficiency in a department of The Denver Tramway Company, which could not be accepted by the Committee on Suggestions.

This Certificate of Acknowledgment, together with any other Certificate of Acknowledgment or Credit awarded the above named employe, may be entered in competition for the Grand Annual Prizes for the year ending May 1, 191__

Issued ____________________, 191__, by the Committee on Suggestions for The Denver Tramway Company.

____________________ Secretary

____________________ Chairman

THIS CERTIFICATE IS NON-TRANSFERABLE

SUGGESTION CAMPAIGN—FIG. 6—CERTIFICATE OF ACKNOWLEDGMENT ACCOMPANYING REJECTION REPORT

In connection with the award of prizes, there is a provision covering a man who sends in a new plan or suggests a change in method which cannot very well be taken care of in the general scheme, but which is really of much value to the company. For instance, one man drew up a wiring diagram that eliminated a great many lights and will result in the saving of hundreds of dollars to the company each year. This will be handled as a special case, and the chief engineer will decide how large a check should be sent to the employee. This part of the program, however, is not advertised.

In carrying out its campaign, the company makes it a private affair with each employee. Thus it avoids some of the snags that one or two other companies have encountered in trying out such a system of prizes.

HOW THE PLAN IS WORKING OUT

The awarding of the first month's acceptances and the prizes was delayed on account of the flood of suggestions brought in by the announcement of the contest. A great many suggestions presented new, constructive ideas of the finest kind, and they received careful study. In many cases they had to be referred to several different departments for consideration and decision as to their practicability. Actual tests on the road or in the shops had to be made on others. A few necessitated working models, which were made, developed and improved at the company's expense.

Quite a few of the suggestions were rejected, the causes being of various kinds. Some suggestions were impractical; many were old ideas that had been tried out on the tramway and other electric railways and proved undesirable or impossible; still others were already in use, and a few had to be rejected because some other contestant made the same suggestion first. By far the largest number of rejections, however, was caused entirely by the fact that the contestant made no suggestion. He would state the facts regarding some condition that ought to be improved, and then his suggestion would be to the effect that the whole thing was wrong and ought to be changed in some way. It has now been explained through the employees' publication that each contestant must tell exactly how any condition can be improved.

The suggestions already submitted have been found to display more thought on the part of the employees and a remarkable increase in value to the company. While there were 150 suggestions the first month, their value could be rated—to fix an arbitrary percentage—at only 40 per cent. The suggestions the next month can be rated at 70 per cent, although there were fewer submitted. It is felt, therefore, that the ideas in the suggestions are going to improve splendidly as time goes on and the men become accustomed to using their brains in this direction.

The company is pleased with the results and finds nothing in the campaign that it would change. The plan has proved to be an excellent stimulant to department heads and to employees. It has been particularly valuable in eliminating the excuse for the rank and file to sit on a bench, tell each other what they would do if they were boss and let it go at that. With the suggestion campaign in operation the men have a fine opportunity to tell seven different officials of the company what they think ought to be done, with the possibility of getting paid for doing it.

Byllesby Properties to Assist in Sale of War Savings Certificates

Application has been made by the bond department of H. M. Byllesby & Company to have the many offices of Byllesby utilities throughout the country appointed special agents for the sale of War Savings Certificates and Thrift Stamps. W. H. Clarke, manager of the bond department, says in this connection:

"Public service company offices which handle cash and come into intimate contact daily with all classes afford admirable facilities for assisting in this campaign. In the many towns we serve a large number of people are accustomed to coming to our offices for investments. Thousands have made their patriotic purchases of Liberty Bonds through our representatives at the properties as well as notes and preferred stock of our operating companies offered under our customer ownership plan. The war savings plan offers a means by which every individual may assist in winning the war by investing his or her savings in amounts of 25 cents and multiples thereof, and we are going to do everything in our power to assist in distributing and popularizing the war stamps."

Railway Service Must Be Preserved

Report of Special Investigator Says Jitneys in British Columbia Territory Must Go—Company Should Have Aid in Form of Suburban Rates Bearing Approximate Relation to Cost of Service—One-Man Car Operation Recommended for Shuttle and Light Lines

THE railway service of the British Columbia Electric Railway, Vancouver, B. C., cannot be maintained efficiently under the present condition of competition with jitneys. The jitney, therefore, should be eliminated, for it cannot meet transportation requirements. But the railway finances should be helped in other ways, too, as through a fare readjustment so that suburban districts outside of some central area would bear part of their cost of service. Moreover, the operation of one-man cars should have a fair trial with the view of reducing costs and maintaining a better service on shuttle and outlying light lines, and the company should be authorized to increase the speed limit and also to give through service to certain patrons.

Such is the substance of the recommendations just made by Adam Shortt, Ottawa, appointed on July 11 as special commissioner to investigate the economic conditions and operations of the British Columbia Electric Railway. The immediate cause for Mr. Shortt's appointment was the strike of more than a week's duration last June, when the employees refused the company's offer of a wage increase of $100,000 a year. Following a meeting of representative citizens called with the object of securing the resumption of car service, negotiations were opened by the City Council of Vancouver, and the company stated that it was impossible for it to pay the wages asked and at the same time compete with the jitneys.

It was decided at this meeting that the company would meet the wage demands and resume service, and that both the city and the company would agree to abide by the decision of a commissioner to be appointed by the Provincial Government. An order-in-council was subsequently passed by the Provincial Government appointing Mr. Shortt, who held sessions in Vancouver and Victoria from July 16 to Aug. 21. His report has just been published by the company in a 61-page printed booklet. The following paragraphs contain a résumé of his comments upon the general questions involved, and the panel on the next page is a substantially complete reproduction of his basic summary of the situation in British Columbia.

SERIOUS REACTION FOLLOWED BOOM

When in 1897 the company undertook to develop a comprehensive system of transportation, the population of the Vancouver district was limited. During the ensuing boom period, however, railway expansion was not only permitted and justified, but even demanded with ever increasing importunities. Operating in an atmosphere of phenomenal growth and optimism for more than fifteen years, when, with the exception of a temporary pause in 1907-08, almost every year surpassed the last both in volume and in ratio of growth, the company expanded far. Mr. Shortt is only surprised that the company had not more fully outrun the existing needs of the districts which it served.

Early in 1913, when the driving force of the boom was spent, the company was not unreasonably in advance of the actual requirements. But a heavy reaction then set in. Population diminished, and activities in the newer districts ceased. Then the war broke out, and the exodus of population increased. The company, therefore, found itself confronted with the maintenance of service in outlying districts where growth had been arrested before sufficient population had been established to meet the primary costs of service.

1916 RATE OF RETURN WAS ONLY 2.13 PER CENT

After setting aside the usual percentage for renewals and maintenance reserve, the net revenue fell from $2,287,556 in 1914 to $875,182 in 1916, through $1,247,890 in 1915. The rate of return on the capital invested was as follows for the three years: 1914, 4.69 per cent; 1915, 2.60 per cent, and 1916, 2.13 per cent.

With bond and debenture interest in 1916 amounting to $987,681, there was a deficit of $112,499 in relation to the fixed charges for the year, there being no return whatever on the share capital of about $21,000,000. The company withdrew from reserve about $350,000 to meet its debenture charges.

While the situation has improved somewhat since 1915-16, up to the end of May, 1917, the railway system was still operating at a considerable loss. At the present time, Mr. Shortt remarks, it is not a question as to whether the company can pay dividends of even the most modest size, but whether it can maintain an equilibrium between income and fixed charges.

During the last three years the heaviest losses were incurred in Vancouver City and the New Westminster interurban services. This is where the jitney opposition, which started in November, 1914, has been most severe. For the city and suburbs of Vancouver the aggregate amount lost to the company through jitney competition for 1916 was $261,278. The actual railway receipts from this area during the year were $1,237,058. The extent, therefore, to which the jitney cuts in upon the income of the company is quite sufficient to make the difference between the possibility and the impossibility of financial soundness for the electric railway system.

JITNEYS CANNOT TAKE THE PLACE OF STREET CARS

Assuming that the majority of the citizens of Vancouver and Victoria and their adjoining municipalities, even if favoring the municipal ownership and operation of public utilities, are no more prepared than those of Edmonton and Calgary to permit private jitney competitors to take the cream of the city's revenue, Mr. Shortt says that the question simply narrows itself down to whether the jitney service or the electric railway service is to operate in the coast cities of British Columbia.

On this point the commissioner says:

"An open-minded examination of the jitney service as it at present exists should convince any one that, while it may be a useful supplement to electric railway service, it cannot possibly take its place. All that is left is the vague possibility that the jitney service might result in some form of trackless motor vehicles which might some day take the place of the street cars.

"Though there have been several experiments with different types of motor cars in American cities, they have not been able to compete successfully with the street cars. It is true that motor-bus services have been successfully developed in some of the older and larger cities of Europe, where the contour and the varying widths of the streets do not lend themselves to the operation of electric cars; also in some of the larger cities of America, where, as in New York and Chicago, every possible form of transportation is employed to deal with the ever increasing volume of traffic. In these cities, however, the trackless trolley bus is employed as a supplementary service, especially on streets where it is not convenient or desirable to have wires and tracks.

"In other large cities, especially those like San Francisco, where municipal ownership of the street-car service is making headway, the bus is occasionally adopted as a supplementary service in order temporarily to meet the requirements of the newer city and suburban districts where it would not be profitable, for a time at least, to lay and operate the regular electric lines. In all such cases, however, experience shows that neither the jitney nor even the motor bus is seriously regarded as a practical alternative to the regular street car service.

"It may be noted that while there is throughout the United States and Canada a very general agitation for an increase in transportation rates, both local and general, in order to meet the increasing cost of labor and equipment, yet in all the necessary expansions of the electric railway service there has been no serious suggestion, in America at least, as to the substitution of other methods of transportation for the street car."

FARE AND SERVICE IMPROVEMENTS RECOMMENDED

Having decided it to be in the best interests of the public to maintain the service of the British Columbia Electric Railway and eliminate the jitneys, therefore, Mr. Shortt turns his attention to possible readjustments in fares and service of the railway. His recommendations are along the following lines:

1. *Suburban Rates Based on Cost of Service*

It is not recommended that the present standard fares in the city of Vancouver be increased. As a result of the hasty and tentative arrangements entered into during the days of rapid expansion and the overflow of municipal boundaries, however, there is an intricate and impracticable system of normal fares, with all manner of special concessions and privileges. It is impossible, Mr. Shortt states, to summarize this tangle of rates within limited compass, but certain general conclusions may safely be derived. In the first place, these rates must be revised and simplified with a view to rendering them more uniform and equitable alike to the company and the citizens.

As a basis factor in the rearrangement, a central

How Mr. Shortt Analyzes the Situation in British Columbia

1. The financial condition of the railway division of the British Columbia Electric Railway is impossible of continuance on the basis of the past three years or the immediate prospects for the future.

2. The urban and interurban business, as proved by long and wide experience, cannot be conducted upon a basis of free competition. It is a public utility and as such essentially a natural monopoly, to be conducted on well-recognized principles as a unified service, the various portions furnishing mutual support. In the case of public utilities free competition has never proved a permanent protection to public interests—quite the reverse. A public utility commission is the only practicable safeguard for the general interest.

3. Jitney competition on a considerable scale in conjunction with a prolonged period of depression and loss of population has destroyed the normal basis on which the railway system was built up and can alone be maintained. As a jitney service it cannot take the place of the railway service. Any of the possible alternatives to the railway which would be adequate to replace its varied services, as for instance a motor-bus development, would involve the reproduction of all the essential features of the British Columbia Electric Railway as an organized capitalistic business corporation. Such a company in turn could not maintain an extended and satisfactory service in competition with the free-lance jitneys, confining themselves, as now, to the cream of the business.

4. The jitneys in competition with the street cars must be eliminated and until more prosperous conditions return certain other changes and economies introduced, or the street cars must go out of business; or, if forced to operate on a basis permitting them to meet competition of jitneys, they must at least abandon the outlying and more unremunerative sections of their lines, reduce the frequency of the service on others, discontinue all transfers, and exact a 5-cent minimum fare for all persons, including children under twelve years, school children, workmen, etc.

5. As a general alternative the cities of Vancouver and Victoria, under arrangement with the adjoining municipalities, may take over the railway systems in their respective centers and conduct them as municipal enterprises, leaving the jitneys their present freedom to take what they please of the street-car revenues.

6. If the jitney competition is eliminated as the chief source of the annual losses of the company, then as regards the Vancouver district the remainder of the losses, due to the prevailing war conditions and the diminished population, might be fairly well met until more prosperous times recur by the fixing of a city population area within which present rates and transfers should continue, while beyond that area a readjustment with reference to rates, frequency of service, etc., could probably be effected in conference between representatives of the adjoining municipalities and the management of the company.

7. As regards Victoria (on Vancouver Island), apart from the elimination of jitney competition in the districts served by the street cars and the revision of the company's charter in order to bring it into harmony with the more modern charters of the mainland, practically no change in existing fares, transfer privileges, etc., would be needed.

8. In both districts special economies, such as the one-man cars on specified routes, to be agreed upon by the city and the company, should be carefully considered and if possible approved.

area should be determined. In prescribing such an area, within which uniform rates for the various classes of city tickets should be established, with free transfers on continuous trips to all other parts of this area, the population limits should be taken, not the restricted municipal limits of Vancouver City.

Beyond this area would lie the suburban areas proper, and for these rates must be arranged which would bear, not the full, but some approximate relation to the cost of the service rendered. In practically all cases this would involve the cancelling of transfers from outlying lines to those within the city population area.

An adherence to the letter of the charters, Mr. Shortt avers, will afford no solution of the present difficulties, which involve the alternatives of an insuperable financial loss to the company or an entire suspension of street-car transportation to the suburban districts in question. In the face of such a situation, the only reasonable solution appears to be that the representatives of the municipalities affected confer with the management with a view to the recognition of the limits of the city population area and the consequent readjustment of fares, transfers and time tables.

When improved conditions return for any or all of the suburban districts, a corresponding improvement in fares, frequency of service and transfer privileges should be made. In the meantime, should a public utilities commission be appointed, as Mr. Shortt recommends, it would naturally be the proper authority to fix suitable times and conditions for a return to lower rates and more extended privileges.

2. *One-Man Cars for Shuttle and Light Lines*

In regard to economies which the company may be able to introduce with a view to lowering costs of operation without materially reducing the quality of the service, Mr. Shortt recommends that trial be made of the one-man car. This could be tried at least on all the shuttle lines operated, and as far as possible on the outlying routes where the lightness of the traffic should render it quite possible of operation. One may doubt, the commissioner remarks, the possibility of such cars handling the traffic in congested areas of a city of any considerable size. As to the practicability of the plan, however, for outlying and more sparsely settled districts, there can be little question, while as to the advantage in point of economy there is still less.

Mr. Shortt notes that the employees look upon such a change with disfavor. That it would involve some reduction in the number of employees is obvious, though were the jitney competition abolished the balance would probably be readjusted. It would be better, however, in Mr. Shortt's opinion, to reduce the number of men, while increasing somewhat the remuneration of those operating the one-man car, than to permit loss of employment for a considerably larger number by virtue of the enforced closing of sections of line on account of the heavy loss in operation.

In summing up their position the employees claim that the one-man car "where at present in operation has been a failure and is opposed by both the public and the men who operate them." This conclusion, to Mr. Shortt's mind, like many of the other claims as to certain elements of danger, does not seem to be borne out by the facts, either in Canada or elsewhere. Besides the experience of Calgary, where one-man cars were much opposed at first but are now quite favorably received, there are numerous reports from various places in the United States as to the acceptable nature of the service rendered by them, with diminished accidents.

3. *Speed Limit Too Low; Stops Too Frequent; Through Service Recommended*

A desirable improvement in suburban traffic would be a reduction in the time taken to reach certain outlying districts. While the present speed limit prescribed in some of the charters is obviously too low, part of the delay, especially between Vancouver and New Westminster, is due to the constant stoppages at street corners in the Vancouver City area.

Pending further and more far-reaching plans for an improved through service, the present service might be bettered by a combination of higher speed and the skipping of many ordinary street corner stops. Were these improvements introduced, they would greatly facilitate the through service on the most important interurban route of the company and practically take away any advantage which the through motor cars have in point of speed.

National Engineering Societies Organize for Closer Co-operation

For economy of administration and to promote cooperation the United Engineering Society, the Engineering Foundation and the Engineering Council have decided to join in one suite of offices and engage a joint secretary. Alfred D. Flinn, now deputy chief engineer of the Board of Water Supply of the City of New York, has been chosen secretary. Mr. Flinn has, during the period since his graduation from the Worcester Polytechnic Institute, twenty-four years ago, been engaged on many important engineering problems connected with water supply. He was also for two years managing editor of *Engineering Record*. He is well known to readers of this paper as a member of the American Committee on Electrolysis.

The United Engineering Society was formed some years ago by the national societies of civil, mining, mechanical and electrical engineers to co-ordinate joint activities and provide for holding property in common. This body acts as the holding company for the four founder societies and is landlord of the Engineering Societies' Building in New York, in which the founder societies have headquarters. In it also is vested the title to the library housed in the same building, now the most important engineering library in the country.

The Engineering Foundation Board was created, as a department of the United Engineering Society, to administer the endowment made by Ambrose Swasey three years ago for the support of engineering research for the benefit of the profession and of humanity. The large sum of money he gave will form, it is hoped, the nucleus to which other gifts will be added.

The Engineering Council was created to handle matters affecting engineers which could not be properly handled by any one of the individual engineering professional societies. Its function is "the proper consideration of questions of general interest to engineers and to the public, and to provide the means for united atcion upon questions of common concern to engineers."

Editors Hear About Coal Status

Editorial Conference of Business Papers in Washington on Dec. 13 Was Addressed by National Fuel Administrator and Others on Coal Situation

A WELL-ATTENDED meeting of the editors of the various business and technical papers of the country under the title of Editorial Conference was held in Washington, D. C., on Dec. 13, to hear the heads of various governmental departments discuss matters under their jurisdiction. The following is a summary of some of the addresses of particular interest to electric railway companies.

ADDRESS OF DR. H. A. GARFIELD

Dr. H. A. Garfield, fuel administrator, described the organization of that department, which includes the federal administrator, and State county and municipal administrators, all under direction from Washington. Such a federal administration, in the speaker's opinion, is necessary so that the fuel resources of the country can be made available in all states, whether they produce coal or not.

Of bituminous coal, Dr. Garfield said that about 50,000,000 more tons were produced during the current year than last year. The shortage which has occurred in spite of this fact is because of the extra demands for fuel from manufacturing enterprises, railroads, etc., to say nothing of the normal increase in the call for domestic coal. Continuing, the speaker said:

"There are three factors entering into the production—first, the operators, then the mine employees, and third, the railroads. Unless each one of those is working at full efficiency, we shall not have maximum results in output. A large part of my time was spent during the first two months, and, indeed, much of my time is still occupied, with bringing together operators and representatives of labor who in certain fields of the country are not able quickly to adjust their differences. To them I have just one theme to present, and it is this: Whatever your controversy, wherever the right lies, make sure that production continues and is not interrupted by reason of your dispute. That theme cannot be overemphasized."

Turning then to the anthracite field, he said: "It is a significant fact that with the normal amount of labor in normal times, something like 175,000 men and boys at the mines are employed. This number has now been reduced by 25,000 because of the draft and because of the fact that employment elsewhere has appeared more attractive. But in spite of the fact that there are only 150,000 men and boys laboring in the anthracite field this year, against the 175,000 formerly, the anthracite mines have produced something like 20 to 22 per cent more coal than they produced a year ago. That plainly is a tribute both to labor and to those who are conducting the mines.

"There is, however, an element in human nature that we ought not to lose sight of, and that is the selfishness of human nature. There has been a great deal of that sort of thing this year. It has extended into the households, people buying more coal than they quite needed. It has found its way into the factories anticipating an increase of business, and the result is that some—many, indeed—have more coal than usual, some have more coal than they need for the entire year and some less provident, possibly because they could not provide the store ahead, are without coal."

In the discussion following, Dr. Garfield explained, among other things, that the administration has made every effort to see that the utilities are supplied with fuel. He said: "The moment we receive the information that a public utility is out of coal, or in danger of being out of coal within a few days, we issue the orders to send coal to that utility." Such a request, he said, should be sent to the state fuel administrator. He also remarked that he had been disappointed with the savings effected by cutting out illuminated display signs and that it was likely that the order on this matter would be changed.

In answer to another question, Dr. Garfield said that he believed that the state public service commissions would be willing to co-operate with the federal department in regard to the economies suggested by the department for public utilities, but no sufficient return from the commissions had yet been received actually to determine this matter.

SECRETARY OF COAL OPERATORS' ASSOCIATION DEFENDS OPERATORS

J. D. A. Mora, secretary of the Coal Operators' Association, made an address in which he claimed that the primary cause of the difficulty of scarcity of fuel was the lack of transportation. He read a number of telegrams from sectional coal organizations complaining of shortage of cars and consequent necessary closing down of mines. He said that the coal operators had done all they could do, that the fuel administration had done all that it could do and that decisive immediate action in regard to transportation was necessary. The speaker thought that if priority of movement should be given to coal and the mines should receive a preference in the supply of cars for thirty days the conditions would be righted. He realized that the railroads were operating in many cases short-handed and with insufficient equipment.

SENATOR POMERENE CRITICIZES COAL OPERATORS

Senator Atlee Pomerene of Ohio, in discussing the subject of "Governmental Price Setting," had a word to say about profiteers in coal. He said he knew of cases where coal operators, who had contracted to deliver the entire supply of coal required by manufacturing plants and municipal corporations, had consigned the coal, but while it was on the way to its destination it would be reconsigned and sold in the public market as spot coal. At the very time that the business men were complaining of the shortage of coal, the coal operators were using coal cars for storage purposes in the yards of different Ohio cities and towns. In one case an operator kept a number of cars on the tracks in storage and paid the demurrage charges amounting in one week to $400 while prices were being boosted. Later he sold the coal at a net profit of $1,600.

F. C. DELANO DESCRIBES WAR CERTIFICATES

Another speaker was F. C. Delano, a member of the Federal Reserve Board, who explained that the present thrift certificates were a modification of the English plan, the principal difference being that the War Savings Certificates all mature at fixed date, Jan. 1, 1923, whereas the English plan was to make them all mature at five years from the date of purchase. One disadvantage of the American plan is that the price at which the certificates can be purchased varies according to the month. Its principal advantage is that a holder is able to cash all of his stamps at one time, and Mr. Delano suggested that the government ought then to offer the holder several alternatives, namely, first, cash; second, a register or coupon bond, and third, an annuity. The annuity plan, although a novel idea here, is very common in France. In spite of the intensive campaign for the sale of Liberty Loan bonds, they were sold to less than 10,000,000 people, leaving a population of something like 95,000,000 to whom, it is hoped, the War Savings Certificates will appeal.

Coal Shortage Forces Co-operation and Service Economies

Skip Stops, Service Reductions and Fine Spirit on Part of Employees Figure in This Week's News on the Power Situation

THE coal situation continues to be critical, but the acuteness of the emergency is bringing about a fine co-operation among all who can assist in saving fuel directly and indirectly. Reports from several sources are epitomized in the following paragraphs.

EVENING AND OWL SERVICE CUT AT GRAND RAPIDS

The Grand Rapids (Mich.) Railway on Dec. 9 began to reduce its evening service on all lines except the Division-Plainfield route, its heaviest line, to a fifteen-minute headway, beginning at 8.30 p. m. Also, the 12.30 and 1 o'clock a. m. owl service has been entirely dispensed with, and the midnight cars, which are now the last ones, have been held at the central transfer point in the downtown district until 12.05 to give the 12 o'clock workers an opportunity to catch the last car. No particular remonstrance to these cuts in service have been manifest by the public, so that the company has concluded that the change has made no great inconvenience. Both these service cuts were made to save coal. The Consumers' Power Company, from which the railway purchases its power, is dependent on coal for approximately two-thirds of its output, the remainder coming from water-power sources in the State.

A 100 PER CENT RESPONSE AT LOUISVILLE

On receipt of the request from the Electric Railway War Board for co-operation in fuel saving, the Louisville Railway secured the signatures of all of its motormen and conductors to a coal-saving pledge card. This was in part the result of the posting of a carhouse bulletin containing, among others, the following statements:

"Coal saving can be accomplished by the proper operation of the controller and brakes, allowing the car to coast as much as possible, by burning lights only when needed, by not having heat turned on in the car except when necessary, and in the proper care and maintenance of the fires in stoves used for car heating.

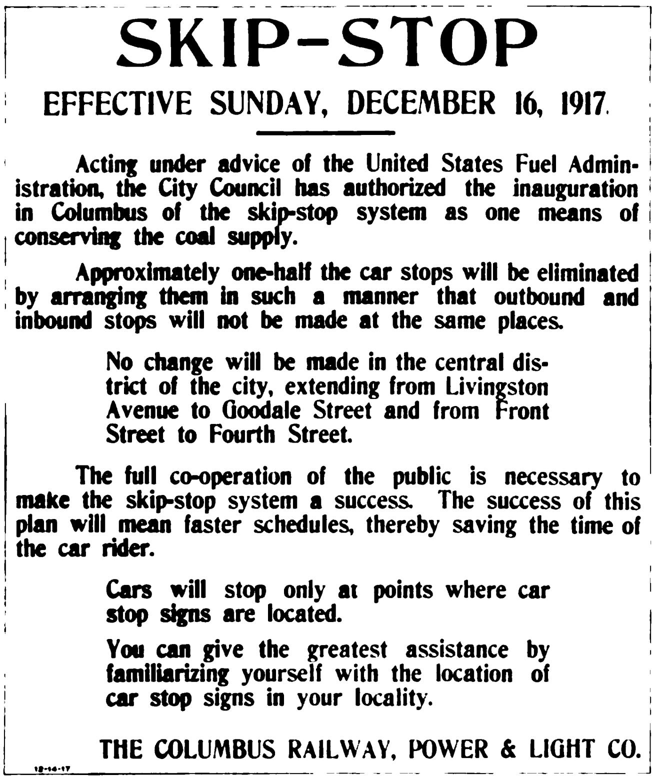
"It is necessary and vital to save as much coal as possible. Coal is difficult to obtain. Already in some cities street car service has been temporarily suspended by reason of inability to obtain coal. This situation may confront us in Louisville if we do not unite in saving coal.

"Coal must be saved: First, to win this war; second, to give continuous car service to the people of Louisville, and third, to give continuous work to motormen and conductors.

"Whether the agitation of the proposition results in any saving of coal or not, it is believed by the management of the Louisville Railway that the pledge card which the men are asked to sign will help because it will aid in impressing them with the fact that the country is at war."

SKIP STOPS TO SAVE FUEL

In accordance with the request of the United States Fuel Administration that electric railways co-operate in all possible ways in the movement to save fuel, the Columbus Railway, Light & Power Company, Columbus, Ohio, has secured permission from the City Council to install a skip-stop system as one means to this end. The new method of operation, which went into effect on Dec. 16, was announced to the public in the poster reproduced above.



SKIP-STOP

EFFECTIVE SUNDAY, DECEMBER 16, 1917

Acting under advice of the United States Fuel Administration, the City Council has authorized the inauguration in Columbus of the skip-stop system as one means of conserving the coal supply.

Approximately one-half the car stops will be eliminated by arranging them in such a manner that outbound and inbound stops will not be made at the same places.

No change will be made in the central district of the city, extending from Livingston Avenue to Goodale Street and from Front Street to Fourth Street.

The full co-operation of the public is necessary to make the skip-stop system a success. The success of this plan will mean faster schedules, thereby saving the time of the car rider.

Cars will stop only at points where car stop signs are located.

You can give the greatest assistance by familiarizing yourself with the location of car stop signs in your locality.

THE COLUMBUS RAILWAY, POWER & LIGHT CO.

12-14-17

ANNOUNCING SKIP STOPS TO CONSERVE COAL

No change was made in the central district of the city, but outside of this about one-half of the car stops were eliminated. The system is so arranged that outbound and inbound stops are not made upon the same street corner. Signs are used to designate the stopping places.

Besides pointing out the usefulness of the skip-stop system in helping to conserve the coal supply, the poster emphasizes the point that the success of the plan means faster schedules and consequently the saving of time for the car riders.

COAL CONFISCATION AGREEMENT REACHED IN KANSAS AND MISSOURI

For the first time since the fuel administrators have had charge of the coal distribution in Kansas and Missouri there was reached on Dec. 22 a definite agreement between railroads, administrators and mine operators on the confiscation of coal for railway use. As a result it is agreed that where the roads have to confiscate fuel it shall not be from the priority orders, which are the emergency shipments from mines. The situation in and around Kansas City is unique in that the Southwestern Coal Operators' Association is entrusted with the distribution of coal for the government, being first furnished with the emergency orders by the administrators, who make a daily canvass through their county chairmen of the two states. The rule existing for emergency orders is that in towns where dealers have coal no emergency exists. In that manner of handling the situation the matter of coal shortage is checked up to the consumers, the government and the operators without consulting the local dealers. No opportunity for forcing an emergency call exists by this arrangement.

Until Saturday some railways had confiscated coal for their own use from emergency orders, but hereafter all confiscating will be done from other sources if the railways find themselves short of fuel.

A new phase of the fuel situation in Kansas and Missouri is that pertaining to the surplus amount of coal allowed various industries, including the government army cantonment at Camp Funston, Kan. Priority orders give the cantonment preference, the officials of the operators say, so there would be no danger of a shortage there. But a demand from the cantonment for a thirty-day surplus has called out much of the available railroad service and coal that should, the operators feel, be going to cities and towns that are without coal.

BAY STATE RECEIVER MAKES STATEMENT

In an advertisement printed last week Wallace B. Donham, receiver of the Bay State Street Railway, explained the situation in the following words:

> The Bay State Street Railway is short of coal and must cut down its service largely, except in rush hours, and some cut in rush hour service may be necessary. This action is taken at the request of the United States Fuel Administrator, and of Mr. Storrow.
>
> So far as possible the new emergency schedules will take care of people going to and from work, and the public will be inconvenienced as little as is consistent with the necessary saving of coal.
>
> I realize that it is most unfortunate that my first official act as receiver of this property must be to make a big cut in service, but the choice is plain.
>
> I must order at once such a cut where it will do the least possible harm, or I must take the responsibility for a complete shutdown of our biggest power plants within a few days.
>
> Eighty per cent of our power will be shut off within a week if we do not get more coal. What we have on hand and in sight must be made to last as long as possible.
>
> We have contracts for six months' supply of coal, but contracts are not coal, and coal is necessary to create power. The mines say they have the coal, but we can't get it. We have asked the United States authorities for help, and priority orders have been obtained for a limited supply of coal, but the federal authorities cannot and will not supply coal for 100 per cent service.
>
> Schedules for the reduced service will be posted in the cars.

The Texas Electric Railway, Dallas, Tex., has remitted to the United States Treasury $11,424.50 as war taxes on tickets sold over its lines during November. Tickets amounting to $154,228.50 were sold, not including those sold for less than 40 cents.

AMERICAN ASSOCIATION NEWS

War Board Considers Many Committee Reports

The Electric Railway War Board met in Washington on Dec. 21 and adjourned to meet again at Washington headquarters (Munsey Building) at 11 a. m. on Jan. 4. The most important items of business were as follows:

President J. J. Stanley referred to the board the question of the advisability of holding a mid-year meeting. The matter was held for further consideration.

L. S. Storrs stated that on Dec. 12 he had addressed the Massachusetts Street Railway Association on the work of the board.

Director C. Loomis Allen stated that P. H. Gadsden and he had attended a conference of the war service committee of industries of the U. S. Chamber of Commerce, and he explained the purpose of this committee.

The board agreed actively to co-operate in the war savings work of the Treasury Department as soon as press of other duties will allow.

Mr. Allen also reported progress on the studies being made by J. F. Layng and M. B. Lambert, assisted by Clarence Renshaw, on possible fuel savings on the local railway lines in Washington. The savings are being put into terms of tons of coal, and are estimated at 25,000 tons annually. They involve skip stops, elimination of needless service and of car heating in the rush hours, etc. Their report will be submitted to the Bureau of Standards committee on conservation (W. F. Durand, Gano Dunn and L. B. Stillwell) for verification.

The transportation-engineering committee (J. P. Barnes, L. H. Palmer, G. H. Kelsay, M. B. Lambert and J. F. Layng) presented a report which bore the approval of the Fuel Administration. The board indorsed it as the basis of a circular to be sent out promptly.

A draft of Bulletin No. 3 was approved. This will contain the request of Fuel Administrator Garfield that fuel-saving pledges be secured from motormen, together with the recommendations of the board.

Secretary E. B. Burritt stated that a committee on fuel conservation had been appointed in Illinois, and that a report had been submitted to the University of Illinois for verification.

Mr. Allen stated that Chairman Seymour Van Santvoord, of the New York State Public Service Commission for the Second District, had requested electric railway representatives to meet at Albany on Jan. 3 to consider recommendations in the Board's Bulletin No. 1.

Mr. Burritt said that progress is being made in the formation of the traffic committee.

Mr. Gadsden read a report on a conference held in New York to prepare suggestions to be submitted to the Bureau of Internal Revenue in regard to the application of the excess profits section of the war revenue act. He will represent the board and the association in presenting certain suggestions to the Commissioner of Internal Revenue.

Chairman T. N. McCarter and Mr. Gadsden were appointed a sub-committee to confer with representatives of the N. E. L. A. committee on gas and electric service to further co-operation between the two bodies.

EQUIPMENT and MAINTENANCE

HAVE YOU A GOOD WAY
OF DOING A JOB?
—*Pass It Along*

These Articles Have Been Selected to Provoke Thought and Stimulate Discussion. All of the Technical Departments Are Represented

Rail for Use in Paved Streets

The Author Reviews the Advantages of Tram Girder Versus Grooved Girder Rail Sections by Way of Adding to the Discussion Begun Last Week

BY W. R. DUNHAM, JR.,
Engineer Maintenance of Way The Connecticut Company, New Haven, Conn.

Referring to the article by Mr. Schreiber in the Dec. 1 issue of the ELECTRIC RAILWAY JOURNAL on the use of the tram girder rail, it appears to the writer that, considered as a rail only, there can be very little question as to the advantage of the tram girder as against the grooved type. The tram girder is practically a T-rail with a lip on it, and, if I am not mistaken, was evolved from the old flat tram rail, which, spiked to a timber stringer, was one of the first rails used in paved streets.

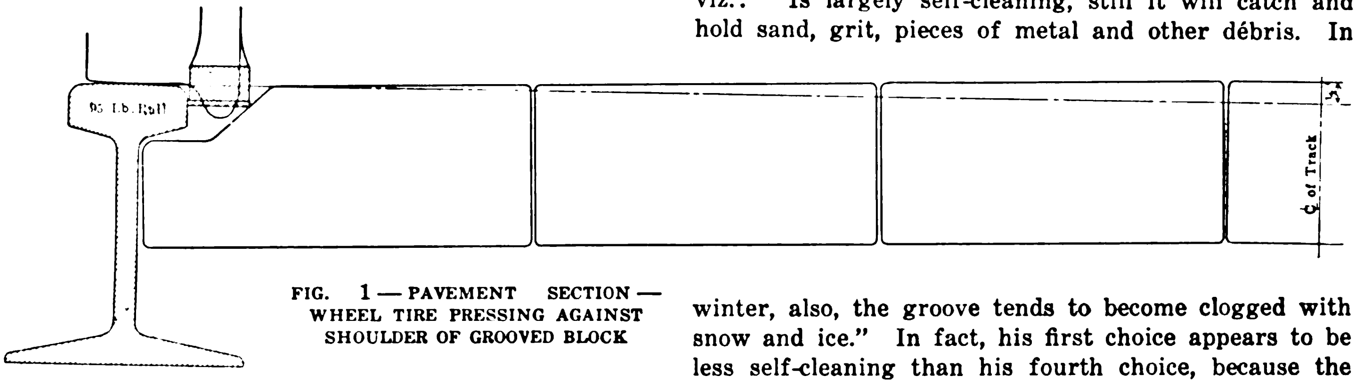


FIG. 1 — PAVEMENT SECTION — WHEEL TIRE PRESSING AGAINST SHOULDER OF GROOVED BLOCK

The necessity of the tram in this flat rail was to provide an increased bearing surface on the stringer and thus diminish the crushing of the timber and also furnish a means for spiking the rail to the stringer. Incidentally it furnished a smooth run for horse-drawn vehicles which, in the good old days of rough cobble, Belgian or block pavements, was a distinct luxury to vehicular users. This use of the tram by vehicles was the cause of ordinances in some cities regulating the gage of tracks to conform to the wheel gage of horse-drawn vehicles so that all four wheels would have a smooth path.

With the growth in the art of rail making, it became feasible to roll a tram rail head on top of a girder, which brought the tram girder rail into existence, and this evolution in rails came when stiffer rails were required, due to increased weights and speed of cars.

A rail provides a pavement or track for one class of vehicles only, and, when included in a pavement suitable for all classes of vehicles, the type of pavement as a whole should determine the type of rail. This brings up the fact that a track for cars cannot necessarily be the most suitable for them. It must fit in with the whole pavement, forming a composite pavement best suited for all the users of it. Incidentally one particular part, the rail, must be of such type as will break up the pavement the least. Taking this into consideration, from the viewpoint of the general public the question is not so much the type of rail as it is the effect on the pavement as a whole, and from this arises the paradox that, for paved streets, the question of the rail is a pavement question, and the maintenance of track is a pavement maintenance.

Mr. Schreiber shows but one paving material, and the illustrations seem to indicate that his first choice would have the same fault that his fourth choice has, viz.: "Is largely self-cleaning, still it will catch and hold sand, grit, pieces of metal and other débris. In winter, also, the groove tends to become clogged with snow and ice." In fact, his first choice appears to be less self-cleaning than his fourth choice, because the stone would make a rougher groove than the steel groove and so would be harder to clean. The flangeway in his third choice would also tend to clog up, especially with snow and ice, which leads us to one more conclusion, viz.: that in addition to being a paving question, the rail question involves to a degree the crown of the paving between the rails.

Probably all engineers agree that the T-rail is the first choice as rail; perhaps none of them agree as to the first choice in pavements, but some will agree that a paving section which permits easy turnout for vehicles when following the rails and nearly a minimum obstruction when they cross the rails diagonally and which offers no inducements for vehicles to follow the rails has a great deal of merit. It seems to me that Mr. Schreiber's second choice does all these things.

With a flange depth of ⅞ in. and a crown at the center of the track of ¼ in. to ¾ in. above the rail heads, a smooth crossing is made for vehicular traffic, and no deliberate flangeway is provided to interfere with the operation of the cars nor to invite vehicles to follow the rails. I believe if the tram girder rail is used the same crown should be maintained, which would bring the edge of the paving ¼ in. above the lip instead of ½ in., as stated in the article. This would leave that much less room for snow, ice and other foreign material in which to accumulate.

As for the grooved rail, there are no arguments in its favor from the street railway standpoint, though we are forced to use it, sometimes from public sentiment.

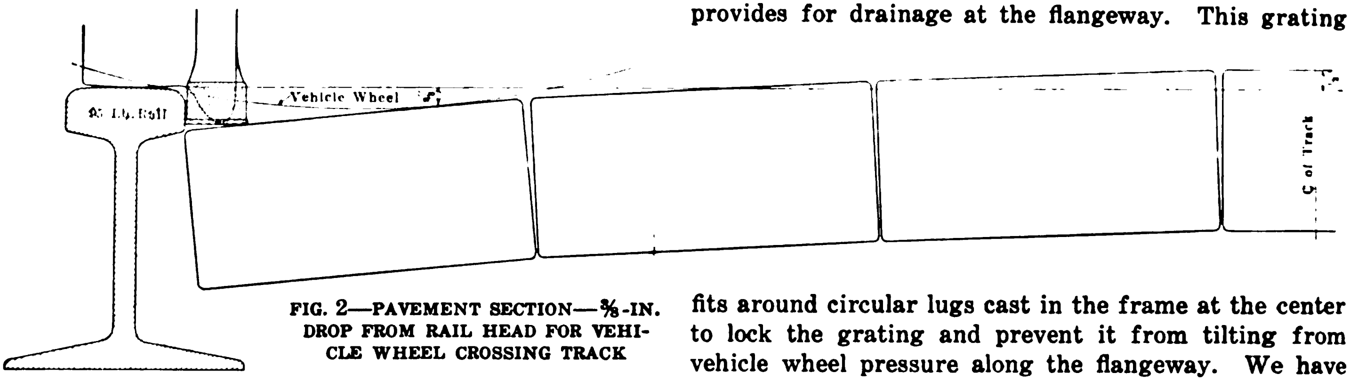

Vehicle Wheel
85 Lb. Rail
℄ of Track

FIG. 2—PAVEMENT SECTION—⅜-IN. DROP FROM RAIL HEAD FOR VEHICLE WHEEL CROSSING TRACK

I do not agree with the editorial in the ELECTRIC RAILWAY JOURNAL of Dec. 8 as to its being unfortunate that the grooved rail has been standardized, unless it is on account of the proposed change from a plain to a curved head. I think that perhaps the tram girder should be recognized and standardized also, thus giving three standards for rails, viz.: best, T-rail; alternate, tram girder; worst, grooved girder; and in addition there should be a standard paving section, irrespective of material, which will best fit the first two rail standards. As for the last type of rail, a flat paving section across the track laid a trifle higher than the abutting edge of the rails will probably answer.

In conclusion regarding the paving section, why not make a standard track basin to conform to the paving section and provide for drainage in the flangeway?

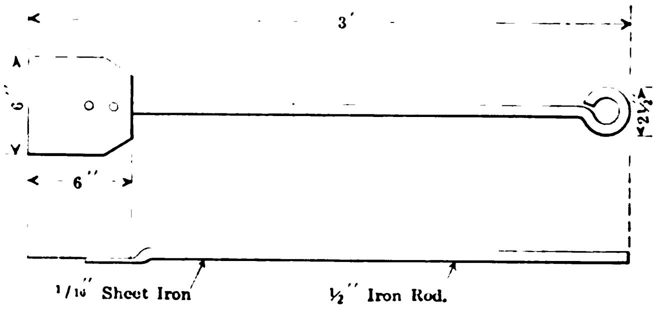
In Fig. 1 is shown a section of pavement with a grooved block against a T-rail on which is indicated a steel-tired wheel. This shows the bearing of the edge of the steel tire against the shoulder of the block which is soon abraded, forming a deep rut exceedingly hard to turn out of and inviting driving along the rails to the rapid deterioration of the pavement.

Fig. 2 shows a plain block laid to a crown to accommodate the wheel flange. It shows, also, a part of a vehicle wheel crossing diagonally and the slight drop of ⅜ in. from the rail head.

The remaining figure shows a standard track grating which conforms to the paving section very closely and provides for drainage at the flangeway. This grating fits around circular lugs cast in the frame at the center to lock the grating and prevent it from tilting from vehicle wheel pressure along the flangeway. We have installed a number of these basins during the past two seasons with good results.

Ice Scraper for Cleaning Car Platforms and Steps

The Beaver Valley Traction Company, New Brighton, Pa., is among the roads that are particular about keeping their platforms and steps free from snow and ice during the winter months. Each car carries a tool similar to the one shown in the accompanying sketch. This serves to remind the men to clean off the snow and ice and provides a means of doing this with a minimum amount of effort.


3′
A
3″
Y
6″
2½″
1/16″ Sheet Iron
½″ Iron Rod.

DETAILS OF ICE SCRAPER

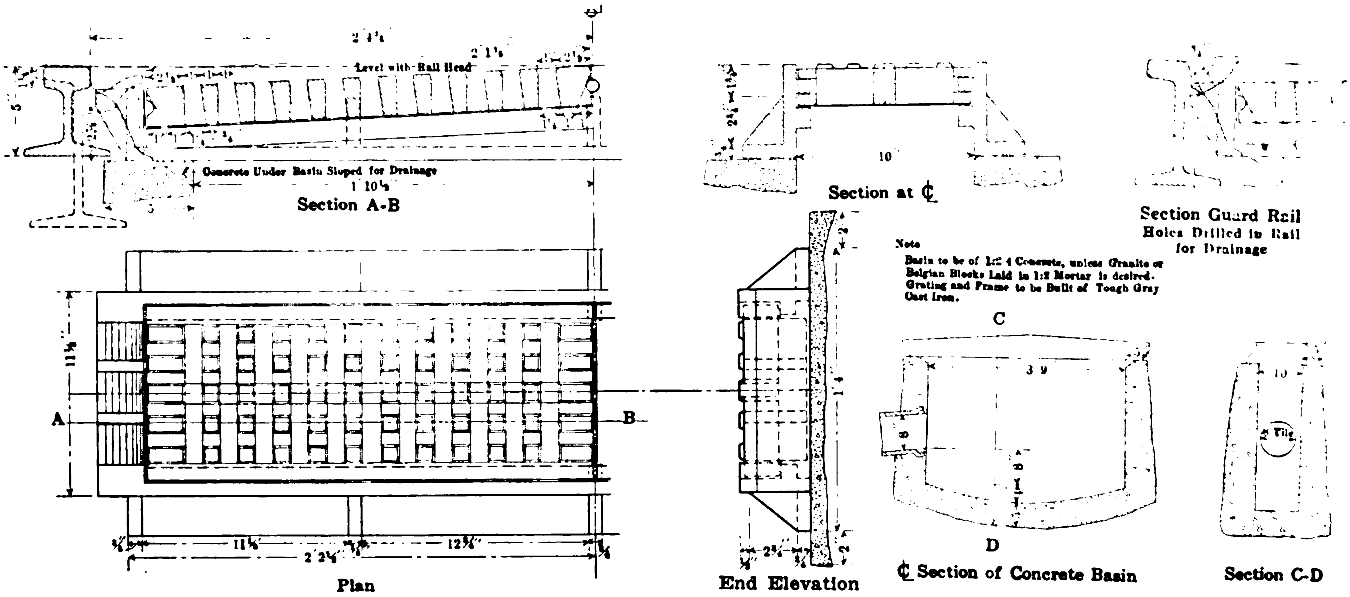
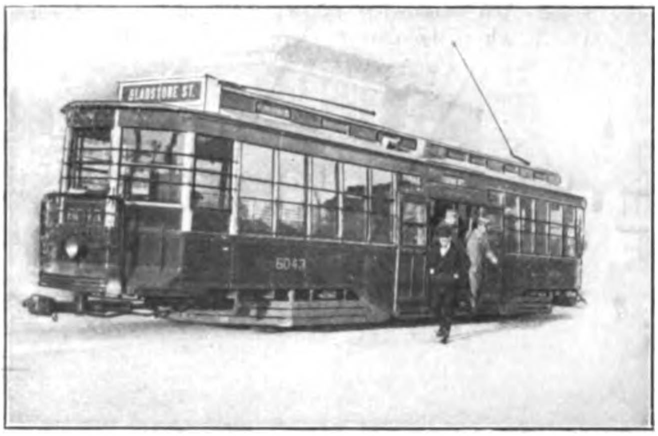

2′ 4¼″
2′ 1¾″
2⅛″
Level with Rail Head
5″
2¾″
Concrete Under Basin Sloped for Drainage
1′ 10½″
Section A-B
11⅝″
A
B
11¼″
12¾″
2′ 2¼″
Plan
Section at ℄
10″
2¾″
End Elevation
Section Guard Rail
Holes Drilled in Rail
for Drainage
Note
Basin to be of 1:2:4 Concrete, unless Granite or Belgian Blocks Laid in 1:2 Mortar is desired. Grating and Frame to be Built of Tough Gray Cast Iron.
C
3′ 9″
D
℄ Section of Concrete Basin
10″
Tile
Section C-D

FIG. 3—STANDARD TRACK BASIN DESIGN OF THE CONNECTICUT COMPANY

Boston Elevated's Latest Surface Cars

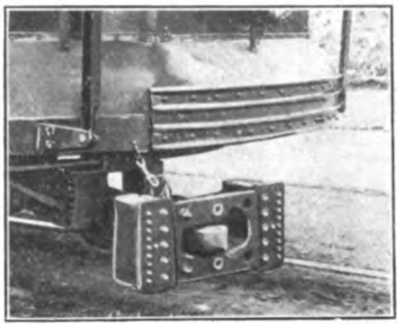
Several New Low-Floor, Multiple-Unit Surface Cars Now in Service on Boston Elevated Railway—Active Trolley at Front End a Special Feature



NEW LOW-FLOOR CAR OF BOSTON ELEVATED RAILWAY

The Boston (Mass.) Elevated Railway is placing in service as it receives from the manufacturers 100 center-entrance, low-floor, multiple-unit motor cars, which represent a noteworthy advance in surface rolling stock design as compared with the company's previous equipment. A brief description of the new cars appeared on page 879 of the ELECTRIC RAILWAY JOURNAL for May 12. In appearance they resemble the center-entrance trailers which have been in use in Boston during the last two or three years. The new cars already received are being operated on the Orient Heights-East Boston tunnel route, and their liberal size, combined with their convenient use in trains during rush hours, has greatly improved service in the tunnel.

Fifty of the cars were built by the J. G. Brill Company and fifty were supplied by the Laconia Car Company. They are equipped with four GE-247, 40-hp. motors, Westinghouse air brakes and hand brakes of the latest type made by the Horne Manufacturing Company. The car bodies, which are 48 ft. 9½ in. long over all and of steel construction, are placed on two Laconia "Diamond" trucks with 5½-ft. wheelbase and 24-in. wheels, the distance between truck centers being 24 ft. To get rapid car movement the starting signals and control are automatic, the latter being obtained with PC-5 control equipment, in which the contactors are mechanically operated. This control was described on page 827 of the ELECTRIC RAILWAY JOURNAL for Nov. 3. The Tomlinson automatic car coupler, furnished by the Ohio Brass Company, is used, which makes both the air and electrical connections, caring for fifteen electrical circuits.



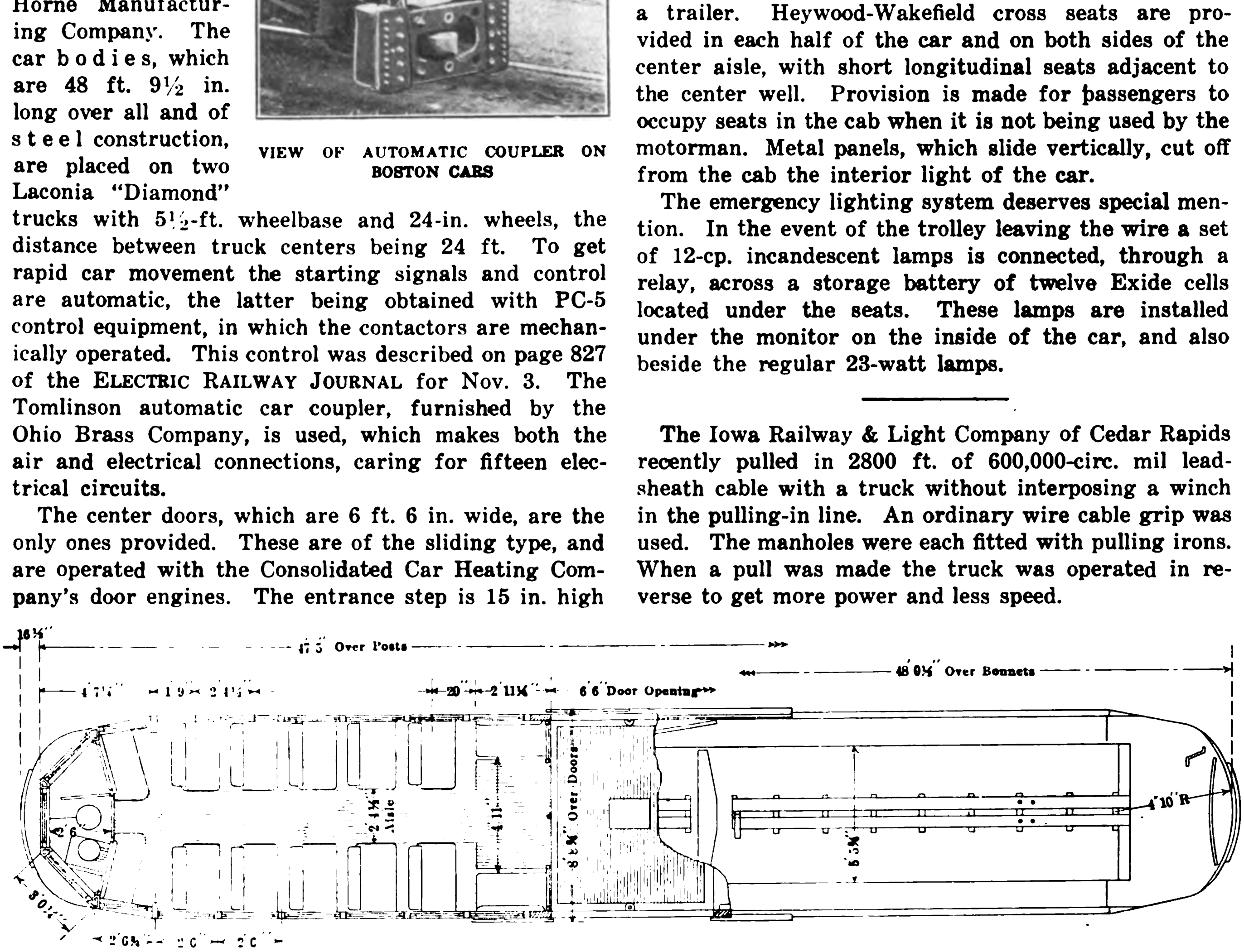
VIEW OF AUTOMATIC COUPLER ON BOSTON CARS

The center doors, which are 6 ft. 6 in. wide, are the only ones provided. These are of the sliding type, and are operated with the Consolidated Car Heating Company's door engines. The entrance step is 15 in. high and the center well, where the conductor's stand is located, is ramped toward the center to give a rise of 1⅜ in. At each side of the entrance well is a 10-in. step, and 4 in. ramps lead from them to the main floor level, which is 30⅞ in. above the rails. Experience gained by the company in the use of articulated cars has been utilized in the location of the active trolley at the front end. The trolley rope, which extends down through a hatch in the roof, is thus placed near the conductor's position.

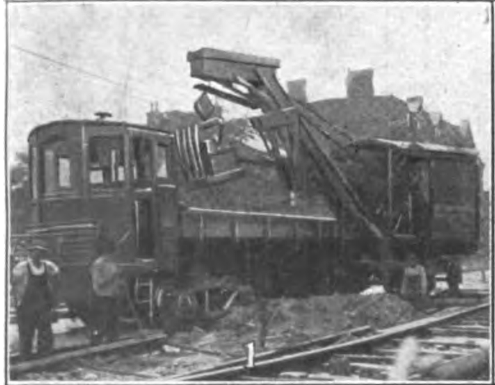
The seating capacity of the car is fifty-eight when used singly or as a motor unit and sixty when used as a trailer. Heywood-Wakefield cross seats are provided in each half of the car and on both sides of the center aisle, with short longitudinal seats adjacent to the center well. Provision is made for passengers to occupy seats in the cab when it is not being used by the motorman. Metal panels, which slide vertically, cut off from the cab the interior light of the car.

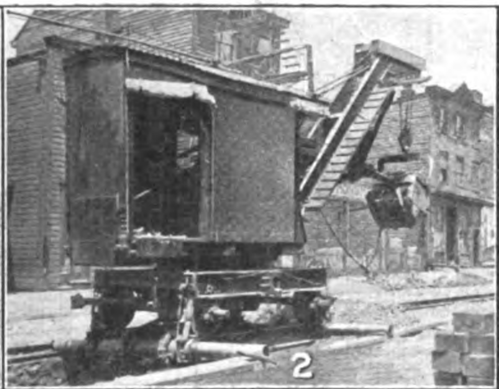
The emergency lighting system deserves special mention. In the event of the trolley leaving the wire a set of 12-cp. incandescent lamps is connected, through a relay, across a storage battery of twelve Exide cells located under the seats. These lamps are installed under the monitor on the inside of the car, and also beside the regular 23-watt lamps.

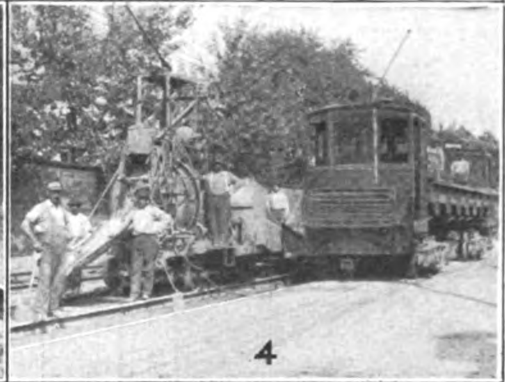
The Iowa Railway & Light Company of Cedar Rapids recently pulled in 2800 ft. of 600,000-circ. mil lead-sheath cable with a truck without interposing a winch in the pulling-in line. An ordinary wire cable grip was used. The manholes were each fitted with pulling irons. When a pull was made the truck was operated in reverse to get more power and less speed.

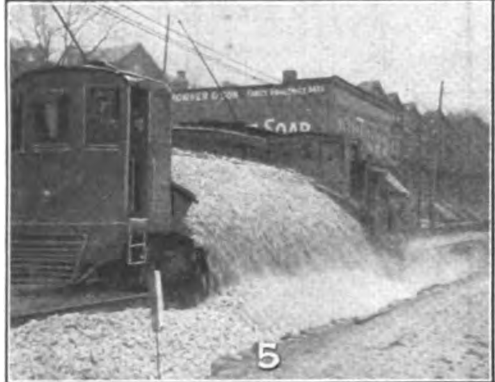


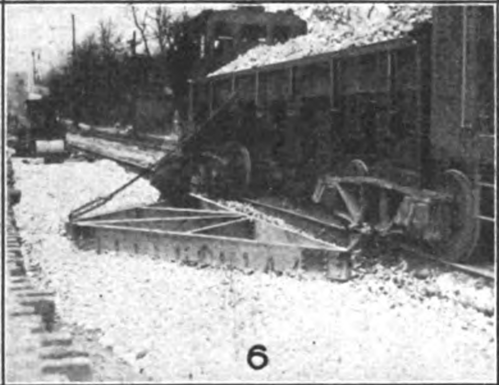
PLAN OF BOSTON ELEVATED RAILWAY LOW-FLOOR, CENTER-ENTRANCE CAR

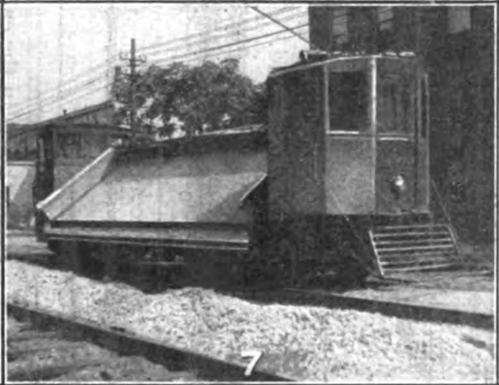


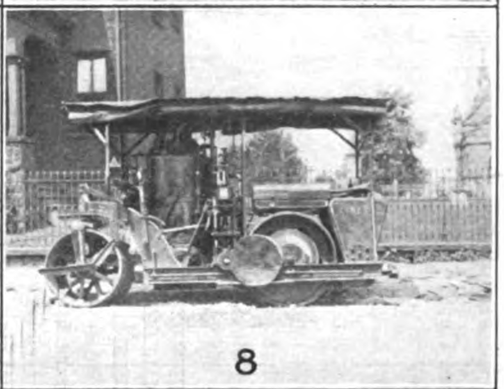


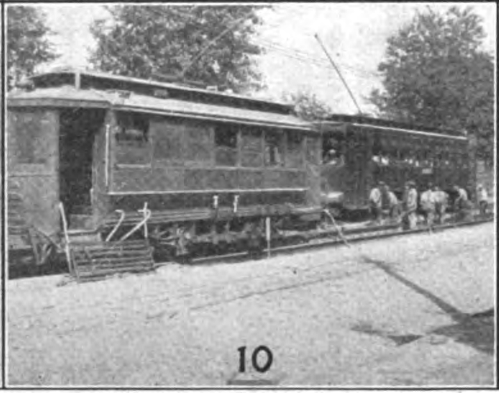


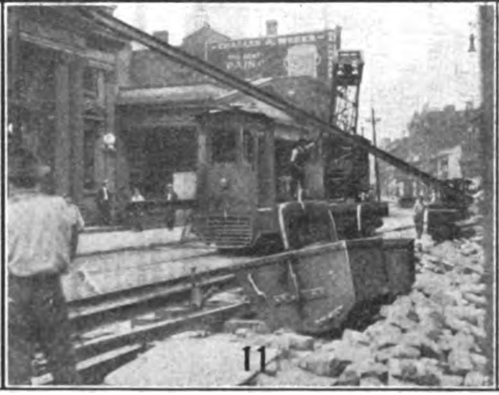












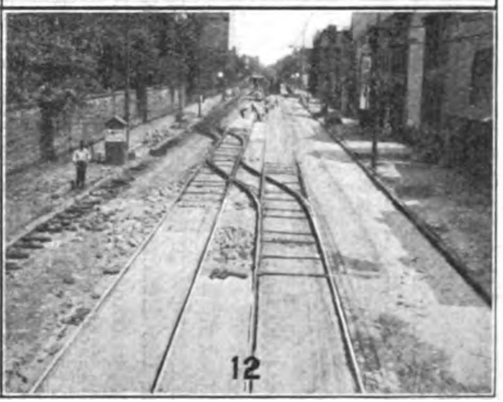


Fig. 1—Electric shovel loading steel dump car.

Fig. 2—View of electric shovel on propelling cradle.

Fig. 3—The path of the electric shovel.

Fig. 4—Charging concrete mixer from dump car.

Fig. 5—Dump car unloading ballast.

Fig. 6—Harrow pulled by dump car for spreading ballast.

Fig. 7—View of empty dump car.

Fig. 8—Steam roller for rolling subgrade and stone ballast.

Fig. 9—View of section of track under construction.

Fig. 10—Air compressor car and pneumatic tie tamper at work.

Fig. 11—Handling rails with electric crane car.

Fig. 12—Cross-overs built of 80-lb. T-rail.

Track Construction Scenes and Labor-Saving Machinery Used on Pittsburgh Railways

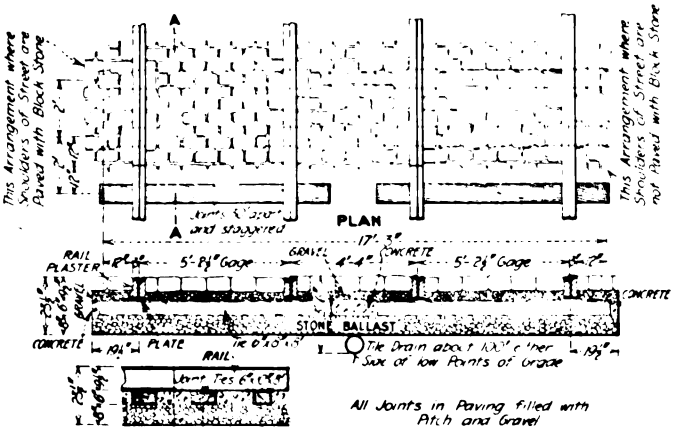
Doing a Big Track Construction Job with a Minimum of Labor

BY G. W. EMORY
Assistant Engineer Maintenance of Way, Pittsburgh (Pa.) Railways

Some of the methods of our company in track construction work may be of interest. The following brief description, together with the views of the work while in progress and some labor-saving machinery used, will give an idea of the work done recently on Penn Avenue.

The subgrade was taken out to a depth of 23½ in. below the grade of the finished street with a Thew electric shovel and the material was loaded into Clark steel dump cars. In operating the shovel a T-rail track was laid on the flank of the street, using the Kerwin T-rail turnouts and crossovers to make connection to the girder rail track at either end of the section where work was in progress. These sections were usually about 1000 ft. long. Traffic was diverted to this temporary track so that the old track adjacent to the one being graded could be used by work cars for taking away the old material and delivering the new.

After the subgrade had been removed to the required depth and a 6-in. tile drain placed in dummy 42 in. below the top of the rails, the bed was rolled with a 10-ton tandem Buffalo steam roller. All soft spots were dug out until a good foundation was reached, and the extra depth was filled with ballast. Upon this new subgrade was placed 8 in. of stone ballast, which in turn was rolled, and upon the rolled ballast 6 in. x 8 in. x 8 ft. white oak ties were spaced 2 ft. between centers, except at the joints where two ties 10 in. wide were used. The 9-in. girder rails, which were either Lorain Steel Company section No. 134-470 or Pennsylvania Steel Company section No. 134-406, were fastened with 5½-in. x 9/16-in. spikes, with a ½-in. shoulder tie plate on each tie.


This Arrangement where Shoulders of Street are Paved with Block Stone
This Arrangement where Shoulders of Street are not Paved with Block Stone
A
A
Joints Staggered and staggered
PLAN
17' 3"
RAIL PLASTER
5'-2½" Gage
GRAVEL
4'-4"
CONCRETE
5'-2½" Gage
CONCRETE
GRAVEL
STONE BALLAST
CONCRETE
PLATE
RAIL
Tie 6"x8"x8'
Tile Drain about 100' either Side of low Points of Grade
Joint Ties 6"x10"x8'
All Joints in Paving filled with Pitch and Gravel
2'
2'
Section A-A

STANDARD TRACK CONSTRUCTION, PITTSBURGH RAILWAYS

The joints were made with 32-in. angle bars and twelve 1 1/16-in. turned bolts. The holes in the angle bars and rails were reamed so that all bolts made a driving fit. A thermit shoe was placed on the base of the rail, and no allowance was made between rails for expansion. These joints were bonded with two No. 0000 concealed compressed bonds. The track was then aligned, surfaced and tamped. The tamping was done with Ingersoll-Rand compressed-air tie tampers.

The next operation was filling in with concrete, 1:3:6 mixture, from the bottom to the top of the ties between rails, in dummy and one foot outside the curb rails. The concrete was mixed with a Marsh-Capron mixer. A 2½-in. sand cushion was spread over this concrete base and Ligonier block stone laid on this cushion. After the stones were rammed to an even surface they were grouted with a 1 to 1 mixture, which was also prepared with the Marsh-Capron mixer, and broomed into the joints until they were thoroughly filled flush with the surface of the blocks. Immediately after this the entire pavement was broomed to a smooth surface. All joints where the height of two abutting rails was not the same were ground with a Goldschmidt grinder.

The average cost of track constructed as described runs between $6 and $7 per lineal foot of single track. In connection with the appliances used on this work, I would call special attention to a ballast spreader and the cradle on which the electric shovel sets while at work and by which it propels itself. Both of these have proved to be great labor savers and are the inventions of our general manager, P. N. Jones. The ballast spreader was described in the ELECTRIC RAILWAY JOURNAL for Feb. 3, 1917, page 215.

Decimal Split-Hand Watch for Motion Study Work

With the development of time and motion study in electric railway shops, a need has been felt for a split-hand watch which at one observation would indicate the productive and non-productive time of an operation. Such a watch has been brought out by Mortimer J. Silberberg, Chicago, Ill. The improvement in this watch over previous time-study watches is that the decimal computed dial has been combined with a high-grade split-hand watch. On this dial, which is divided into tenths and hundredths of a minute, figures are spaced two-hundredths of a minute apart, indicating at any point of elapsed time exactly what the corresponding hourly production would be. The computations on the dial designate pieces or operations per hour.

600
300
200
150
120
100
85
75
66
TIME STUDY

DECIMAL SPLIT-HAND TIME STUDY WATCH

The watch has two hands, one of which is controlled by the side plug and the other by the crown. If it is desired, both hands can be used as a unit and controlled by the crown. The crown-controlled hand can be used individually to determine the gross time, and the one controlled by the side plug to subtract the non-productive time or delays. By the combination of the two, therefore, an observer is able to obtain at one reading both the gross and net time for an operation.

Cost Data on Special Work Construction—I

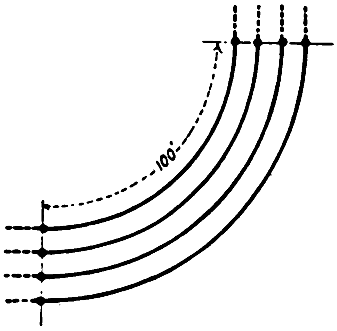
By M. BERNARD

**Assistant Engineer Way & Structures Department,
Brooklyn (N. Y.) Rapid Transit System**

Supplementing the series of plates giving Cost Data on Special Work Renewals, the author has compiled a few cost data on original installations of special work. The following four units are of the same types as those covered in the issues for Aug. 18, page 279, Fig. 4; Sept. 8, page 406, Fig. 8; Sept. 29, page 588, Fig. 14; Dec. 8, page 1043, Fig. 30.

Fig. 1—Double Track—Plain Curve (90 Deg.)

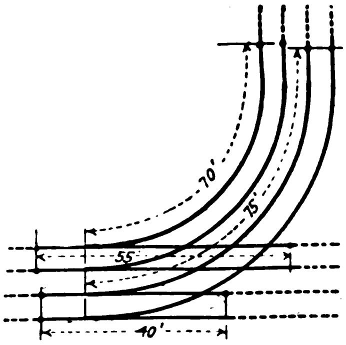
Length—200 ft. single track
New construction—7-in. girder construction—5-in. granite on concrete
Old construction—street graded, unpaved



	No. Traffic
Labor	$260.00
Handling	120.00
Miscellaneous	30.00
Total (except materials)	$410.00
Cost per single track foot	2.05

Fig. 2—Double Track—Branch-off (90 Deg.)

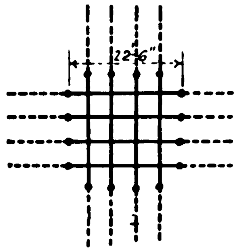
Length—240 ft. single track
New construction—7-in. girder rail*—5-in. granite on concrete.
Old construction—Streets graded, unpaved. Existing track—7-in. girder rail.



	Light Traffic	Average Traffic	Heavy Traffic
Labor	$340.00	$380.00	$420.00
Handling	110.00	120.00	130.00
Miscellaneous	45.00	50.00	55.00
Total (except materials)	$495.00	$550.00	$605.00
Cost per single track foot	2.06	2.29	2.52

Fig. 3—Double Track Crossing (90 Deg.)

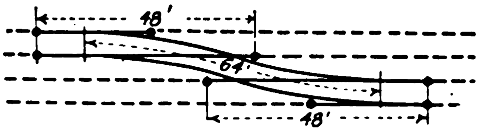
Length—90 ft. single track
New construction—7-in. girder rail*—5-in. granite on concrete.
Old construction—8-in. granite on sand. Existing track—9-in. girder rail.



	Light Traffic	Average Traffic	Heavy Traffic
Labor	$190.00	$210.00	$230.00
Handling	60.00	70.00	80.00
Miscellaneous	40.00	45.00	50.00
Total (except materials)	$290.00	$325.00	$360.00
Cost per single track foot	3.22	3.61	4.00

Fig. 4—Right Hand Cross-over

Length—160 ft. single track
New construction—7-in. girder rail*—5-in. granite on concrete.
Old construction—7-in. girder rail—5-in. granite on concrete.



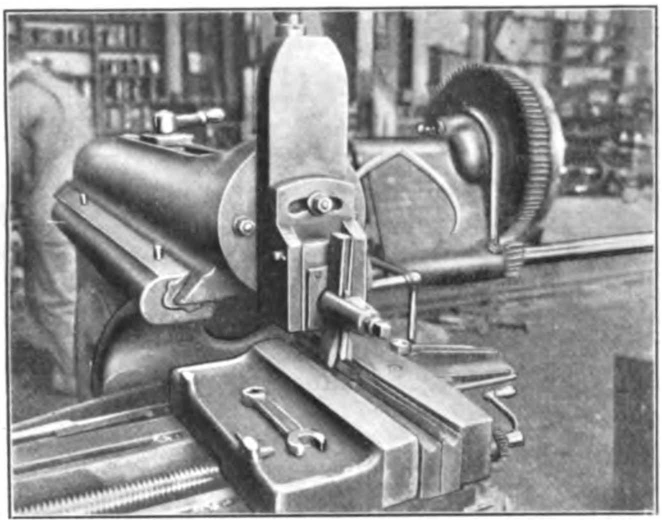
	Light Traffic	Average Traffic	Heavy Traffic
Labor	$280.00	$310.00	$365.00
Handling	75.00	80.00	95.00
Miscellaneous	45.00	50.00	60.00
Total (except materials)	$400.00	$440.00	$520.00
Cost per single track foot	2.50	2.75	3.25

---

*Hard-center construction. *Explanation:* By "light traffic" is meant either the divergence of cars during progress of work or a traffic of not more than 150 cars per day of twenty-four hours. "Average traffic" denotes the passage of about 325 cars per day of twenty-four hours, and "heavy traffic" that of 750 or more.

By "labor" is meant the labor cost of tearing out the old paving and special work and installing the new at the location where the work is done. "Handling" signifies the cost of loading the necessary materials at the various storage yards as well as the unloading of same at the place of renewal. It also includes the cost of transportation and the cost of removal of old or left-over material. Since the transportation is done by a subsidiary company, which adds profit and overhead expense to the net cost, this item may differ considerably from that obtained on other railways. Under "miscellaneous" are included the expense of city inspectors, expense incurred when portable crossovers are used for divergence of cars during renewal, watchmen's wages, and incidental engineering expense. The total of these three items—labor, handling and miscellaneous—therefore includes everything except the cost of materials.

On account of the unsettled labor conditions prevailing since the beginning of the war, the costs given are based on pre-war wages, the average track labor on which these costs are based is 20 cents per hour, including the foreman's wages.

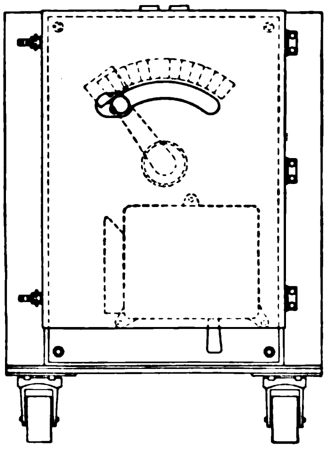


GROOVING TROLLEY EARS IN SPOKANE SHOPS

Trolley Ears Made with Shaper

The Washington Water Power Company, Spokane, Wash., has its own design of trolley ears. For cutting the grooves for the wire, R. A. Willson, general superintendent, designed the special tool shown in the illustration. This tool in one operation perfectly cuts the groove to receive the trolley wire and at the same time it brings up the sides to a feather edge so that they can be hammered over the wire. It is notable that a shaper is used for this work, the grooves being cut instead of milled. Special form blocks are used to hold the ears in place in the shaper. The facing and tapping is done on a turret lathe, a special check being used. The ears are made in three sizes, No. 0, No. 00 and No. 0000.

Portable Outlet Panels for Electric Welding Service



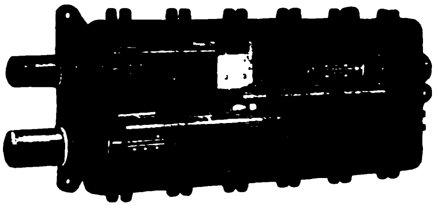
PORTABLE OUTLET PANEL FOR ELECTRIC WELDING SERVICE

An electric welding outfit, to be of maximum service, must be so arranged that it can be transported to the work regardless of location. One solution of this problem would be the location of an outlet panel of suitable type wherever it is anticipated that electric welding may be desired. This is, however, a rather expensive proposition and the same result may be accomplished in a more simple manner. The Westinghouse Electric & Manufacturing Company has developed portable outlet panels, mounted on light trucks, to take care of this situation. The outfit consists of a control panel mounting a handle-trip, railway-type circuit breaker having overload release with magnetic blowout and a thirteen-point face plate connected to a resistor mounted in the rear of the panel. The face of the panel is protected by a metal cover through which the handles of the rheostat and circuit-breaker project. The resistor is made up of grids and is protected by a cage of expanded metal.

When an electric welding system using these portable panels is installed, the company suggests that an arc-welding motor-generator set be placed at some central point. If suitable low resistance ground connection can readily be made throughout the shop, as for instance in a railway shop where the track system can be used, only one connector need be extended to the various receptacles. The track rails can be bonded by arc-welding the fish plates to the rails and receptacles of the capacity appropriate for the service for which they are intended provided at suitable points throughout the shop. These receptacles can be mounted out of doors if they are provided with protection from the weather. Single-pole receptacles and a single wire cable to the portable panel should be provided, this cable being of sufficient length to place the panel as near as possible to the work. The flexible cable leading from the panel to the electrode holder should be as short as is consistent with the class of work to be done.

Underground Switch Box for Trolley Feeder Connection

An underground cable switch box has been designed especially for electric railway service by the Standard Underground Cable Company, which makes possible the disconnecting and sectionalizing of different parts of a live circuit by simply opening one or more quick-break knife switches. The box is waterproof and is mounted on the wall of the manhole. The cables enter the box through nipples which are mechanically connected to the lead cable sheath by a wiped soldered joint. The main feeder cable passes into the box through the nipples shown at the right end and at the lower left-hand corner in the accompanying illustration. The other nipple is for the feeder tap to the trolley. The box is designed for main feeders up to 2,000,000 circ. mil. and for 500,000 circ. mil. side-tap feeders. The switches in the main feeder circuit have a capacity of 1000 amp., and the side-tap switch has a capacity of 400 amp. All live parts in the box are mounted on non-inflammable insulating material and separated by ample air gaps.



INTERIOR VIEW OF CABLE JUNCTION BOX

An important feature of this junction box is the patented bimetallic nipple, the rigid portion of which is brass and the malleable portion lead. The wiped joint is thereby made between the lead of the nipple and that in the cable sheath, which requires much less heat and less skill than in making a similar joint between brass and lead. The nipple is also designed to permit all cable connections to be made away from the box where there is more room to work and no metal wall to conduct the heat from the parts to be joined. After all connections are made to the cable the nipple is inserted and clamped in position.

News of Electric Railways

Traffic and Transportation

Financial and Corporate · Personal Mention · Construction News

Railways Under Government Control

Street and Interurban Railways to Be Taken Only If It Shall Be Found Necessary or Desirable Later On

President Wilson on Dec. 26 issued his proclamation putting the railways of the country under government control and appointing Secretary of the Treasury McAdoo director general of railroads. The street and interurban railways are expressly exempted for the present from the proclamation in the following terms:

"Nothing herein shall be construed as now affecting the possession, operation, and control of street electric passenger railways, including railways commonly called interurbans, whether such railways be or be not owned or controlled by such railroad companies or systems. By subsequent order and proclamation, if and when it shall be found necessary or desirable, possession, control, or operation may be taken of all or any part of such street railway systems, including subways and tunnels, and by subsequent order and proclamation possession, control, and operation in whole or in part may also he relinquished to the owners thereof of any part of the railroad systems or rail and water systems, possession and control of which are hereby assumed."

Mr. McAdoo is directed as soon as may be possible after having assumed possession and control of the roads, to enter upon negotiations with the several companies looking to agreements for just and reasonable compensation for their possession, on the basis of an annual guaranteed compensation above accruing depreciation and the maintenance of their properties, equivalent, as nearly as may be, to the average of the net operating income thereof for the three-year period ended June 30, 1917. The result of such negotiations are to be reported to the President for such action as may be appropriate and lawful.

Cleveland Interurban Men Return

The efforts failed which were made on Dec. 14 and 15 by the Chamber of Commerce of Elyria, Ohio, to settle the strike of the motormen and conductors of the Cleveland, Southwestern & Columbus Railway, but on Dec. 20 the employees of the company voted to return to work at the present scale and then take up negotiations for an increase. Under this plan service was resumed on Dec. 22.

Officers of the company and representatives of the employees were present at the conferences on Dec. 14 and 15. It was intimated that the men might accept an increase of 5 cents an hour in their wages, but the company could offer them only 4 cents. The original demand of the men was for 8 cents.

The men were under contract until April 1, 1918, and the officers of the company said that they could view the matter in no way other than that the contract had been broken. The men simply walked out because the company refused to pay 8 cents an hour more than their contract provided for, although the company had consented to meet them half way by the payment of 4 cents an hour in addition to what they are receiving at the present time. Service was discontinued on Dec. 10 .

Owing to the fact that the coal supply had been diverted during the strike, the road could not be put into operation until the morning of Dec. 22. The previous day was spent in clearing the tracks of snow and ice and securing coal, a sufficient quantity being obtained to last for some time. Neither passenger nor freight cars were operated on the road while the men were on strike. No attempt was made to secure substitutes.

Toledo Men Appeal to Washington

They Ask the Government to Make a Thorough Investigation and Outline Terms of Wage Settlement

Employees of the railway and electrical departments of the Toledo Railways & Light Company, Toledo, Ohio, have taken the unusual course of appealing to the federal government to investigate and adjust their demands for an increase in wages. They sent a telegram to Secretary of Labor William B. Wilson on the evening of Dec. 20, after a conference between Henry L. Doherty and representatives of the unions had failed of results. This telegram follows:

The Telegram to the Secretary of Labor

"A strike is threatened on the railway properties of Toledo by 2000 trainmen and electricians. This company furnishes power to many of the large industrial plants of the city, in addition to its railway business.

"Contracts between the company and the organizations of railway men and electricians exist and will not expire for another year. These contracts were made nearly two years ago at a time when neither side realized the enormous cost of living that now prevails.

"The present wages are low and do not compare with the wages prevailing in other lines of employment; the employees contend that they cannot continue to live upon them. Company officials admit that the wages are too low to meet the present conditions, but contend that their financial condition will not permit them to increase wages.

"This is a serious situation. The officials of both organizations have exhausted every effort to reach a settlement.

"We do not want to see a suspension which will inconvenience the public and retard government work, and we feel that the only hope of preventing a suspension is for the United States government to make a thorough investigation of the situation and outline terms of a settlement. We therefore jointly appeal in the name of our organizations to you to at once take up this matter and order the investigation. Awaiting your reply we remain."

Mr. Doherty States the Company's Case

When informed of the step that had been taken Henry L. Doherty, chairman of the board, said:

"I am not surprised to hear of the step taken by the representatives of the men. It is certainly an unusual proceeding. The company will, however, render every aid possible to a government investigator of conditions if one comes. It will turn over its books and papers and afford every opportunity for a thorough analysis of the situation. I hardly see how the government can step in, but I have no objection whatever. Of course, I realize we are furnishing power to plants which are turning out government work, and I suppose that the federal investigation will be made on this ground."

The men are under contract until April, 1919. They base their plea for an increase in wages upon the advance in the price of all foods and other products necessary for support. An increase of 10 cents an hour has been demanded by the men in the railway department. The electrical workers have asked for a graduated increase based upon the present scale. At several conferences held during the week ended Dec. 22 Mr. Doherty tried to make it plain to the representatives of the men that an increase in wages could not be made unless the rate of fare was raised sufficiently to cover the additional amount of money this would involve. Prices of materials and cost of operating have increased so tremendously that it is impossible to take the one step without the other.

Work for the Engineer in France

Both Reconstruction and Welfare Work of Vast Magnitude Waits to Be Carried Out

C. O. Mailloux, the well-known consulting electrical engineer, has contributed to the New York *Evening Post* a series of two articles showing the important part American engineers can take in reconstruction work in France. He has surveyed the field and cites specific opportunities in many branches of engineering for American co-operation. According to Dr. Mailloux the work of reconstruction to be done will be of two general classes: that which concerns human welfare; and that which concerns industry. In some small rural communities the work of welfare character can be carried on alone, because the problem is that of providing homes only. In industrial districts the two classes of reconstruction work must be carried on together, to a great extent, because industries must be revived there to give employment to the inhabitants as fast as homes are provided for them. The author says that the amount of work involving engineering that there will be to do and that ought to be done, in France, and also in Belgium, immediately after the end of the war, is so enormous that even long rows of figures fail to give an adequate idea of it.

In commenting on electric railway and water-power needs, Dr. Mailloux said in part:

MORE ELECTRIC RAILWAYS NEEDED

"The war has shown the desirability of more suburban electric tramway lines in many places, more especially where there are works located outside the limits of cities and towns which draw their labor from the urban population. Experience in America has shown that employees who are obliged to travel some distance in electric cars in going from their homes to their work and back, acquire the 'riding habit.' The development of this habit has caused the development of many suburban and interurban lines in America. It is possible that the same condition will result in France.

DEVELOPMENT OF WATER POWER A WAR MEASURE

"It was in France that the hydraulic turbine was invented and received its early applications in the development of water powers, both of low and of high heads; and it was also in France that the first practical demonstration of high voltage and long-distance electric transmission on a working scale were made. The field of hydroelectric power remains large, in spite of the relatively great activity which has existed in it in the last twenty years or more. It presents the greatest interest at the present time, and it offers good opportunities for the utilization of American business enterprise, financial resources, and engineering ability, in a way that would benefit France and incidentally bring fair profits to the concerns engaging in the work.

"Of the total available water power in France—estimated at from 6,000,000 to 10,000,000 hp.—only about one-tenth, or somewhat under 1,000,000 hp., has been developed. The desirability and importance of further development of this available power, which were already appreciated before the war, have been realized very strongly since then, as a means of reducing the demand or meeting the shortage for coal. Before the war, France consumed annually about 60,000,000 tons of coal, of which her mines produced about two-thirds; and she imported the rest, or about 20,000,000 tons. At the very beginning of the war, her best coal mines fell into the hands of the Germans, and thus her domestic production was curtailed very seriously, at the same time that the coal coming from other countries became scarce and costly. Under the circumstances the development of water power became a war measure of importance.

HOW THE ENGINEER SHOULD WORK

"It may be presumed that American electrical engineers would have less difficulty than their colleagues of other engineering specialties in going to France to do engineering work. In this case, as in most other cases of engineering work done in France, the American engineer will work more efficiently as part of or under an American group than under French auspices."

Inter-Community League Meets

Representatives from Commercial Bodies in Missouri, Oklahoma and Kansas Organize to Discuss Transportation and Other Problems

The Inter-Community League, embracing Missouri, Oklahoma and Kansas, was formed in Kansas City on Dec. 5, by 100 representatives of commercial bodies of these states. While problems directly resulting from the war will be handled first—especially transportation—the league plans to effect active co-operation among the communities of the three states through their Chambers of Commerce. Divisions were established for these five general topics: Agriculture, transportation, civics, industry and commerce. The subject of power sources, for instance, was frequently mentioned, and the experience of each will be at the service of all. Public utility questions will also be handled, in the same way—though there is a hint at effective help to be given on special occasions, in the fact that a community that has solved a problem will be called upon to help its fellow-member of the league solve a similar problem.

SUBSTANTIAL RESULTS AT THE FIRST CONFERENCE

One instance of the substantial results of the first conference is the way the delegates received a suggestion from the secretary of the Wichita (Kan.) Chamber of Commerce on assignments of club work. Wichita had given the chairmanship of its division on new industries to the manager of the electric interurban railroad, who had much experience in gaging the needs as to location of various industries. Many of the secretaries and presidents of Chambers of Commerce present intimated that upon returning home they would get busy and put the officials or representatives of their local public utilities to work.

There was an occasional remark among the delegates as to a possible campaign for municipal ownership of certain utilities, though it is definitely stated that the league is not on record as favoring such action. If any community seeks municipal ownership, the other communities would be asked to give their opinions and experience.

Harry W. Graham, secretary of the Chamber of Commerce of Chillicothe, Mo., was elected president, and H. B. Ober, president of the Lawrence (Kan.) Chamber of Commerce, was elected secretary.

Gas-Electric vs. Steam Service

San Diego Line Increases Traffic and Reduces Operating Costs by Substituting Motor Cars for Steam Equipment

The San Diego & Southeastern Railway, San Diego, Cal., a steam line with branches serving several districts adjacent to San Diego, was so seriously crippled by jitney competition that the Railroad Commission had recommended the abandonment of service on the line and the owners were considering the matter of acting on this advice. At this juncture the expedient of substituting motor cars for the steam equipment was determined upon, and two 50-ton gas-electric motor cars were purchased. Later a third car of the same type was added. These cars were overhauled and put in excellent condition and the steam equipment was then disposed of.

The steam operation, with locomotives burning oil, cost 85 cents per car-mile. With the motor cars in service the operation cost has been reduced to 20 cents per car-mile. In arriving at this latter figure the assumption is made that the motor cars will be obsolete within ten years and that therefore 10 per cent of their cost price of $25,000 each should be charged to each year's operation. In addition to this depreciation, the figure includes all maintenance, fuel, supplies and wages.

With the increased flexibility which the motor cars afforded it was possible so to improve the service that with progressive advertising methods the traffic more than doubled.

The rehabilitation has been effected under the direction of E. J. Burns, general manager.

Plan to Hasten New Seattle Line

Council Adopts Plan for the Construction of an Elevated Railway to Connect Present Municipal Lines

The public utilities committee of the City Council is considering a proposal to hasten the construction on the proposed Seattle municipal elevated railway along the waterfront and south on Whatcom Avenue and the construction of a spur of the municipal line on East Marginal Way 1½ miles south to Michigan Street, as a solution of the problem of supplying transportation in the shipyard district. The public utilities committee recently held a conference with the Chamber of Commerce and Commercial Club at which the subject was discussed in all its ramifications. Oliver T. Erickson, chairman of the utilities committee, proposed that the voters at the March election be asked to authorize the transfer of the $375,000 remaining in the original municipal railway bond issue of $800,000 to a fund for the construction of the elevated line. Mayor H. C. Gill suggested that construction work might be started immediately after the election. R. H. Thomsen, Councilman, suggested an alternative to the construction of the elevated line. This was that the spur be built by the city of Seattle on East Marginal Way, but that arrangements be made with the Puget Sound Traction Light & Power Company for the routing of the city's cars on First Avenue south between King Street and Spokane Street.

SEATTLE M. O. VOTE IN MARCH

The City Council will submit to the voters of the city on March 6, 1918, the question of utilizing the $375,000 remaining unsold from a bond issue of $800,000 authorized in 1911 for the purchase or paralleling of the Seattle & Rainier Valley Railway, for the construction of an elevated railway on Railroad and Whatcom Avenues from Washington Street to Spokane Street. This is in line with furthering the proposed plan for the connection of the city's two municipal car lines, one ending at Third Avenue and Pine Street, and the other at Riverside, on the west side of the West Waterway. The use of the Renton line tracks on Fourth Avenue is contemplated.

The plans which have been adopted by the Council call for the construction of an elevated railway on Washington Street from First Avenue South to Railroad Avenue; on Railroad Avenue and Whatcom Avenue from Washington Street to Spokane Street, and on Spokane Street from Whatcom Avenue to the West Waterway Bridge. A. H. Dimock, city engineer, estimates the cost of the elevated portion of the line at $330,000 for wood construction, and $1,500,000 for steel construction. By building this road the city would be enabled to operate its Lake Burien line over the elevated road to First Avenue South and Washington, connecting with the present Division A at Third Avenue and Stewart Street, by exercising common user rights on Fourth Avenue and Washington Street.

Partial Rapid Transit Operation

Construction Material Brought from Pittsburgh by Motor Truck

Announcement has been made by the Public Service Commission for the First District of New York that it is hoped to have the Lexington Avenue subway and the Seventh Avenue subway in full operation, in connection with the first subway, as soon after April 1 as is possible. In the meantime, according to Frank Hedley, vice-president and general manager of the Interborough Rapid Transit Company, which will operate these lines, the earliest date at which partial operation may be expected is on or about March 1, with the hope, however, that partial operation in Lexington Avenue may be had a week or so before that date. Mr. Hedley stated that delays in material were responsible for the inability of the operating officials to have the lines ready with operating equipment before that time. General construction work under the auspices of the Public Service Commission is practically completed and only the equipment details are lacking. Some of these materials come from points far distant from New York, and in the present congestion of railroad traffic, shipments have been difficult to obtain. In some cases it has been necessary to ship carloads of materials by express in passenger trains, while other materials have been loaded in motor trucks and brought to New York all the way from Pittsburgh. Mr. Hedley stated that the program of temporary operation as outlined could be carried out in the event that other and more serious delays did not occur.

Meetings with Mr. Brinkerhoff Concluded

At the meetings of the local transportation committee of the Chicago City Council, held on Dec. 18 and 19 and attended by H. M. Brinkerhoff, who served as chief engineer of the Chicago Traction & Subway Commission, as counsel to the committee, the time was occupied principally by a review of the physical plan and its meaning in detail to each section of the city. The financial plan was discussed to a limited extent, but consideration was devoted more especially to the physical plan.

The members of the City Council had been invited to attend, but only three of them appeared. No particular opposition to the plans developed, except from two Aldermen in whose wards no extensions were provided for in the first six years of the Subway Commission's plan, and for which there was nothing definite planned even after that. The committee adjourned after two days of these discussions, and the next step will be to hold a meeting at which representatives of the Chicago traction companies will be present to express again their willingness to carry out the plans as laid down.

Utility Legislation for Texas

A special committee of the Legislature of Texas is engaged in framing a public utilities bill which will come before the next session of the Legislature, either special or regular. The regular session will convene in January, 1919. It is proposed to create a corporation commission, based on the present Railroad Commission, with authority over all corporations in the State, but more particularly over railroads and utility corporations.

The committee has had representatives of electric light and power companies and the interurban and city railways before it and has received the recommendations of these utilities as to what the proposed law should contain. Legislators and representatives of the utilities agreed that the law should give the proposed utilities commission authority to regulate rates and require good service, and that this authority should extend to interurban and city railways. There was a difference of opinion, however, on the question of authority over the issuance of stocks and bonds.

Philadelphia Lease Reported Out

Joint Finance Committee of Councils Reports Favorably the Proposed Lease with the Philadelphia Rapid Transit Company

The joint finance committee of Councils of Philadelphia reported out with favorable recommendation the proposed lease of the unified transit lines presented for final action at the session of the committee on Dec. 21. There was one further amendment in the proposed lease, however. Councilman Hetzel's suggestion that the board of engineers be constituted as originally provided for in the first city plan, viz.: three members, one appointed by the city and one by the company with the third chosen by the two, was approved and the change will be made in the final lease form before presentation to Councils. Under this latest revision the members of the board will receive a salary the amount of which is to be fixed by the Mayor of the city and the president of the Philadelphia Rapid Transit Company. The proposed amendment that all exchange tickets be abolished sixty days after the company signed the contract, was defeated. Likewise Councilman Trainer's amendment providing the company shall be compelled to extend the Delaware Avenue elevated line southward with the development of the city to within five blocks of the extreme southern end of the improved section. Final action is planned in Councils on Jan. 4.

Increase in Wages in Pittsburgh.—The Pittsburgh (Pa.) Railways decided on Dec. 21 to raise the rate of pay of its motormen and conductors 2½ cents an hour, the change to be effective immediately.

Strike Called Off.—The employees of the Gulfport & Mississippi Coast Traction Company, Gulfport, Miss., who went on strike on Dec. 5 when the company refused to recognize their newly organized union and grant wage increases, returned to work on Dec. 7 and agreed to arbitrate the wage question later.

Preparing for Damage Suit Hearing.—W. G. McClaren, attorney for the Duwamish Waterway District, Seattle, will represent that district in Washington, D. C., in the case of the Puget Sound Traction, Light & Power Company vs. the Waterway District. The company asks $500,000 for damages to its lines as the result of dredging and river improvement work. The case was tried in the King County Superior Court and appealed by the plaintiff to the Supreme Court.

Municipal Ownership Agitation in Central New York.—The Aldermen of Syracuse, N. Y., are discussing the matter of municipal ownership of the local railway lines. The adjacent villages are said to be in sympathy with the movement. The hope is expressed that the discussion now going on will bring about a bill authorizing municipal ownership of railways or result in an amendment to the legislative measure now being prepared by Senator Robert F. Wagner authorizing municipal ownership in Syracuse.

Armed Guards Asked for Trains.—A petition has been filed with the Public Utilities Commission of Illinois asking that the East St. Louis & Suburban Railway, East St. Louis, Ill., be required to place armed guards on trains running to the plant of the St. Louis Smelting & Refining Company. The petitioner states that owing to unsettled labor conditions and strikes in progress the guards are necessary for the protection of the patrons of the road. This is the first petition ever filed with the commission demanding armed guards on trains of any carrier.

Increase in Wages in Tampa.—The Tampa (Fla.) Electric Company has increased the pay of its trainmen 2 cents an hour, effective on Jan. 1. This is the third increase in a little more than a year and means an advance of 30 per cent within this period. In announcing the increase the company said: "This increase is made for the purpose of relieving the high cost of living, a situation brought about by the war, and not because the company can afford to pay its trainmen more money. The company is having just as hard a time to exist as its employees have to live. In view of this, the company feels obliged to consider this increase in the nature of a war bonus, which will be continued as long as conditions permit."

Program of Association Meeting

Pacific Claim Agents' Association

At a meeting of the executive committee of the Pacific Claim Agents' Association and the Pacific Claim Agents' Index Bureau at Portland, Ore., on Dec. 14 it was decided to hold the next annual convention in Portland on May 1, 2 and 3, 1918. The program of papers decided upon is as follows:

"Prevention of Grade Crossing Accidents," by S. A. Bishop, Los Angeles, Cal., and A. M. Lee, Seattle, Wash.

"Automobile Accidents in Cities and Towns, Causes and Means to Their Prevention," by W. H. Moore, San Diego.

"The Effect of New Labor Conditions on Accident Causes and Prevention," by J. H. Handlon, San Francisco, Cal.

"Obtaining Co-operation from the New Employee and the Old One Under Present Conditions," by H. G. Winsor, Tacoma, Wash.

"How Will the Employment of Women in Railway Work Affect the Claim Department?" by Thomas G. Aston, Spokane, Wash.

"What Is Being Accomplished Along Safety Lines and Accident Prevention," by B. F. Boynton, Portland, Ore.

"The Value of Courtesy," by F. M. Hamilton, Seattle.

The secretary-treasurer of the associations is B. F. Boynton, claim agent of the Portland Railway, Light & Power Company.

Financial and Corporate

Annual Report

Bay State Street Railway

The income statement of the Bay State Street Railway, Boston, Mass., for the year ended Dec. 31, 1916, follows:

	Amount	Per Cent	Increase for Year
Operating revenue	$10,413,618	100.0	$854,783
Operating expenses	7,972,800	76.5	740,247
Net operating revenue	$2,440,818	23.5	$114,536
Taxes	626,251	6.1	712
Operating income	$1,814,567	17.4	$113,824
Non-operating income	62,430	0.6	*1,510
Gross income	$1,876,997	18.0	$112,314
Deductions from gross income:			
Rent of leased roads	$192,667	1.8	$8,524
Interest on funded debt	1,050,774	10.1	14,943
Interest on unfunded debt	68,775	0.7	*40,957
Miscellaneous	30,627	0.3	3,965
Total deductions	$1,342,844	12.9	*$13,523
Net income	$534,153	5.1	$125,836
Dividends:			
First preferred stock	$175,951	1.7	$11,035
Common stock	102,586	0.9	102,586
Total dividends	$278,537	2.6	$113,621
Surplus for year	$255,616	2.5	$12,215

*Decrease.

The fiscal year of Massachusetts electric railways (in conformity with a recent act of the legislature) now ends on Dec. 31. The current report of the controlling organization, the Massachusetts Electric Companies, therefore, includes figures for the Bay State Street Railway only for the calendar year 1916. Any attempt to state at the present time the operating results of the present calendar year would depend upon estimate and be inaccurate. It is said, however, that the net, after cost of operation and fixed charges for the first ten months of this year, amounts to $436,881, while that for the same months of 1916 amounted to $806,409.

The expenditures during 1916 for improvements and reconstruction amounted to $883,350. The principal items in this total were $378,269 for track reconstruction and State and municipal requirements; $147,523 for track construction and $165,123 for electric lines and feeders. For the first nine months of 1917 the expenditures amounted to $464,713, including $167,197 for track reconstruction and government requirements, $60,646 for car reconstruction, $69,501 for electric lines and feeders and $85,925 for power stations.

On the matter of capital expenditure the report says:

"This has resulted in a heavy burden on the finances of the company, and the work so done has been of a kind which, in general, adds nothing to economy of operation or to better service. Consisting, as it does, largely of rebuilding of bridges, abolition of grade crossings, and the putting of wires under ground, it may be said to benefit the public without any corresponding benefit to the street railway. The case is quite different with the 200 new cars and the new dynamo for the power station at Quincy, mentioned in the last report; both of these are most important for economy and for improved service."

During 1917, underlying bonds aggregating $907,000 fell due and were paid, excepting a few not yet presented. Bonds of the Boston & Northern Railway and Old Colony Street Railway have been issued to the Bay State Street Railway in place of the underlying bonds paid. In addition, $764,000 of the same bonds were issued under approval of the Public Service Commission. The condition of the security market has been such that to sell new bonds would have resulted in serious sacrifice. The emergency was met by an issue of $850,000 of one-year 5 per cent notes dated March 15, 1917, and secured by $1,147,000 of the above mentioned bonds. There remain in the treasury of the Bay State Street Railway as of Dec. 1, 1917, $377,000 bonds of the Boston & Northern Railway and Old Colony Street Railway. During 1917, 5300 shares of first preferred stock of the Bay State company were issued, all of which were taken at par by the trustees of the controlling organization.

As to the various fare adjustments that have been secured by the Bay State Street Railway, the report states that these have resulted in a substantial amount of relief. The gross passenger earnings for the first eleven months of 1917, with no increase in car miles run, exceed those of the previous year by $444,268. However satisfactory these figures might have been under normal business conditions, the increases in gross have not been sufficient to cope with the increased cost of operation. Increases in fares have been constantly overtaken and passed by the rise in wages and material costs. Having in mind the various unfavorable circumstances which are gathering around all electric railway operations the trustees of the Massachusetts Electric Companies are said to view the situation of the Bay State Street Railway with grave concern.

$210,500,000 Utility Maturities in 1918

Larger Amount Than Any in Past Five Years, and $126,500,000 More Than in 1917—Maturities in the Railway Field in 1918 Will Total $126,817,000

The aggregate of public utility securities which will mature in 1918 amounts to $210,500,000, according to the *Wall Street Journal*. This is $126,500,000 more than matured in 1917 and is larger than any amount in the past five years. As usual in recent years, the preponderance of issues coming due next year is notes running from one to five years. The largest single item to mature in 1918 is $57,735,000 six-year 5 per cent notes of the Brooklyn Rapid Transit Company, due on July 1. Below are given the various railway issues maturing in 1918, issues less than $200,000 not being shown.

More Massachusetts Electric Committees

Affairs of Massachusetts Electric Companies Are Said to Be in Exceedingly Precarious Condition

The committee representing the noteholders of the Massachusetts Electric Companies, Boston, Mass., has been increased by addition of George H. Stuart, third, treasurer of the Girard Trust Company, Philadelphia, Pa., and J. C. Neff, vice-president of the Fidelity Trust Company, Philadelphia, Pa. The committee has issued a statement to the noteholders as follows:

"The financial affairs of the Massachusetts Electric Companies are in an exceedingly precarious condition, owing to the probable necessity of readjusting the financial structure of the Bay State Street Railway (common stock of which is owned by your company) due to lack of working capital and early approach of maturing obligations, a condition brought about by increased expenses of the Bay State Street Railway and its inability to obtain authority to increase correspondingly its revenue.

"Since the protective committee has been formed in the interests of the preferred and the common stocks, it seemed necessary to form a committee to protect the interests of the noteholders. We believe it is essential to your best interest to deposit your notes at once with the International Trust Company, Boston, Mass., or the Girard Trust Company, Philadelphia, Pa."

A committee has been formed to represent the holders of the 4 per cent bonds of the Boston & Northern Street Railway bonds, due in 1954, and the 4 per cent bonds of the Old Colony Street Railway, due in 1954. This committee consists of John R. Macomber, chairman; James Dean, Frederick H. Ecker, William L. Garrison, Jr., John E. Oldham, Philip Stockton, Frederic B. Washburn and W. Eugene McGregor, secretary. The committee requests deposits of bonds to be made with the Boston Safe Deposit & Trust Company.

ELECTRIC RAILWAY SECURITIES MATURITY IN 1918

January	%	Amount
Lorain Street, 3-year notes	6	$200,000
Milford & Uxbridge St. Ry. 1st	5	335,000
M., St. P., Roch. & Du. El. tr. notes	6	750,000
United Light & Railways Co. notes	6	750,000
Winnipeg Elec. Ry. 2-yr. notes	6	750,000
Total		$2,785,000
February		
Oak., Ant. & East. R. conv. notes	6	$317,500
Philadelphia Co. col. notes	6	250,000
Toledo Trac., Light & Power 1st	6	7,013,000
Toledo Trac., Light & Power 2d lien	6	1,200,000
Total		$8,780,500
March		
Aurora, Elgin & C. R. R. notes	6	$800,000
Eastern Power & L. Co. conv	5	2,350,000
Lewiston, Bruns & B. Ry. 1st	5	845,000
Total		$3,995,000
April		
Cinn. & Hamilton El. Ry. 1st	6	$400,000
Mansfield Railway, Light & Power	5	742,000
Massachusetts Electric Cos	5	3,000,000
U. S. Public Service Co. notes	6	1,200,000
Wilmington & Chester Traction	5	2,305,000
Joliet Railroad general gold	5	400,000
Total		$8,047,000
May		
Charleston Interurban notes	6	$450,000
Commonwealth P., R. & L. conv	6	8,081,000
Fort Smith Light & Traction deb	6	300,000
Portland (Ore.) Ry., Lt. & Power notes ext	5	4,000,000
Sutter Street Ry. 1st	5	1,000,000
Detroit United Ry. coup. notes	5	3,500,000
Total		$17,331,000
June		
Lewiston, Augusta & W. notes	5	$614,000
Manchester Trac., L. & P. notes	5	1,000,000
New Orleans Ry. & Light notes	6	3,250,000
Tenn. Ry., Light & Power notes	5	2,500,000
Total		$7,364,000
July	%	Amount
Brooklyn Rapid Transit notes	5	$57,735,000
Kansas City Rys. Co. 3-yr. notes	5½	7,922,000
Oklahoma Railway notes	6	500,000
Oakland Transit Co. consol	6	1,121,000
Total		$67,278,000
August		
Carolina Power & Light Co. notes	5	$202,000
Hudson Cos. secured notes	6	1,500,000
Missouri Elec. R. R. pur. money	5	700,000
Newport & Fall River St. Ry	5	240,000
People's St. Ry., Pa	6	200,000
Philadelphia Company notes	6	250,000
West End St. Ry. ser. deb	5	1,581,000
Total		$4,673,000
September		
Chicago & West Towns Ry. 1st	6	$556,000
Ohio Traction Co. coupon notes	6	300,000
Total		$856,000
October		
Christopher & Tenth St. R. R. 1st	4	$210,000
Clev., Pains. & East. R. R. 1st con	5	1,131,000
Clev., Pains. & East R. R. 1st ext	5	500,000
Phila. & West Chester Trac. 1st	5	400,000
Quincy Horse Ry. & Car Co. 1st	5	400,000
Twin State Gas & Elec. Co. deb	5	300,500
Total		$2,641,500
November		
General Gas & Electric notes	5	$525,000
Total		$525,000
December		
Bay State St. Ry. coupon notes	6	$357,000
Eastern Texas Electric notes	6	500,000
Pan Handle Trac. Co. notes	6	309,530
Toronto Railway notes	6	750,000
Wyandotte & Detroit River Ry	5	425,000
Easton, Palmer & Bethlehem St. Ry	5	200,000
Total		$2,541,530
Total for railways		$126,817,030
Grand total—all maturities		$210,427,780

Electric Railway Statistics

Comparison of Returns for Nine Months, January-September, 1917, with Those for 1916, Shows That Increases in Expenses Are Outrunning Revenue Gains

A comparison of electric railway statistics for the nine months, January-September, 1917, with figures for the corresponding months of 1916, made by the bureau of statistics and information of the American Electric Railway Association, indicates that expenses have increased out of all proportion to the gain in revenues.

Data for the nine months, representing 7450 miles of line of companies scattered throughout the country, figured on the per-mile-of-line basis, indicate an increase in operating revenues of 5.87 per cent, an increase in operating expenses of 11.02 per cent, and a decrease in net earnings of 2.17 per cent. Data representing approximately 75 per cent of this mileage indicate an increase in the amount of taxes paid of 8.78 per cent and a decrease in operating income of 6.38 per cent.

The returns from the city and interurban electric railways as shown in detail in the appended tables, have been classified according to the following geographical grouping: Eastern District—East of the Mississippi River and north of the Ohio River. Southern District—South of the Ohio River and east of the Mississippi River. Western District—West of the Mississippi River.

All of the three groups show a far greater percentage increase in operating expenses than in earnings. Returns for the Eastern, representing 5023 miles of line, indicate an increase in operating revenues of 6.67 per cent, an increase in operating expenses of 13.83 per cent and a decrease in net earnings of 4.06 per cent. Taxes paid by companies represented by approximately 70 per cent of this mileage

TABLE I—COMPARISON OF REVENUES AND EXPENSES OF ELECTRIC RAILWAYS FOR NINE MONTHS, JANUARY-SEPTEMBER, 1917 AND 1916

Account	United States				Eastern district				Southern district				Western district			
	Amount, January-September, 1917	Per mile of line			Amount, January-September, 1917	Per mile of line			Amount, January-September, 1917	Per mile of line			Amount, January-September, 1917	Per mile of line		
		1917	1916	% Increase		1917	1916	% Increase		1917	1916	% Increase		1917	1916	% Increase
Operating revenues.....	$129,459,101	$17,376	$16,412	5.87	$86,109,064	$17,142	$16,070	6.67	$9,591,263	$11,660	$11,610	0.43	$33,758,774	$21,042	$19,837	6.07
Operating expenses.....	82,759,119	11,108	10,005	11.02	55,127,582	10,974	9,641	13.83	5,527,235	6,719	6,644	1.13	22,104,302	13,777	12,793	7.69
Net earnings..........	46,699,982	6,268	6,407	†2.17	30,981,482	6,168	6,429	†4.06	4,064,028	4,941	4,966	†0.50	11,654,472	7,265	7,044	3.14
Operating ratio, per cent	1917, 63.93; 1916, 60.96				1917, 64.02; 1916, 59.99				1917, 57.62; 1916, 57.23				1917, 65.47; 1916, 64.49			
Av. No. miles of line represented..........	1917, 7,450; 1916, 7,358				1917, 5,023; 1916, 4,991				1917, 823; 1916, 778				1917, 1,604; 1916, 1,590			

COMPANIES REPORTING TAXES

Account	United States				Eastern district				Southern district				Western district			
Operating revenues.....	$84,743,426	$16,229	$15,473	4.89	$44,548,999	$14,055	$13,522	3.94	$6,748,617	$13,319	$12,677	5.06	$33,445,810	$21,643	$20,396	6.11
Operating expenses.....	55,344,760	10,599	9,629	10.07	29,658,630	9,357	8,351	12.05	3,804,644	7,509	6,964	7.83	21,881,486	14,160	13,129	7.85
Net earnings..........	29,398,666	5,630	5,844	†3.66	14,890,369	4,698	5,171	†9.15	2,943,973	5,810	5,713	1.70	11,564,324	7,488	7,267	2.97
Taxes..............	5,951,411	1,140	1,048	8.78	2,899,742	915	838	9.19	541,959	1,070	995	7.54	2,509,710	1,624	1,496	8.56
Operating income......	23,447,255	4,490	4,796	†6.38	11,990,627	3,783	4,333	†12.69	2,402,014	4,741	4,718	0.49	9,054,614	5,859	5,771	1.52
Operating ratio, per cent	1917, 65.31; 1916, 62.23				1917, 66.57; 1916, 61.76				1917, 56.38; 1916, 54.94				1917, 65.43; 1916, 64.37			
Av. No. miles of line represented.........	1917, 5,222; 1916, 5,176				1917, 3,170; 1916, 3,137				1917, 507; 1916, 507				1917, 1,545; 1916, 1,532			

†Decrease. NOTE.—There were twenty-nine days in February, 1916, and only twenty-eight days in February, 1917.

TABLE II—COMPARISON OF REVENUES AND EXPENSES OF ELECTRIC RAILWAYS IN SEPTEMBER, 1917 AND 1916

Account	United States				Eastern district				Southern district				Western district			
	Amount, September, 1917	Per mile of line			Amount, September, 1917	Per mile of line			Amount, September, 1917	Per mile of line			Amount, September, 1917	Per mile of line		
		1917	1916	% Increase		1917	1916	% Increase		1917	1916	% Increase		1917	1916	% Increase
Operating revenues.....	$14,892,903	$1,999	$1,893	5.60	$9,804,837	$1,952	$1,860	4.95	$1,165,550	$1,417	$1,363	3.96	$3,922,516	$2,445	$2,253	8.52
Operating expenses.....	9,370,476	1,258	1,141	10.25	6,212,824	1,237	1,111	11.34	660,716	803	770	4.29	2,523,829	1,573	1,418	10.93
Net earnings..........	5,522,427	741	752	†1.46	3,592,013	715	749	†4.54	504,834	614	593	3.54	1,398,687	872	835	4.43
Operating ratio, per cent	1917, 62.93; 1916, 60.27				1917, 63.37; 1916, 59.73				1917. 56.67; 1916, 56.49				1917, 64.34; 1916, 62.94			
Av. No. miles of line represented..........	1917, 7,450; 1916, 7,358				1917, 5,023; 1916, 4,991				1917, 823; 1916, 778				1917, 1,604; 1916, 1,590			

COMPANIES REPORTING TAXES

Account	United States				Eastern district				Southern district				Western district			
Operating revenues.....	$9,846,518	$1,886	$1,782	5.84	$5,133,709	$1,620	$1,566	3.45	$823,201	$1,625	$1,499	8.41	$3,889,608	$2,517	$2,318	8.58
Operating expenses.....	6,283,743	1,203	1,104	8.97	3,321,700	1,048	978	7.16	462,596	913	818	11.61	2,499,447	1,617	1,456	11.06
Net earnings..........	3,562,775	683	678	0.74	1,812,009	572	588	†2.72	360,605	712	681	4.55	1,390,161	900	862	4.41
Taxes..............	671,719	129	120	7.50	305,661	96	95	1.05	65,561	129	111	16.22	300,497	194	174	11.49
Operating income......	2,891,056	554	558	†0.72	1,506,348	476	493	†3.45	295,044	583	570	2.28	1,089,664	706	688	2.62
Operating ratio, per cent	1917, 63.79; 1916, 61.95				1917, 64.69; 1916, 62.45				1917, 56.18; 1916, 54.57				1917, 64.24; 1916, 62.81			
Av. No. miles of line represented.........	1917, 5,222; 1916, 5,176				1917, 3,170; 1916, 3,137				1917, 507; 1916, 507				1917, 1,545; 1916, 1,532			

†Decrease.

increased 9.15 per cent, while the operating income of these companies decreased 12.69 per cent.

As compared with the Eastern group, the Southern and Western have done comparatively better. It must be borne in mind, however, that for some time past there has been a great curtailment in the expenditures for maintenance of way and structures and of equipment. Returns for the Southern group indicate almost no change in its operating income. The net earnings of the Western group increased 3.14 per cent and the operating income 1.52 per cent. Both groups show increases in the amount of taxes paid.

The operating ratio for the country as a whole has increased from 60.96 in 1916 to 63.93 in 1917. The operating ratio of the Eastern district has increased from 59.99 to 64.02. The operating ratios of the Southern and Western groups have also risen.

Reason for Paducah Abandonment

The Paducah (Ky.) Traction Company, as noted briefly in the Electric Railway Journal of Dec. 8, page 1049, has petitioned the City Commission to be permitted to discontinue operation over the Fisherville line. That line is paralleled by the Sixth Street line and the Union Station line for practically its entire distance. Its operation is less profitable than any of the company's other lines.

WHY THE FISHERVILLE LINE WAS SELECTED

In an effort to reduce the schedule in such directions as seemed advisable the company felt that this line offered an opportunity to save the greatest amount of operating expense with minimum loss in revenue by diverting the traffic to the other lines. It was not the intention of the company to abandon the line definitely, but merely to learn the result from discontinuing operation under the stress of present conditions. The discontinuance of the line will necessitate an amendment to the company's franchise.

ONE-MAN OPERATION SUCCESSFUL

The company is operating all its cars on a one-man basis with very satisfactory results. The number of accidents has decreased and the company has met with very little complaint on the part of the traveling public.

Withholding the Income Tax

Memorandum from Treasury Department Explains New Provisions Covering Collection of Income Tax at Source

The Treasury Department, through the office of the commissioner of internal revenue, has issued a memorandum regarding the withholding of the income tax at the source in the case of corporations. Under the new tax law of Oct. 3, 1917, the withholding agent under certain conditions is obliged to refund all tax withheld during the current year, and it will become obligatory for every bondholder to file his own return for 1917 in order to determine the individual liability.

The memorandum reads thus:

"The withholding of tax at the source from income paid to nonresident alien individuals, corporations, joint-stock companies or associations and insurance companies having no office or place of business in the United States, and the return of the tax so withheld shall be in accordance with the regulations in force on Oct. 4, 1917.

"Income paid to citizens or residents of the United States is subject to withholding of normal tax at the source only when derived from interest on bonds and mortgages, or deeds of trust, or other similar obligations of corporations, joint-stock companies, etc., containing a so-called 'tax-free' or 'no deduction' clause. No amount of income paid to a copartnership, either domestic or foreign, is subject to withholding of income tax at the source.

"In lieu of the withholding of normal tax at the source, heretofore required, from incomes paid to citizens or residents of the United States, there shall hereafter be furnished 'returns of information' in accordance with the provisions of Section 1211 of the war revenue act of Oct. 3, 1917.

"Normal tax withheld from income paid to citizens or residents of the United States during the year 1917, other than interest on corporate obligations containing a so-called 'tax free' or 'no deduction' clause, may now, under Section 1212 of the war revenue act, be released and paid over to the persons entitled to receive the same.

"In each case where withholding of normal income tax at the source is now required, it shall be at the rate of 2 per cent only, except that 6 per cent is to be withheld from all payments of interest on bonds and mortgages, or deeds of trust, or other similar obligations of corporations, joint-stock companies, etc., when paid to foreign corporations, joint-stock companies, etc., having no office or place of business in the United States."

Central Passenger Railway, Atlantic City, N. J.—The New Jersey Board of Public Utility Commissioners has dismissed an application of the Central Passenger Railway asking approval of an agreement under which that company was to lease the property of the Venice Park Company, formerly owned by the Venice Park Railway. Both parties to the agreement operate electric railways in Atlantic City. In refusing to sanction the lease the commission held that compliance had not been made with the statutory provisions authorizing such leases.

Lincoln (Ill.) Municipal Railway.—The Council of Lincoln has issued a warrant from the street railway bond fund to the Lincoln Electric Railway for the transfer of certain property of that company to the city of Lincoln. The property in question is known as the extension of the railway from Stringer Avenue to the entrance of the Lincoln Chautauqua grounds. The railway in Lincoln is now owned and operated by the municipality.

Loyal Heights Railway, Seattle, Wash.—The City Council of Seattle, Wash., has voted to purchase the Loyal Heights Railway for $40,000, this sum to be paid from the city railway extension bond issue of $125,000. A. L. Valentine, superintendent of public utilities of the city; J. D. Ross, superintendent of lighting, and C. R. Case, superintendent of streets, have been appointed to make final arrangements for the purchase. The line will connect with the projected extension of Division A of the Seattle Municipal Railway into Ballard.

Milford & Uxbridge Street Railway, Milford, Mass.—The Massachusetts Public Service Commission has authorized the Milford & Uxbridge Street Railway to extend for not more than five years the maturity of $335,000 of 5 per cent mortgage bonds and to increase the interest rate from 5 per cent to not more than 7 per cent, also to extend for five years the $165,000 first mortgage bonds of the Milford, Holliston & Framingham Street Railway, which were acquired when the Milford company purchased the former company in 1902, the interest rate being increased also from 5 per cent to not more than 7 per cent. Both issues were payable on Jan. 1, 1918.

Morris County Traction Company, Morristown, N. J.—On the ground that the plan of financing is reasonable and in no way prejudices the public interest, the Board of Public Utility Commissioners of New Jersey on Dec. 20 approved the application of the Morris County Traction Company for permission to issue $1,179,000 of income debenture bonds in denominations of $1,000, payable on June 16, 1948. Interest on the principal sum is not to exceed 5 per cent. The general mortgage gold bonds are to be retired by the new debenture bonds. This change is in accordance with the plans for the financial readjustment agreed to earlier in the year. As noted in the Electric Railway Journal for June 30, the holders of the first mortgage bonds agreed to a change in the method of the payment of interest to them, while the holders of the second or general mortgage bonds agreed to the substitution of an equal amount of income bonds for their $1,179,000 of holdings.

Mount Vernon (Ohio) Railway.—The property of the Mount Vernon Railway was sold on Dec. 15 for $28,600. The road will be dismantled and junked. The property was placed in the hands of a receiver in 1915. It was sold in 1916, but that sale was not confirmed by the court.

Oakland, Antioch & Eastern Railway, Oakland, Cal.—The suit for foreclosure proceedings instituted by Howard D

Smith and associates, as owners of bonds of the Oakland & Antioch Railway, against the Oakland, Antioch & Eastern Railway has been submitted in the Superior Court of Contra Costa County, after argument and after a motion for a non-suit had been entered by the defendant companies. Mortimer Fleishhacker, president of the Anglo-California Trust Company, trustee under the trust deed, testified that while he had discussed the affairs of the Oakland & Antioch Railway with security holders, he had never considered a suit to foreclose, nor had any such contingency been suggested. He said that such a course would have accomplished no useful purpose or end and would have disrupted the management. He knew from personal observation that the road had been exceedingly well managed under adverse conditions.

Southwestern Traction Company, Temple, Tex.—The property of the Southwestern Traction Company was sold at public auction on Dec. 19 under an order issued by the United States District Court, to F. F. Downs, Temple, for $10,000 subject to $130,000 of outstanding bonds.

Trenton & Mercer County Traction Corporation, Trenton, N. J.—Upon application of the Trenton & Mercer County Traction Corporation the New Jersey Board of Public Utilities Commissioners has modified an order made last May permitting the issuance of notes amounting to $66,000 for the purchase of ten cars. Five of these cars were recently destroyed by fire at the carhouse of the company. Under the modified order the notes will bear 6 per cent interest instead of 5 per cent interest.

Electric Railway Monthly Earnings

Period	Operating Revenue	Operating Expenses	Operating Income	Fixed Charges	Net Income
BATON ROUGE (LA.) ELECTRIC COMPANY					
1m., Oct., '17	$19,338	*$10,119	$9,219	$3,616	$5,603
1 " " '16	18,509	*8,319	10,190	3,532	6,658
12 " " '17	228,746	*114,337	114,409	42,591	71,818
12 " " '16	208,536	*102,548	105,988	40,285	65,703
BROCTON & PLYMOUTH STREET RAILWAY, PLYMOUTH, MASS.					
1m., Oct., '17	$9,509	*$10,226	†$717	$1,286	†$2,003
1 " " '16	9,964	$9,306	658	1,128	†470
12 " " '17	124,190	*123,838	352	14,386	†14,034
12 " " '16	121,336	*106,240	15,096	13,264	1,832
EASTERN TEXAS ELECTRIC COMPANY, BEAUMONT, TEX.					
1m., Oct., '17	$76,333	*$45,043	$31,290	$12,242	‡$21,678
1 " " '16	72,130	*37,862	34,268	8,759	25,509
12 " " '17	925,937	*511,642	414,295	131,953	‡296,284
12 " " '16	817,842	*435,548	382,294	106,336	275,958
EL PASO (TEX.) ELECTRIC COMPANY					
1m., Oct., '17	$111,011	*$65,970	$45,041	$6,501	$38,540
1 " " '16	104,990	*55,576	49,414	5,286	44,128
12 " " '17	1,284,073	*777,855	506,218	64,601	441,617
12 " " '16	1,088,443	*633,775	454,668	56,891	397,777
GALVESTON & HOUSTON ELECTRIC COMPANY, GALVESTON, TEX.					
1m., Oct., '17	$197,919	*$126,614	$71,305	$38,403	$32,902
1 " " '16	171,761	*107,012	64,749	36,858	27,891
12 " " '17	2,028,899	*1,349,087	679,812	447,661	232,151
12 " " '16	1,929,671	*1,231,365	698,306	438,617	259,689
HOUGHTON COUNTY TRACTION COMPANY, HOUGHTON, MICH.					
1m., Oct., '17	$26,023	*$17,850	$8,173	$5,076	$3,097
1 " " '16	25,956	*15,756	10,200	5,240	4,960
12 " " '17	341,821	*208,704	133,118	61,631	71,487
12 " " '16	320,263	*181,911	138,352	64,478	73,874
NORTHERN TEXAS ELECTRIC COMPANY, FORT WORTH, TEX.					
1m., Oct., '17	$298,951	*$142,029	$156,922	$29,148	‡$137,357
1 " " '16	205,490	*102,633	102,857	29,442	73,415
12 " " '17	2,363,682	*1,346,955	1,016,727	349,354	‡676,956
12 " " '16	1,886,666	*1,146,542	740,124	345,315	394,809
PADUCAH TRACTION & LIGHT COMPANY, PADUCAH, KY.					
1m., Oct., '17	$26,210	*$20,278	$5,932	$7,682	†$1,750
1 " " '16	26,437	*17,390	9,047	7,241	1,806
12 " " '17	304,065	*232,221	71,844	88,797	†16,953
12 " " '16	310,557	*203,171	107,386	87,075	20,311
SAVANNAH (GA.) ELECTRIC COMPANY					
1m., Oct., '17	$88,589	*$59,743	$28,846	$24,526	$4,320
1 " " '16	72,246	*49,068	23,178	23,830	†652
12 " " '17	942,348	*625,264	317,084	288,959	28,125
12 " " '16	806,554	*545,425	261,129	281,513	†20,384
TAMPA (FLA.) ELECTRIC COMPANY					
1m., Oct., '17	$82,709	*$46,814	$35,895	$5,501	$30,394
1 " " '16	82,457	*43,762	38,695	4,263	34,432
12 " " '17	1,007,494	*557,897	449,597	54,532	395,065
12 " " '16	964,328	*527,078	437,250	52,269	384,981

*Includes taxes. †Deficit. ‡Includes non-operating income.

Traffic and Transportation

Dallas Jitneys Lose

Ordinance Requiring Heavy Indemnity Bonds Upheld by the Court of Civil Appeals

The Court of Civil Appeals for the Fifth Supreme Judicial District of Texas, sitting at Dallas, has upheld the ordinance enacted by the city of Dallas under the administration of Henry D. Lindsley as Mayor on Jan. 5, 1917, requiring heavy indemnity bonds from all jitney drivers in Dallas. The Court of Civil Appeals also ruled on another jitney case unfavorably to the jitney drivers. This was the case styled Henry D. Lindsley, Mayor, et al. vs. the Dallas Consolidated Electric Street Railway, in which the railway had secured an injunction in the lower courts restraining the city from enforcing the ordinance initiated by the jitney drivers and adopted by the people on the face of the returns at a referendum election. The judgment of the lower court was upheld and the injunction was continued in force.

These two decisions taken together mean that the initiated ordinance, passage of which was secured by the jitney men and which was considered as favorable for their continued operation, is declared void and the ordinance enacted by the city of Dallas with a view to eliminating the jitneys is upheld and is now the law in Dallas.

According to City Attorney Callaway, the jitneys in Dallas may continue to operate unmolested until final judgment is rendered in these cases. The city of Dallas has fifteen days in which to file motion for rehearing in the Lindsley case, and if this motion is overruled, motion for writ of error to the State Supreme Court may be filed. It is expected that final judgment may be entered inside of two months. In the meantime the jitneys will continue operation at will. Many jitney drivers, however, have already admitted that their fight is hopeless and are indisposed to carry it further.

PROVISIONS OF DALLAS ORDINANCE

The principal provisions of the ordinance that is upheld by the opinion of the Court of Civil Appeals are as follows:

"A motor bus means any automobile, auto truck or trackless motor vehicle engaged in the business of carrying passengers for hire within the city. The 'donation' plan is not excepted.

"No motor bus may run without a license. Application must be made in writing, said application to state over what route the applicant wants to operate and the length of time such license is desired.

"The motor vehicle must be examined and found safe.

"No license shall be granted until the operator of the car furnishes bond in the sum of $2,500. Suits for damages may be brought on this bond.

"Routes may be changed upon the payment of a $1 transfer fee. It will be unlawful for an operator to leave the route granted.

"Licenses may be secured for six months or one year at the rate of $65 per annum. Licenses are not transferable. License fees are $10 in addition to the $65.

"Motor buses must be operated continuously on each day except Sundays between the hours of 7 o'clock a. m. and 11 o'clock a. m. and 3 o'clock p. m. and 7 o'clock p. m. except in cases of illness, breakdown or other accident. Jitneys can run a longer period of time but cannot reduce the hours named.

"Each motor bus must have the route painted with oil and lead on the windshield and the word 'bus' painted on the back of the car with oil and lead, the letters to be 5 in. high.

"For any person who violates the provisions of the ordinance the judge of police court may order a fine of not less than $5 nor more than $100.

"Upon conviction the judge of the court may declare the license forfeited. Once a license is forfeited the driver is not eligible for another such license within six months."

I. U. T. Fare Hearing Concluded

Final Arguments Are Confined Almost Entirely to the Question of Jurisdiction

The hearing before the Public Service Commission of Indiana on the petition of the Union Traction Company of Indiana for increased rates of fare was concluded on Dec. 20. The final arguments on the petition were devoted almost entirely to the question of jurisdiction. When the hearing closed the commission had before it two main questions, one of jurisdiction and one of whether the relief requested by the company should be granted. The motions for the dismissal of the petition were filed by attorneys representing Indianapolis, Broad Ripple, Marion, Elwood, Muncie, Fairmount and Grant County.

INDIANAPOLIS DECISION CITED

Woodburn Masson referred to the decision of the commission that it was without jurisdiction in the petition of the Indianapolis Traction & Terminal Company to increase fares to 5 cents straight, that decision being based on the failure of the company to surrender its franchise and on the fact that the 1899 law, under which Indianapolis made a franchise contract, was specific on maximum rates of fare to be charged. Mr. Masson said the same law authorized the city to contract with interurban lines.

J. E. Van Osdol, attorney for the company, assuming but not conceding that the decision of the commission in the case of the Indianapolis Traction & Terminal Company was correct, said the franchise of Indianapolis was probably the one exception in this case, in that the State law granting the franchise practically said what the contract should contain. As to Broad Ripple, he said that town had no power to contract on rates outside the corporation boundaries. He contended that in the cases of all the cities concerned in the Union Traction Company petition the Public Service Commission had emergency power to change rates whenever the necessities of the properties required it. He took the stand that the power to make franchises was permissive to cities and towns and that the State may step in and exercise its paramount authority whenever it desired to do so. He argued that cities and public service corporations were creatures of the State and could make only such contracts as would be at all times within the control of the State.

ESTIMATES OF CONSTRUCTION COST DIFFER

H. O. Garman, chief engineer of the Public Service Commission, on Dec. 20 testified as to the physical value of the property. The estimated construction cost presented by the company officials amounted to $20,245,717. Mr. Garman's estimate was $17,456,729. He stated that according to his calculations the present value of the system, allowing 15 per cent for depreciation, was approximately $14,880,273. These values do not include any allowances for franchise values.

Citizens Must Select Jitneys or Trolley

In a notice served on Dec. 21 upon the Selectmen of Nahant, Mass., the Nahant & Lynn Street Railway informed the officers of the town that service would be curtailed on Jan. 1 and the discontinuance of the line considered unless relief from jitney competition was furnished. The Nahant Selectmen granted ten jitney licenses between Central Square, Lynn, and the terminal of the electric railway, the trip on the jitneys costing 10 cents. The fare on the electric railway is 14 cents, of which the Bay State Street Railway receives 6 cents for the use of a short stretch of track in Lynn and the Nahant company receives the balance. In a letter to the individual members of the Board of Selectmen the company pointed out that it could not compete with the jitneys. Notice was also given that after Dec. 31 the company would operate only twelve cars in twenty-four hours, as allowed by its charter. The company maintained a fifteen-minute schedule in summer and a headway of one hour in winter. Many privately-owned automobiles in Nahant have also been the means of cutting into the company's revenue.

Tinkle, Tinkle, Little Car

Clever Skit on the One-Man Car by the Poet of the "Post-Intelligencer"

Tinkle, tinkle, little car—if indeed that's what you are—running on the Summit line—how I wish that you were mine. I would put you in my flat as a playroom for our cat, so he couldn't catch our bird. You may think it sounds absurd; but when first the thing I spied, "Holy Smokes!" I wildly cried, "someone's child has strayed afar on his little kiddie kar."

When at length it came along, I decided I was wrong; thought it was the private bus of some plutocratic cuss, who prefers to ride alone with a street car all his own—or perhaps a circus van. Then it was the little man, seated on a stool in front, did a great magician stunt; pulled a throttle open wide, then a casement by his side folded up like some big fan. When this novel act began, down a tiny platform dropped and upon it people hopped, with their car fares in their hands. Then I saw a sight: My land!

Some had dollars, some had dimes. He makes change a dozen times, answers questions with a smile, hollers "Step up in the aisle"; pulls a lever here and there, regulating brakes and air. When he is prepared to go, shuts the birdcage with his toe, moves a gadget with his knee—regulates the speed, you see—pulls the bell cord with his teeth, lest some folks get caught beneath. That would throw 'er off the track; maybe flop 'er on 'er back. Calls out names of every street, punches transfer with his feet. Thus he earns his daily pay, running cars out Summit Way. Worth a jitney, yea, and more, just to see him fold that door.—Seattle *Post-Intelligencer.*

Need for Economy

Assistant General Manager of the Detroit United Railway Makes Plea for Employee Co-operation

E. J. Burdick, assistant general manager of the Detroit, Mich., United Railway, has addressed to the force of the company the following letter on the need for economy:

"The condition that confronts us to-day is one that calls for earnest and thoughtful consideration on the part of each of us. I am therefore addressing this appeal to you in the hope and expectation that our company will receive your full and hearty co-operation.

"You *can* help.

"There isn't a man in the rank and file of the company but is in a position to lend valuable aid.

"Although we are operating many more miles of track now than a year ago in the city of Detroit with the car-mileage increased nearly 500,000 miles a month, our earnings have gone down from a daily gain of $6,000 in January to a loss of $2,500 at the present time. And there is no sunshine in sight.

"Business conditions have changed materially since the first of the year. Many factories find their orders decreasing. There are men walking the streets looking for work. All this has a serious effect upon us, for it takes the prosperity of others to bring prosperity to the company. When people are not working they are not buying car rides.

COAL COSTS $1,000,000 MORE THIS YEAR

"With business on the decline and the cost of everything we use going up you readily appreciate the need of saving. We are paying more for material, for taxes, for labor, for fuel—in fact, for everything necessary in the business. For instance, coal for our power houses will cost $1,000,000 more this year for the same amount of fuel.

"Yet our business is not as great.

"It follows that every economy must be practiced. We've got to do it exactly as the average household is obliged to exercise the greatest care.

"Save for the company just as you save for yourself. It is just as important and just as necessary. You are familiar with the work you are doing, and so a little study will enable you to determine wherein you can do your bit.

"Each and every man in every department can find ways of helping, and in doing this each one is helping himself, the company, the community and the country.

"New material is almost impossible to obtain; therefore, we must carefully guard what we have that it may last as long as possible.

"Cars and other equipment ought to be carefully used in order that accidents may be avoided.

"Our fuel supply is limited and must not be wasted. Therefore cars that are not actually needed should not be run by any department. Motormen can be of great assistance in saving by coasting wherever possible and using care in starting cars.

"Please remember that the less 'juice' used the less coal must be put in the furnace at the power houses.

"We believe the complete establishment of the rerouting and skip-stop plans will materially reduce accidents and so save money for other purposes.

"Please let us have team work by every man in the operating, mechanical, track and power departments. Let us accomplish results."

Delay Unlikely in Indianapolis Case

The Chamber of Commerce of Indianapolis on Dec. 21 filed a petition before Judge Louis B. Ewbank of the Circuit Court asking for a continuance until Jan. 7 of all hearings in the mandamus suit brought by the Indianapolis Traction & Terminal Company to compel the Public Service Commission of Indiana to assume jurisdiction in the matter of the company's petition for proposed increase in street car fares. In taking this action the Chamber of Commerce did not assume any position regarding the merits of the proposed petition, but as the present city administration had shown no disposition to demand representation in the case, the Chamber of Commerce requested this delay in order that the new city administration might decide on any action it wished to take. Judge Ewbank told the representatives of the Chamber of Commerce that he did not see how he could entertain a request from that body for a continuance of the hearing on the demurrer set for Dec. 26, and indicated that the court would go ahead with the hearing on that date.

New York Railways Warns Children

Conductors of the New York Railways, operating surface lines in New York City, on Dec. 22 began distributing to children copies of an illustrated booklet of "Mother Gooselets," which the company has just published as part of its campaign againts accidents. Theodore P. Shonts, president of the company, has addressed this letter directly to the children of New York; it is printed on the back cover of the book of rhymes:

"Dear Children: I want you to have all the fun in the world, but I don't want a car to run over you and cut off your legs or your arms. Every day boys and girls get hurt while playing in the streets of New York.

"When you play, keep away from the trolley cars. When you are on the streets look out for cars, wagons and automobiles. Do as your mother tells you. Always be careful."

Public Asked to Co-operate

The Fort Wayne & Northern Indiana Traction Company, Fort Wayne, Ind., has issued an appeal to its patrons through the medium of the daily press, asking for assistance in keeping the service of the company at its present high efficiency. Among the points mentioned by the company are entering and leaving cars promptly, having the exact fare ready and transfers unfolded upon entering cars. Patrons are advised that these suggestions are necessary now on account of the additional burdens thrown upon the service on account of holiday traffic and more especially during the winter season when snow, ice and the use of tracks by wagons, trucks, and automobiles increase the handicaps under which the company must operate.

The Urbana & Champaign Railway, Gas & Electric Company, controlled by the Illinois Traction Company, is also asking the co-operation of the public in maintaining the efficiency of its service. The East St. Louis & Suburban Railway is another company which is appealing to the bar of public opinion for a fair and equitable hearing.

I. U. T. Advertises Its Service

The Union Traction Company of Indiana, Anderson, carried in the Indianapolis *News* before Christmas a very striking advertisement which was the cause of much favorable comment. The reading matter in the advertisement, which covered two-thirds of a page, was surrounded on three sides with pictures of alarm clocks the hands of which were set at different hours. For instance, there was a clock with the hands set at 5 o'clock in the afternoon, with the hour of 5 p. m. noted below as the leaving time of the Marion Flyer, the Muncie Meteor, another train to Anderson, Muncie and Fort Wayne, and still another train to Kokomo and Logansport. Other hours throughout the day were noted in a similar way. Not only did the company describe the passenger travel in detail and note the merits which this class of its service has over other modes of transportation, but it called attention to its superior facilities for handling freight to and from Indianapolis and many towns in northern Indiana, and some in southern Michigan. The protection of block signals and steel coaches and the quick and economical way the company has of handling freight through its Merchants Dispatch were also mentioned.

Women on B. R. T. Surface Cars

Several Now Being Introduced in Brooklyn Add to Large Number Already in Transportation Service in Greater New York

The possibilities of women for platform work become increasingly evident with their introduction as surface car conductors by the Brooklyn (N. Y.) Rapid Transit Company, which has had women in service as subway guards for the last two months. This action, of course, is the result of a general shortage of labor caused by the war, about 500 trainmen of the company now being in government service. About a dozen conductresses are already working independent runs, besides about twice that number acquiring experience on the cars and receiving instruction.

The first women conductors are being assigned to the low-level, center-entrance, pay-as-you-enter cars, of which the company has about 100, operating on the Flatbush Avenue line. Their fitness for the work and the demands of the service will determine whether they will be employed subsequently on other cars. Applications are received in the regular way and the women begin at the same rate of pay as the men in the same position. Special accommodations for their convenience have been provided at the Flatbush Depot. The age limits are twenty and forty-five years.

The women whose applications are accepted and who have passed certain physical requirements are placed in the school, which is in charge of J. J. Duffy, chief instructor. In the classroom they are taught to make out accident reports, day sheets and route, register and time cards, and are made familiar with the car equipment with the help of a three-quarter length model of one of the low-level cars. After two days those who qualify work on trial runs for about three days, assisted by an instructor.

The conductress on these cars, in addition to making change and operating the doors, changes the entrance railings and curved end seats when the motorman changes cabs at the end of the line, and also has charge of the heating, lighting and ventilating of the car. Fares are collected as the passengers enter, the conductress being stationed in the center well at a pedestal which has a change table on top. On the side of the pedestal are mounted push buttons for opening and closing the doors, to signal the motorman and to ring up cash fares and transfers. The doors are air operated and can be closed also with a foot trip.

The uniform selected consists of a cap and a sacque coat made of blue cloth like that worn by the men. The skirt is not made of special material. The coat is trimmed with brass buttons and has a small military collar. This uniform is quite similar to that worn by the company's women subway guards, illustrated in an article in the ELECTRIC RAILWAY JOURNAL for Oct. 27, page 771. It was considered suitable in this service also, inasmuch as the conductress's duties do not necessitate her leaving the car.

Stay in Rochester Fare Case

An order has been granted upon the application of B. B. Cunningham, Corporation Counsel of the city of Rochester, and served upon the Public Service Commission for the Second District of New York and the New York State Railways to show cause why an alternative writ of prohibition should not be issued directing the commission and the railway to suspend further proceedings in the matter of the application of the New York State Railways for authority to increase its passenger fares in the city of Rochester. The order was served upon Chairman Van Santvoord of the Commission on Dec. 26. It was granted on Dec. 24 by Supreme Court Justice Adolph J. Rodenbeck of Rochester.

The serving of this order stays all further proceedings by the Public Service Commission in this matter until a determination of the motion made by Attorney Cunningham has been reached by the courts. The application is returnable in a special term of the Supreme Court to be held in Troy on Jan. 19. For this reason this rate increase case, which was set for hearing on Dec. 26, before the Public Service Commission, has been taken off the calendar.

Increase in Rockford Suburban Fare.—The Rockford & Interurban Railway, Rockford, Ill., has increased the fare from Rockford to Freeport from 50 cents to 54 cents, making the rate 2 cents a mile.

Increase in Fare in Pittsburgh to be Asked.—In announcing the increase in the wages of its motormen and conductors, to which reference is made elsewhere in this issue, the Pittsburgh (Pa.) Railways gave notice that it would petition the Public Service Commission of Pennsylvania for permission to increase the fare from 5 cents to 5.55 cents when a book of eighteen tickets for $1 is purchased, or a straight 6-cent rate for single fares.

Another Cleveland Fare Increase.—J. J. Stanley, president of the Cleveland (Ohio) Railway, announced on Dec. 24 that fare rate C of the Tayler franchise will go into effect on Dec. 27. That means that the 1 cent charged for transfers will not be rebated. Rate D has been in effect only since Dec. 15, but Mr. Stanley stated that this had yielded no more income than the old rate E and that it was necessary to increase the income before the deficit in the interest fund grew too large.

One-Man Cars for Dallas.—The city of Dallas, Tex., through the City Commission, N. M. Baker, supervisor of public utilities, has approved the proposal of the Dallas Railway to install one-man cars on several lines in Dallas. The use of the cars was approved after an investigation of the operation of similar cars in Fort Worth. The Dallas Railway has ordered twelve one-man cars, which it will put in service on several of the most congested lines as an experiment. If these are found to be satisfactory other cars will be ordered.

Bay State Publicity Is Appreciated.—In testifying at a recent fare hearing before the Public Service Commission of Massachusetts, Robert S. Goff, vice-president of the Bay State Street Railway, described how the company, through its weekly bulletin, *Your Street Railway Service*, is endeavoring to make its case clear to the public. The circulation is about 100,000 copies a week, of which 10,000 are mailed. Recently, Mr. Goff said, a Selectman of one of the towns voluntarily stated that he looked forward to the coming of each week's bulletin and thought that the publication was a step in the right direction.

Clerks in Washington Start Work Earlier.—Secretary of the Interior Lane has changed the hours of work of all employees in the Interior Department building in Washington, D. C., effective Jan. 1, so as to run from 8.45 a. m. to 4.15 p. m. instead of from 9 a. m. to 4.30 p. m. This change was made after consideration had been given to figures showing the times of day at which the cars of the Washington Railway & Electric Company and the Capital Traction Company patronized by employees in the new Interior Department building are most greatly crowded. It is believed that the change will relieve congestion to some extent.

Fatal Accident in Pittsburgh.—Fourteen persons were killed and many other passengers on a Knoxville car of the Pittsburgh (Pa.) Railways were hurt on Dec. 24, when the car ran away in a tunnel which connects the south side business district with the south hills. After a dash of almost a mile through the tube the car emerged at Carson Street and turned over on its side. A statement issued by the company said: "The car was of the most modern and substantial construction and equipped with every modern device for the safety of passengers. We have been unable yet to learn just how the accident happened."

Error in Transmitting Fare Story by Telegraph.—In the article, "Decision in Indianapolis Fare Case" reported in the ELECTRIC RAILWAY JOURNAL of Dec. 15, page 1095, there was an error in the second paragraph from the bottom of the page, made in the transcription of the telegraphic message. As printed the sentence referring to the street railway situation at the time of the franchise grant reads "was a desperate one because of the recent fare law and the uncertain court decisions." This should read "was a desperate one because of the 3-cent fare law and the uncertain court decisions." This is, of course, a matter of importance in considering the argument presented.

Chicago Surface Lines Holds Christmas Party.—A novel plan was adopted this year for the Christmas party of the Chicago Surface Lines by devoting it entirely to the children of Surface Lines' employees. The party was held in the afternoon of Dec. 22 and was attended by nearly 800 employees and their children. No employee was admitted without a child. The entertainment was provided principally by employees, and a Santa Claus distributed presents from a Christmas tree. There were singing and dancing and various stunts to amuse the children. Following the fixed program as carried out in the auditorium of the Surface Lines' Club, there was story telling by several ladies in different rooms about the club house.

Fare Increase Case Held Over.—At the second hearing on the petition of the Aurora, Elgin & Chicago Railroad for a fare increase, held on Dec. 20, the Mayors of Maywood, Aurora and Elgin and other objectors took an active part in the opposition. Mr. Bulkeley, Chicago, retained as attorney by the Mayors, took the position that he had just been engaged on the case and that he had not had time to look into the matter. He asked that the hearing be held over until he could have time to go over the evidence presented by the company, examine witnesses, etc. He requested that the matter be put over for thirty days. With this encouragement, several other objectors took a similar position and the commission decided that another hearing of the case should be held on Jan. 11.

Application for Fare Increase in Fort Wayne.—The Fort Wayne & Northern Indiana Traction Company, Fort Wayne, Ind., on Dec. 21 filed a petition with the Public Service Commission asking for permission to increase passenger rates in Fort Wayne to a straight 5-cent fare. The company says that for the last five years its earnings have not been sufficient to pay operating costs and taxes and "even 4 per cent" on the physical value of the property used in the Fort Wayne city service. The rate of fare is now six tickets for 25 cents. A date for the hearing before the public service commission has not yet been set. The petition is of the same general character as that filed some time ago by the Indianapolis Traction & Terminal Company and by the Union Traction Company of Indiana.

Shop Early Appeal in Seattle.—The Puget Sound Traction, Light & Power Company, the Seattle & Rainier Valley Railway and the Seattle Municipal Railway have started a definite campaign to educate the women shoppers to complete their shopping and start for home before 4 o'clock. The rush hour in Seattle has been moved from 5 o'clock to 4 o'clock, due to the tremendous growth of the Seattle shipbuilding industry. More than 30,000 workers are employed in this and allied industries, whose working day ends at 4 o'clock, and it has become a problem to provide transportation for the men. "Car Full" signs are now common on the coaches that cross Pike Street (the northern part of the retail district), and the cars are often loaded to capacity before they reach the shopping district.

Personal Mention

J. M. Mellor has been appointed acting manager of the Hartford & Springfield Street Railway, Warehouse Point, Conn., effective Jan. 1, to succeed J. S. Goodwin, whose appointment to the Connecticut Company is noted elsewhere in this column.

Bion J. Arnold, Chicago, prominent consulting engineer, has been commissioned a lieutenant-colonel in the aviation section of the Signal Corps and assigned to foreign service. He was called into active service on Dec. 22, when he proceeded to Washington. It is understood that he will be assigned to service in France in the very near future.

Charles H. Chapman, who has been manager of the lines of the Connecticut Company at Bridgeport, has been transferred by the company to Waterbury, where he will succeed H. L. Wales, who retires from the company on account of ill health. Mr. Chapman has been at Bridgeport as superintendent and manager since June, 1907. Before that he was superintendent of the lines of the company at Middletown.

J. J. DEMPSEY

John J. Dempsey, superintendent of elevated transportation of the Brooklyn (N. Y.) Rapid Transit Company, was elected vice-president of the company on Dec. 27 to succeed S. W. Huff, who on Jan. 1 becomes president of the Third Avenue Railroad, New York. Mr. Dempsey started his railroad career as a boy with the Lehigh Valley Railroad. In 1894 he severed his connection as telegraph operator with that company to take a position as telegraph operator with the Brooklyn (N. Y.) Union Elevated Railroad. He remained with this company until June, 1897, when he resigned to return to the Lehigh Valley Railroad as telegraph operator, from which position he was promoted to yardmaster. In 1900 he left the Lehigh Valley Road and re-entered the employ of the Brooklyn Rapid Transit Company as assistant dispatcher. He was successively advanced from assistant dispatcher to dispatcher, trainmaster, chief dispatcher, assistant superintendent and finally superintendent of transportation of the New York Consolidated Railroad (Brooklyn Rapid Transit System). Mr. Dempsey has also been elected a vice-president of the operating subsidiaries of the Brooklyn Rapid Transit Company, including the Brooklyn Heights Railroad; Brooklyn, Queens County & Suburban Railway and others. He has served on a number of committees of the American Electric Railway Association and was president of the New York Electric Railway Association in 1915-1916. He is now a member of the executive committee of the American Electric Railway Transportation & Traffic Association.

W. J. Canada, who has had a leading part in the development and application of the National Electrical Safety Code, has resigned his position as engineer with the United States Bureau of Standards and has joined the staff of the American International Shipbuilding Corporation, with headquarters at Philadelphia, Pa. At one time Mr. Canada was superintendent of motive power of the Appleyard lines in Ohio, and later was electrical and hydraulic engineer for the Rocky Mountain Fire Underwriters' Association. He has been actively connected with a number of associations and committees organized to reduce accident and fire hazards, serving a term as president of the Western Association of Electrical Inspectors. When the Bureau of Standards became interested in safety work Mr. Canada joined its staff through the civil service, and has spent several years of conscientious and faithful work in bringing about the co-operation of numerous interests affected by the Safety Code. This work has brought him into contact with state public utility commissions, public utility officials and others whose respect he has gained and holds.

J. S. GOODWIN

J. S. Goodwin has resigned as secretary, manager and purchasing agent of the Hartford & Springfield Street Railway, Warehouse Point, Conn., to become manager of the lines of the Connecticut Company at Bridgeport. Mr. Goodwin was born in Beverly, Mass., in 1877. He entered railway work in 1895 as a motorman on the Gloucester, Essex & Beverly Street Railway, now a part of the Bay State Street Railway. He was subsequently employed as a motorman for a short time with the Rhode Island Company, Providence, R. I. In 1901 he entered the employ of the Hartford & Springfield Street Railway as a motorman. He was later appointed a dispatcher of the company. In 1906 he was advanced to chief dispatcher and served in that capacity until February, 1914, when he was made secretary and superintendent of the company. He was subsequently made general manager of the company.

W. G. McAdoo, appointed by President Wilson as director of railroads, will direct the organization of railroad control by the government from the Treasury Department and will continue to be Secretary of the Treasury. No idea of the plan of organization contemplated by Mr. McAdoo had been made public up to Dec. 28. Mr. McAdoo was named by President Wilson as Secretary of the Treasury in 1913. Previous to that he was president of the Hudson & Manhattan Railroad operating between New York and New Jersey under the Hudson River. Mr. McAdoo was born in Marietta, Ga., on Oct. 31, 1863, and was admitted to the bar at Chattanooga, Tenn., when he was twenty-one. In 1892 he began the practice of law in New York, and four years later he formed a partnership with William McAdoo, formerly police commissioner of New York. Ten years after he took up his residence in New York Mr. McAdoo launched the enterprise of burrowing under the Hudson River to link the cities on the New Jersey shore with the shopping district of Manhattan. He set a very high standard of service for the employees of the Hudson & Manhattan Railroad and that property attracted unusual attention by the practical results which were obtained with the policy "The Public Be Pleased."

C. H. ANDREWS

C. H. Andrews, assistant to the president and chief engineer of the North Carolina Public Service Company, Greensboro, N. C., has been appointed general superintendent of the Southern Utilities Company, which operates electric light and power, gas and ice properties throughout Florida, under the management of The J. G. White Corporation, New York, N. Y. He will assume his new duties on Jan. 1. Mr. Andrews was graduated from Purdue University, Lafayette, Ind., in 1908, receiving the degree of Bachelor of Science in Electrical Engineering. After graduation he entered the employ of the Public Service Corporation of New Jersey, Newark, serving in the meter department of that company. In 1909 he became connected with the North Carolina Public Service Company, and soon thereafter he was appointed superintendent of the light and power department. Later on he was made departmental manager of new business. In 1911 he was promoted to the position of assistant general manager, in charge of electric, gas and street railway utilities in Greensboro and High Point, N. C., and in 1917 his position was made assistant to the president and chief engineer. In connection with his general duties, Mr. Andrews has devoted much time with success to studying the question of rates and their application. He is a member of the American Institute of Electrical Engineers and of the American Gas Institute.

H. L. Wales has resigned as manager of the lines of the Connecticut Company at Waterbury on account of ill health.

R. L. Easter has been promoted from the position of master mechanic to that of general manager of the Greenville Railway & Light Company, Greenville, Tex. He entered the employ of the company in 1911, and two years later was appointed cashier. In 1916 he became master mechanic of the company, which position he held until appointed general manager.

William A. Del Mar has resigned as assistant electrical engineer of the Interborough Rapid Transit Company, New York, N. Y., to become chief engineer of the Electric Cable Company and the Habirshaw Electric Cable Company, Inc., New York, N. Y. Mr. Del Mar is a native of San Francisco. He was graduated in 1900 from the City and Guilds' College of London. After completing a course in the testing department of the General Electric Company, he became associated successively with the Manhattan Railway, the New York Central Railroad and the Interborough Rapid Transit Company. He made a specialty of transmission and distribution work while with the New York Central Railroad and was selected by the late H. G. Stott to design the distribution system of the new Interborough subways and to re-design those of the old subways and elevated lines. Mr. Del Mar is author of a book on wires and cables entitled "Electric Power Conductors" and of the articles on wires and cables in Pender's handbook. He was for several years chairman of the wire and cable committee of the Association of Railway Electrical Engineers, and in that capacity was active in the standardization of specifications for wires and cables. He is also secretary of the joint rubber insulation committee, which has prepared standard specifications and an analytical procedure for high-grade rubber insulation. He has been a member of the standards committee of the American Institute of Electrical Engineers since 1913, and has taken an active part in its work, especially in matters relating to railroad standards and wires and cables. He is chairman of both the sub-committee on railway standards and the sub-committee on wires and cables. In the latter capacity he is assisting the Navy Department in the design of cables for the new electrically driven warships. Mr. Del Mar is also a member of the board of directors of the American Institute of Electrical Engineers. In his new position Mr. Del Mar will have charge of engineering work and will establish a research laboratory for investigating problems relating to wires, cables and insulating materials.

W. A. DEL MAR

Obituary

Arthur L. Wheeler, vice-president of the J. D. Este Company, Philadelphia, Pa., died in that city on Dec. 20. Mr. Wheeler was forty-four years old. Following his graduation from Princeton in 1896 he entered the banking firm of Winthrop Smith & Company.

E. A. Heron, who was president of the Oakland Traction Company before its reorganization as the San Francisco-Oakland Terminal Railways, died on Dec. 5 at his home in Oakland, Cal., after a short illness. Mr. Heron was born in Galena, Ill., sixty-five years ago.

Construction News

Construction News Notes are classified under each heading alphabetically by States.

An asterisk (*) indicates a project not previously reported.

FRANCHISES

Los Angeles, Cal.—An ordinance has been adopted by the Board of Supervisors granting a forty-year franchise to the Pacific Electric Railway for the construction and maintenance of an electric railway along certain public roads and highways in Los Angelese County.

Brookfield, Mass.—The Worcester & Warren Street Railway has received a franchise from the selectmen of Brookfield to conduct a trolley freight and express business.

Lorain, Ohio.—The City Council of Lorain has rejected the Franchise recently submitted by the Lake Shore Electric Railway and the Lorain Street Railway, a subsidiary.

Aliquippa, Pa.—The Woodlawn & Southern Railway has received a franchise from the City Council for the construction of a line on South Hopewell Avenue from the Woodlawn-Aliquippa borough line to the Pittsburgh & Lake Erie Railroad subway.

TRACK AND ROADWAY

Fort Smith Light & Traction Company, Fort Smith, Ark.—This company will rebuild about 1 mile of track.

Northern Electric Railway, Chico, Cal.—Improvements resulting in the expenditure of more than $27,000 will be made by the Northern Electric Company on its line on C Street between Twenty-fifth and Thirty-first Streets. The 60-lb. T-rails will be replaced with 127-lb. grooved rails. It is stated that the T-rails will be replaced with grooved rails throughout the entire system.

Sacramento Valley Electric Railroad, Dixon, Cal.—This company reports that its line is being dismantled and the 12 miles of roadbed, right-of-way and ballast, its fences and bridges are for sale.

Cienfuegos, Palmer & Cruces Electric Railway & Power Company, Cienfuegos, Cuba.—A report from this company states that it has under construction extensions to Cruces, Cumanayagua and Carlota Mine.

Miami (Fla.) Traction Company.—A report from the Miami Traction Company states that it will build 4 miles of new track between Miami and Miami Beach during 1918.

Columbus (Ga.) Railroad.—About 2 miles of track will be rebuilt by the Columbus Railroad in 1918.

Caldwell (Idaho) Traction Company.—Through the subscription of $15,000 by the citizens of Wilder the electrification of the Caldwell Traction Company's branch from Caldwell to Wilder is now assured. This sum completes the loan of $25,000 made by the business men of Caldwell to the company to insure the early electrification of the line which is held to be essential to the continuance of the rapid development of the great agricultural country embraced in the territory to be traversed by the road. The work of electrifying the road is to be finished some time next year. With the completion of the work the traffic service of the road will also be enlarged.

Louisville, Ky.—A measure described as a grade crossing ordinance has been introduced in the Louisville City Council, providing that the city shall determine when and what grade crossings shall be abolished. Where steam railway lines and street railway lines intersect, the cost of construction of the underpasses, overpasses, etc., shall be borne 75 per cent by the steam line and 25 per cent by the electric line, according to the draft before the Council. When no electric crossing is involved the city will assume the 25 per cent. The measure was referred to a committee without action.

Union Street Railway, New Bedford, Mass.—This company reports that it will reconstruct 1½ miles of track next year.

Plymouth & Sandwich Street Railway, Plymouth, Mass.—A report from the Plymouth & Sandwich Street Railway states that during 1918 it will place in service about 4½ miles of track between the village of Sagamore and the village of Bourne, both in the town of Bourne.

Grand Rapids (Mich.) Railway—It is reported that a cross-town extension to the northeastern section of the city is being considered by the Grand Rapids Railway.

McComb & Magnolia Railway & Light Company, McComb, Miss.—Merle R. Walker, secretary of the McComb & Magnolia Railway & Light Company, advises that about 8 miles of track will be built by the company during the coming year on its proposed line to connect Summit, McComb, Fernwood and Magnolia. [July 28, '17.]

Southwest Missouri Railroad, Webb City, Mo.—This company reports that in 1918 it will place in service 8 miles of track between Baxter Springs, Kan., and Picher, Okla.

Public Service Railway, Newark, N. J.—The Public Service Railway proposes to negotiate through Thomas N. McCarter, president of the company, with the federal and municipal authorities for the construction of an electric railway from Newark to the Port Newark terminal to accommodate the ship-building interests on the bay shore.

Buffalo & Depew Railway, Buffalo, N. Y.—During 1918 the Buffalo & Depew Railway will place in service 2½ miles of new track, consisting of an extension from Depew to Lancaster, ½ mile, and from Depew to Bowmansville, 2 miles.

International Railway, Buffalo, N. Y.—A report from the International Railway states that in 1918 the company will place in service 34 miles of new line between Buffalo and Niagara Falls. The company will rebuild 10 miles of line.

Hudson Valley Railway, Glens Falls, N. Y.—This company will rebuild 1.18 miles of city track.

Northern Ohio Traction & Light Company, Akron, Ohio.—This company reports that during 1918 it will place in service 6 miles of new track and will rebuild 2½ miles of track.

Cincinnati (Ohio) Traction Company.—A report from the Cincinnati Traction Company states that during 1918 it will place in service 2.44 miles of new track and will rebuild 8 miles of track.

Ardmore (Okla.) Railway.—This company plans to place in service 2 miles of new track in 1918.

Oklahoma (Okla.) Railway.—This company will reconstruct 1 mile of track next year.

Tulsa (Okla.) Street Railway.—This company is double-tracking all of its lines in Tulsa, and has ordered new cars of modern type to take the place of the old cars now in service. The improvements being made will cost about $200,000.

London (Ont.) Street Railway.—This company reports it will rebuild 1½ miles of track.

Harrisburg (Pa.) Railways.—This company will probably rebuild 1 mile of track.

Lykens Valley Railway, Williamstown, Pa.—This company will construct an extension from Tower City to Reiner City and will reconstruct 2½ miles of track.

Levis County Railway, Levis, Que.—This company will reconstruct 1½ miles of track next year.

Columbia Railway & Navigation Company, Columbia, S. C.—Surveys have been completed by the Columbia Railway & Navigation Company for its proposed interurban line from Columbia to Greenwood, via Lexington and Saluda, about 75 miles. Construction of the line has been deferred on account of financial, material and labor conditions. G. A. Guignard, Columbia, president. [Dec. 16, '16.]

Bryan & Central Texas Interurban Railway, Bryan, Tex.—This company reports that during 1918 it will build 4 miles of new track between Newsome and Wilcox.

Dallas (Tex.) Railway.—The City Commission of Dallas has issued a formal order to the Dallas Railway to relay its track on Seventh Street in Oak Cliff, from Bishop Avenue to Tyler Street, placing heavier steel on concrete foundation. The city will pave this street and the work is to be done in co-operation.

Dallas (Tex.) Southwestern Railway.—Interurban cars will be operating over the Dallas Southwestern Traction Company from Dallas to Irving by July 1, 1918, according to George Kadane, vice-president and general manager of the Creek Construction Company, which has the contract for construction of the road. The line will extend from Dallas to Irving via Cement City and Eagle Ford, thence to Cleburne via Grand Prairie and Mansfield. Most of the Grade for the road through the Trinity River bottoms has been completed, this work having been pushed before the rainy season sets in, and work will begin on the bridge over the Trinity at Dallas about Jan. 15. Material has been ordered for this and other bridges on the line, and trolley poles and trolley wire is now on hand for the line. [Dec. 8, '17.]

Seattle (Wash.) Municipal Railway.—Plans for an elevated railway on Washington Street, Whatcom Avenue and Railroad Avenue from First Avenue to Spokane Street have been approved by the City Council and it has practically been determined to submit to the voters next March a propsition to utilize $375,000 of bonds authorized in 1911 for the purchase of the property of the Seattle, Renton & Southern Railway.

Norfolk & Western Railway, Bluefield, W. Va.—A report from the Norfolk & Western Railway states that it will build approximately 16 miles of new track from Kimball to Farm and Wilcoe, W. Va., during 1918.

SHOPS AND BUILDINGS

Fort Wayne & Decatur Traction Company, Decatur, Ind.—Work has been begun by the Fort Wayne & Decature Traction Company on the construction of a new freight station at the rear of its new passenger station at the corner of Monroe and Jackson streets.

Bay State Street Railway, Boston, Mass.—The carhouse of the Bay State Street Railway, which has been in constant use by the company for thirty-eight years, will be abandoned by the company. The cars will be distributed between the West Lynn and Yoma carhouses.

Trenton & Mercer County Traction Corporation, Trenton, N. J.—Work will be begun at once by the Trenton & Mercer County Traction Corporation on the reconstruction of its carhouse recently damaged by fire. The work of rebuilding the cars that can be used again will also be begun at once.

POWER HOUSES AND SUBSTATIONS

Union Traction Company of Indiana, Anderson, Ind.—The power station of the Muncie & Portland Traction Company, being operated by the Union Traction Company of Indiana, will be discontinued, and power will hereafter be derived from the Muncie station.

St. Joseph Railway, Light, Heat & Power Company, St. Joseph, Mo.—A new 5000-kw. bleeder type General Electric turbine has been placed in operation at the St. Joseph plant of the St. Joseph Railway Light, Heat & Power Company. This type of turbine permits a maximum steam extraction of 40,000 lb. of steam an hour at 5-lb. pressure for steam heating purposes. A 7000 sq. ft. Alberger surface condenser is used to maintain the vacuum. The turbine is designed to operate on 150-lb. pressure, using dry saturated steam, and will have a water rate of about 16 lb. per kilowatt-hour when the vacuum is 28 in.

Brooklyn (N. Y.) Rapid Transit Company.—Plans have been filed by the Transit Development Company, a subsidiary of the Brooklyn Rapid Transit Company, for an addition to its electric generating system at Kent Avenue and Division Street, known as the Eastern district plant.

Sarnia (Ont.) Street Railway, Ltd.—This company reports that it has purchased one 500-kw. rotary, which will be delivered in January.

Charleston Consolidated Railway & Lighting Company, Charleston, S. C.—This company reports that it is just completing a 3450-kva., 2300 to 6600-volt transformer house.

Olympia Light & Power Company, Olympia, Wash.—This company reports that it is installing an additional 400-kw. a.c. generator in its power plant.

Manufactures and Markets

Discussions of Market and Trade Conditions for the Manufacturer, Salesman and Purchasing Agent

Rolling Stock Purchases Market Quotations Business Announcements

Eastern Purchasing Agents' View of Railway Supply Market

Prices, Now Considerably Higher Than Normal, Thought to Be at Peak—Deliveries Bother Some Factories

While prices on every description of railway equipment supplies and material have steadily advanced for the last three years, there has been no increase within a couple of months in the New York territory. If revision upward in other parts of the country are announced, competent authorities declare, though they may appear new, or else were made on account of local conditions, the figures given have governed purchases here for two or three months at least. Prices on nearly every article used in equipment or maintenance are said, by the purchasing agents of the principal railways in this section, to be at peak. Possibly there may be another mark up after Jan. 1 on a few things, which will be due to anticipated acute conditions. Manufacturers, however, realize there is a danger line in such a proceeding, and therefore they are rather loath to add to the burden which the electric traction companies are now carrying. As a matter of fact, the producers would prefer to cut the figures than to raise them.

PRICE INCREASES SINCE 1914

As an illustration of how prices on a number of standard articles have advanced since 1914 to 1917, the appended table is submitted. It was compiled by the purchasing agent of one of the largest transportation systems in the world, who considers the figures very conservative. In addition to its steam equipment, the company owns, manages and maintains a number of traction lines. Its purchases are on a very huge scale. The figures are part of a private report from the buying department for the personal information of the company's president. In tabulated form the figures, interesting and impressive, are as follows:

	1914	1915	1916	1917
Cross-ties, white oak	$0.95	$0.92	$1.10	$1.25–$1.30
Cross-ties, yellow pine	.75	.80	1.15	1.25– 1.30
Spruce lumber	...	27.50	31.65	40.00
Waste, cotton	.06½	.06½	.10	.12½
Waste, wool	.11	.12	.16	.22
Cast iron wheels, 33 in.	7.00	7.00	8.50	12.30
Solid steel wheels, 33 in.	18.00	18.00	20.50	37.50
White lead	.06½	.06½	.09½	.12¾
Malleable iron castings	.04	.05	.06¼	.12¾
Gasoline	.11	.11	.23	.23
Copper	.15	...	...	.32– .36
Rails	28.00	28.00	33.00	40.00

It must be borne in mind that the report is of January, 1917, and the prices for the current year, bearing the date January, 1918, are now in the course of preparation. During the past twelve months, therefore, the trend upward in some instances ranges from 50 to 100 per cent. White oak ties are now quoted at $1.35 to $1.40, maybe even higher. Yellow pine ties from $1.45 to $1.50. Besides, cross-ties are scarce and hard to get, and so is ash lumber, which is in demand for car interior work. Cotton waste has gone to 25 cents a pound; wool waste of best quality is now 44 cents as against 22 cents a year ago. Cast iron car wheels 30 in. in diameter are quoted at $16 as of December, and then only one bid was received by the company which is in the market for a large lot. Steel wheels, according to the same source of information, are 68 per cent higher than before the war. The average increase on all railway material during the year is 22 per cent.

This company as well as others use great quantities of lumber, and they are finding it exceedingly difficult to meet requirements at any price almost. Some of their contracts, especially with Southern mills and lumbermen, are in a perilous condition on account of the high prices. The purchasing agent referred to stated that on a recent order for eight or ten cars of lumber his company had received two. Where the remainder was they had no means of knowing. A couple of firms in this line with which it had dealings had about abrogated their contracts and were going out of business, confessing they were in a hazardous position in respect to a future supply of stock.

Relaying rails, formerly sold at $15, now command $70 a ton, with no guarantee of delivering under a year. A request for quotations on gears and pinions submitted to manufacturers two weeks ago, had met with not a single response. No contract would be accepted or delivery promise made. An attempt to buy a lot of fire-box material was met by the producers with a flat declaration that no steel was to be had for such a purpose and therefore the order was unacceptable. On cast iron wheels one bid was received. In truth, anything and everything, of either iron or steel, was a difficult problem to negotiate. Copper wire could be had in two or three weeks delivery. Rubber covered wire had been bought at 29 cents. On a late order for 100 miles of hard wire, to be delivered in six weeks, 28 cents was paid. The present price of bare copper wire, of the right quality, is acceptable to the railway buyers, who know current conditions. The official selling figure and attitude, so these people intimated, was something of a fiction when one was in the market for wire. The price was arranged between the parties to the transaction to the mutual satisfaction of both, with the governmental regulation a hazy factor.

DELIVERIES THE SOURCE OF MOST TROUBLE

After all, the most bothersome and troublesome condition is that of deliveries. The car builders are from six to eight months behind, with no perceptible sign of improvement. This is reported as holding up the placing of a number of important orders for new rolling stock. It appears that when a purchasing agent is now in the market his first inquiry is not for price but promise of delivering. Price is secondary, if not negligible. As one railway official expressed it, "We pay the price asked. Of course, it is not reasonable; for nowadays there is no such thing as a reasonable price." Up to the present the companies bought where the best price could be had, from a responsible manufacturer, of course, whether he was in Chicago, St. Louis or New Orleans. Now, owing to the freight congestion, everything possible is purchased in New York or nearby points in order to insure shipment and delivery. Railway officers admit they have paid a bonus to further shipments and expedite deliveries.

Several companies controlling traction properties in various parts of the country and abroad, with headquarters in New York, do their principal buying under a blanket contract. The local managers also purchase what they need in minor accessories. The original price probably was the prevailing quotations six months or a year ago; but they are finding it exceedingly difficult to obtain their requirements. Delivery is the great obstacle, and the use of express instead of freight shipments does not always solve the problem. An order for transformers was recently accepted for April, 1918, delivery, providing no government priority order intervened. In that event everything went overboard, and the delivery would be postponed indefinitely. One of these companies, when they make a shipment to a property, send a man along to push it through, and frequently he goes clear across the continent or to the West Indies. It is easier to freight West than East; and it is almost impossible to secure "bottoms" for foreign shipments.

New Competition Among the Fuse Manufacturers

Standard Producers to Place Refillable Types on Market in the Near Future, Probably During the Coming Week

The revelations of the last two weeks have brought to a head the intention of manufacturers of standard or non-refillable fuses to put on the market types of refillable fuses also which have been in the process of development for some time. The Chicago Fuse Company, one of the manufacturers of the standard line, expects to bring out a refillable type within the next two or three days. Last week the Economy organization gave notice to the trade that it had purchased the Detroit fuse, one of the well-known standard types.

While the other fuse manufacturers have not as yet disclosed their program, so far as could be learned on inquiry all makers of the one-time type of fuse expect to bring out shortly, probably by the first of the year, a renewable or refillable type. In fact, reports say, they had been working continually along these lines. Just what the selling policies of the various companies interested may be is not yet definitely known. It is believed, however, that prices and sales activities will remain undisturbed, for the present at least.

The presumption is that with a greater number of both types in the market a greatly increased production will follow. Under the stress of competition this may lead to a revision of prices downward. In the meantime considerable jockeying is said to be going on between the fuse concerns to ascertain what schedule will be adopted by other manufacturers.

New York Railways Securing Window Glass Supply

Possibility of Higher Prices After First of New Year, with Present Indications Pointing to a Curtailment of Supply

Railway companies not caring to run any risks in a threatened, if not impending, shortage in car window glass, are placing heavy orders for as early delivery as can be made. Prices as yet have not advanced as frequently or in the same ratio as on other railway necessities. One of the largest companies in the country stated to the ELECTRIC RAILWAY JOURNAL that a 5 per cent increase was made three months ago but none since. Another company of prominence and a heavy buyer said there had been no change at all. Then again a window glass manufacturer, controlling a group of tank factories and producing roughly 50 per cent of the glass sold in the United States, reported the advance was made in October and averaged about 10 per cent.

SHORTAGE OF FUEL SERIOUS PROBLEM

It was understood that the window glass manufacturers were to "blow in" on Dec. 8. Only 10 per cent of them started. The concern above mentioned has ten plants, of from one to three tanks capacity each. One tank represents a factory in itself, and while all their works are not now in operation, the majority did not start up until Friday of last week, though a number are run continuously. According to an official of this large company, the reason of their late beginning to turn out car and every other variety of window glass and being compelled at times to curtail production and sometimes close down altogether is lack of fuel. As he phrased it, the window glass situation is chaotic. The industry is not only short of fuel, but also of raw material. They are under no obligation to any foreign country for the latter, as it is entirely of domestic origin. There is a mountain of sand in every state in the Union, he stated, but the embargoes and freight congestion on all lines prevent shipments.

Last week the same gentleman was at one of the company's plants in Pittsburgh. There was a dearth of fuel; but 200,000 ft. of wood was "somewhere" in transit, but not a stick in the factory. No priority order from the Board of War Industries can be obtained to allow shipments of this kind to come through and therefore only the consideration to be received from the transportation companies can be depended upon.

When a further advance may be made is not known now, but if it came along about the opening of the new year it would be no surprise. Prices have not been withdrawn, and no quotations are made. Each order is passed on its individual merits and the usual requirements of the buyer are considered in connection therewith. Railway purchasing agents are not buying any lower or cheaper grade of glass for car windows. The quality is held up, but the demand is inclined to specialties in size, appearance and grade.

In the East orders are placed through the jobbing houses and seldom direct with the manufacturer. The traction companies in and around New York City have been placing orders of a heavier caliber than usual on account of a possible shortage caused by lesser production. One road has ordered 50,000 sq. ft. of car window glass to be in storage in New York, and to be taken at the convenience of the road, as a precautionary measure along these lines. Maybe other orders of significant size will be uncovered as on delivery with the same contingency in view. The American Glass Window Company is making up the big order mentioned, with the Interborough Rapid Transit Company and New York Railways Company as the buyers. The delivery is to be in six months.

Incandescent Lamp Price Increase Announced

New Prices on These Goods Which Are to Go Into Effect Jan. 1, 1918, Show Advances in the Neighborhood of 10 per Cent

On Wednesday a new price list on Mazda and graphitized-filament incandescent lamps, dated Dec. 22 and effective Jan. 1, 1918, was announced, bearing, as was predicted here several months ago, an increase generally around 10 per cent.

On Schedule 5, which includes vacuum lamps for electric railway service to be used on 525-650 volts, five in series, the new prices are as follows:

	LIST PRICE	
Watts	Clear	Frosted
23–36	$0.30	$0.33
56	0.35	0.39
94	0.70	0.77

The increases are 3 cents per lamp on the 23 and 36-watt sizes, 1 cent on the 56-watt and 5 cents on the 94-watt size.

ROLLING STOCK

Aberdeen (S. D.) Railroad Company has a McGuire-Cummins snowplow ordered for December delivery.

Trenton & Mercer County Traction Corporation, Trenton, N. J., is rebuilding seven of the ten cars damaged by a recent fire.

Tri-City Railway Company of Iowa, Davenport, Iowa, had a couple of cars damaged by fire, a few weeks ago, to the extent of $4,500.

Seattle (Wash.) Municipal Street Railway has ordered six one-man cars, to be operated on an extension of Division A to the north city limits, which is under construction.

Bristol & Plainville Tramway Company, Bristol, Conn., has received two of the new cars ordered in the spring from the Wason Manufacturing Company, Springfield, Mass. The cars are of the convertible type.

Union Railway Company, New York, N. Y., a subsidiary of the Third Avenue Railway, has been recommended to purchase six snowplows by the Public Service Commission of the First District. The commission points out that the type of sweepers now used by the company are not sufficient in number or efficient during a heavy fall of snow to clear its tracks.

TRADE NOTES

International Signal Company, Brooklyn, N. Y., is the new name of the National Electric Signaling Company, which will continue the manufacture and operation of radio telegraph and radio telephone apparatus under the patents owned by the original company. The receivership of the latter, due to differences between the stockholders, has been amicably adjusted and closed.

Walter A. Zelnicker Supply Company, St. Louis, has secured the services of L. B. Moses, who has been closely associated with the railway trade since 1903, when he left the position of assistant to the president of the Knasas City Southern Railway. Since 1911 Mr. Moses was sales manager of the Kettle River Company of Minneapolis, Minn. Mr. Moses joins the Zelnicker organization as second vice-president, in charge of the rail department, with headquarters at the company's main offices in St. Louis.

International Steel Tie Company, Cleveland, Ohio, since Dec. 1 has booked 10,000 ties for the Cleveland Railway Company, which means 12 miles of track. It has also on order 2000 ties for the Arkansas Valley Railway, Light & Power Company, Pueblo, Col., and about 1000 ties for the Denver (Col.) Tramway. The company has sufficient material on hand to build about 100,000 ties. During the last year deliveries have been made as demanded; that is, steel twin ties in from one to two weeks, and the company expects to be able to continue such delivery in 1918. November was the largest month in the history of the International company's business in booking tonnage.

Economy Fuse & Manufacturing Company, Chicago, Ill., has purchased the entire fuse business of the Detroit Fuse & Manufacturing Company, makers of the "Arkless" inclosed fuses. The transaction includes the conveyance of all merchandise, materials, machinery, tools, designs, patents, good-will and unfilled orders. The physical assets of Detroit Fuse & Manufacturing Company, in so far as they pertained to the making of fuses, have been shipped to the Chicago plant of Economy Fuse & Manufacturing Company, where the manufacture of "Arkless" fuses will be continued, production being, as heretofore, under the label service of Underwriters' Laboratories, Inc. The "Square D" line of inclosed safety switches remains the property of the Detroit Fuse & Manufacturing Company.

NEW ADVERTISING LITERATURE

Denton Engineering & Construction Company, Kansas City, Mo.: A booklet is being distributed outlining this firm's electrical service and its facilities for handling repair and construction work.

Lefax, Inc., Philadelphia, Pa.: The products of various companies in the trade are described in catalog sheets now being distributed that are punched and indexed for filing in the Lefax data books.

Railway Utility Company, Chicago, Ill.: "Announcement of Importance to Railways" is an illustrated circular explaining the working trade agreement on patent car heating and regulating appliances between this company and the Thermo-Electric Regulator Company. The devices in question are also shown and described.

Portland Cement Association, Chicago, Ill.: A pamphlet, finely illustrated, entitled "Concrete Highway Bridges," in which is described the use of concrete for this particular purpose. A list of free booklets and bulletins on the use and advantages of concrete published by the association is included, as well as standard bridge and culvert plans.

I. P. Morris Company, Philadelphia, Pa.: Bulletin No. 4 is descriptive of its hydraulic turbines. This complete and well-illustrated bulletin includes a general history of the firm, shop views, a list of wheels built by this company, efficiency curves of turbines, an article on "The Efficient Use of Water Power," and a number of plant illustrations giving views of I. P. Morris turbines.

Ajax Metal Company, Philadelphia, Pa.: "Ajax Bearings, Castings and Babbitt Metal for Railway Equipment" is the title of a sixteen-page catalog recently issued in which are set forth the advantages and disadvantages of the various alloys as applied to railway requirements. The company has also prepared a concise circular on the advantages of Ajax plastic bronze. Copies of the catalog or the circular may be had by writing.

Condit Electrical Manufacturing Company, South Boston, Mass.: "Useful Information for the Application of Electrical Protective Devices" is a substantially bound volume, with flexible covers, which presents, in compact and convenient form, information of practical value to the engineer and electrician. It is not intended, however, to cover broadly the various fields of the electrical art. Besides general definitions, which are intended to be practically descriptive rather than scientifically rigid, terms as applied to rotating machines, switches, circuit breakers and auxiliary apparatus are also given in the same simple and clear manner. In addition various tables for readily and easily determining any desired electrical condition, general wiring and other formulas are also furnished. A complete index adds greatly to the value of this practical and valuable little work.

Edgar Allen & Company, Ltd., Sheffield, England: A new issue of their pamphlet "The Making of a Tramway Point," in which is incorporated "Thirty Years of Tramway Practice, 1883 to 1913." The whole industry of making tramway points and crossings is illustrated in the pamphlet by a series of twenty pictures, showing page by page the making of a tramway point or track switch. The history begins with its inception in the drawing office; then follows the making of the pattern, the finished pattern, its insertion into the mold in the foundry, the making of the various cores that go with it, the casting, fettling, trueing and grinding processes, and afterwards the finished product. Each picture tells its own story, so that it is easy when one has examined all the pictures to understand exactly how a tramway point is made. The illustrations are accompanied by a reproduction of the paper by Fred Bland of this company which was read at the Tramways' Association Congress in 1913, and which gave a detailed history of the introduction of tramways, the development of the rails and points and crossings, reviewing the progress from the most primitive kind of crossing to the recent types which are now cast in manganese steel. A copy will be sent to anyone interested on application to the company at Sheffield.

NEW YORK METAL MARKET PRICES

	Dec. 19	Dec. 24
Prime Lake, cents per lb	23½	23½
Electrolytic, cents per lb	23½	23½
Copper wire base, cents per lb	29	27
Lead, cents per lb	6.40	6½
Nickel, cents per lb	50	50
Spelter, cents per lb	7.75	6.35
Tin, Straits, cents per lb	*85.50	*85.50
Aluminum, 98 to 99 per cent, cents per lb	36	36

OLD METAL PRICES—NEW YORK

	Dec. 19	Dec. 24
Heavy copper, cents per lb	22	22
Light copper, cents per lb	19½	19½
Red brass, cents per lb	17½	17½
Yellow brass, cents per lb	14¼	14¼
Lead, heavy, cents per lb	5½	5¾
Zinc, cents per lb	5	5
Steel car axles, Chicago, per net ton	$44.50	$44.00
Old carwheels, Chicago, per gross ton	$32.50	$34.00
Steel rails (scrap), Chicago, per gross ton	$34.50	$34.50
Steel rails (relaying), Chicago, per gross ton	$55.00	$55.00
Machine shop turnings, Chicago, per net ton	$17.25	$17.25

RAILWAY MATERIALS

	Dec. 19	Dec. 24
Rubber-covered wire base, New York, cents per lb.	32-34	32-34
Rails, heavy, Bessemer, Pittsburgh	$38.00	$38.00
Rails, heavy, O. H. Pittsburgh, per gross ton	$40.00	$40.00
Wire nails, Pittsburgh, per 100 lb	$3.50	$3.50
Railroad spikes, 9/16 in., Pittsburgh, per 100 lb.	$5.50	$3.90
Steel bars, Pittsburgh, per 100 lb	$5.00	$4.50
Sheet iron, black (24 gage), Pittsburgh, per 100 lb.	$5.80	$5.80
Sheet iron, galvanized (24 gage), Pittsburgh, per 100 lb	$4.85	$4.85
Galvanized barbed wire, Pittsburgh, cents per lb.	$4 35	$4.35
Galvanized wire, ordinary, Pittsburgh, cents per lb.	$3 95	$3.95
Cements (carload lots), New York, per bbl	$2.22	$2.22
Cement (carload lots), Chicago, per bbl	$2.31	$2.31
Cement (carload lots), Seattle, per bbl	$2.65	$2.65
Linseed oil (raw, 5 bbl. lots), New York, per gal.	$1.23	$1.26
Linseed oil (boiled, 5 bbl. lots), New York, per gal.	$1.24	$1.27
White lead (100 lb. keg), New York, cents per gal.	10	10
Turpentine (bbl. lots), New York, cents per gal.	47½	47½

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*None offering.

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